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COLLEGE OF ENGINEERING

SERVQUAL DIMENSION ANALYSIS AT HBKU STUDENTS HOUSING

FACILITIES

BY

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ABSTRACT

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Title: **[SERVQUAL DIMENSION ANALYSIS AT HBKU STUDENTS HOUSING FACILITIES]**

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In this competitive era, the improvement of any organization robustly relies on increasing their customer satisfaction about the provided services. It is more important to provide the customers with what they want especially in a case of students housing facilities at universities. For that, organizations need to start paying close attention to their customer voice and constantly work to meet their needs.

The aim of this project is to assess the current level of the actual services delivered by HBKU students housing facilities against the level of importance of these services to the students. It also presents a review of current literature on SERVQUAL and how it is applicable to measure quality in the provision of services quality on housing and residential services.

The purpose of this project is to determine the gap between the expectation and perception of student housing services provided by HBKU. It utilizes an instrument based on the SERVQUAL model. SERVQUAL is based on the premise that service quality can be measured between the gap that exists between what the customer expects and what they have perceived they have received. To collect primary research data, the questionnaire has been prepared based on the original SERVQUAL framework of 22 questions adapted with minor modifications to be more applicable to HBKU's students housing facilities case. The survey has been completed by approximately 194 out of 622

the total number of students currently utilizing the student housing facility at HBKU.

It is important for educational institutions to have deep insight into their students' experiences. In addition, of contributing to current literature on the topic, the outcome of the project provides information and suggestions to HBKU HRL team so that it can improve its future services offering to students to enable it to bridge the gap between its students' expectations and perceptions.

Keywords: Service Quality; SERVQUAL Model; Customer's Expectation; Customer's Perception

DEDICATION

I would like to dedicate this work to my husband for his continues love and support throughout my work and academic career to overcome challenges. I am truly lucky to have such a person in my life. This work is also dedicated to my supportive family especially my parents, who have helped me with encouragement throughout my life and believed on my ability to achieve my dreams and academic goals and without which I would not have succeeded.

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ABBREVIATIONS

HBKU	Hamad Bin Khalifa University
HRL	Housing and Residence Life
SERVQUAL	Service Quality
RATER	Reliability, Assurance, Tangible, Empathy and Responsiveness
DAP	Data Analysis Process
ICR	Internal Consistency Reliability
DASD	Description Analysis of Survey Data
AS	Average Score
EPM	Expectation - Perception Matrix
ZH	Zone Horizontal Limit
ZV	Zone Vertical Limit

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CHAPTER 1: INTRODUCTION

In today's competitive environment, it is more important than ever to provide the customer with what they want. This is as applicable to university student housing facilities as it is to any other service. Today housing facilities are an important offering of most universities (Price et al., 2003). It has been demonstrated that students living in university accommodation perform better than those who do not make it an important decision for students to make (Radder and Han, 2009). Some universities even insist that students live in their university residences (Murray and Arajuo, 2010). In addition to providing a service to students, housing facilities are also an important function that enables universities to differentiate themselves (Radder and Han, 2009). It is of great importance that educational institutions to have insight into their students' expectations and perception of service quality because this can also draw attention to the focus of resources and internal management processes that are potentially ineffective (Ushantha and Kumara, 2016).

1.1 SERVQUAL Model (RATER)

Parasuraman, Zeithaml, and Berry (1985) have described the model as a successful tool used to measure the gap between customers' expectations about any particular service prior to offering the service and the actual level of quality perceived after offering the same service. However, as per authors' description about SERVQUAL model, it is a tool with a high accuracy and validity used by different organizations to study and find out their customers' expectations and perceptions to modify and get better

in their offered future services.

This project is based mostly on the discrepancies and measuring gap 5 which presents between the expected service and the perceived service by residents of HBKU students housing facilities across the housing and residential services.

1.2 Customer Expectations

Customer expectation is defined as different types of criteria set by the customer to evaluate the service provider. It is critical to study and determine customers' expectations about any service to proceed with the required level of quality. High level of service quality can only be achieved if the service provider can meet the customers' expectations. Customers' expectations depend on a variety of elements such as cost, trademark, previous experiences, and needs. Meeting customers' expectations will ensure several things to service providers such as an increase in sales, revenues and retain customer loyalty.

1.3 Customer Perceptions

Customer perception is defined by the personal estimation for the provided services, which varies from one customer to the other due to different peoples' tastes. Customer perception is mainly measured based on the actually obtained service. It depends on different opinions received from customers. Smart organizations always focus on customers' highest perceived values to achieve lifetime customer satisfaction. This element can support organizations with long-time customer loyalty and competitiveness.

1.4 SERVQUAL Model Dimensions

SERVQUAL model is an instrument consists of 5 dimensions and 22 statements on customers' expectations and another 22 statements on customers' perceptions. The instrument used a 5 point Likert scale to respond to each question from the two divisions (0 = not applicable, 1 = not important at all, 2 = not important, 3 = neutral, 4 = important, 5 = very important). The framework of this project will focus on these five well-known dimensions of quality that highly impact students' perceptions and expectations for the case of HBKU students housing facilities. The scale point was created to support the customers to evaluate the service provider based on their own anticipation and personal judgment. This can give indications and allow organizations to predict their profitability.

The 22 statements have been distributed further into 5 dimensions known as RATER which are:

1. ***Tangible Dimension***: This dimension is about the actual sensibility of services, including visual appearance of facilities, use of modern looking equipment and staff neat appearing.
2. ***Reliability Dimension***: This dimension is about the dependability of a service and its ability to provide as promised service.
3. ***Responsiveness Dimensions***: This dimension is about the employees' readiness to help and give prompt services.
4. ***Assurance Dimension***: This dimension is about the ability of service provider to instill confidence to the customers and provide a safe environment.
5. ***Empathy Dimension***: This dimension is about the personal attention given to

customers by their service provider to understand their specific needs.

CHAPTER 2: LITERATURE REVIEW

2.1 Housing Facilities as a Service

The provision of housing facilities to students at a university is a service as it meets the three well-defined characteristics of a service. These are intangibility, heterogeneity, and inseparability (Parasuraman et al., 1985). However, services are intangible because they involve giving a performance rather than the presentation of a tangible object (Parasuraman et al., 1985). As such precise manufacturing specifications are not relevant which can more easily be used to measure quality of goods (Parasuraman et al., 1985). It is also inherently harder to test, measure, count, or verify services to measure their quality unlike goods (Parasuraman et al., 1985). Services are heterogeneous because their performance varies from service provider to service provider and from customer to customer who can make consistent quality levels of service harder to measure (Parasuraman et al., 1985). Finally, in respect of services, production and consumption are inseparable because as the provider performs the service it is enjoyed by the customer (Parasuraman et al., 1985). Since in the provision of student housing facilities all these factors are present, it can be categorized as a service offering (Khodayati, 2011).

2.2 Service Quality

Service quality is no longer a concern exclusively for operations management (Zainuddin et al., 2014). Current literature points to need to understand quality in respect of services to be able to improve them (Parasuraman et al., 1985). This is applicable to a number of fields and is very relevant to the provision of student services including students housing facilities (Yousapronpaiboon, 2014; Price et al., 2003; Bashir et al., 2012).

Quality is open to a number of interpretations. In management and marketing contexts, service quality has been defined as the level to which a service satisfies customers' expectations (Bondinuba et al., 2013).

Markovic and Raspor proposed a study to examine customers' perceptions of service quality in the Croatian hotel sector. The goal of the study was to test the perceived service quality of hotel features and to find the main structure that can affect the service quality perception. A modified SERVQUAL scale was used to examine the service quality perceptions from the view of local and international tourists. Questionnaire was distributed to 15 hotels in the Opatija Riviera (Croatia), manually. The results of the study provided that hotel customers had high expectations. Findings can be used as a guide for hotel managers to improve quality attributes and enhance service delivery.

Bozorgi proposed a SERVQUAL model to measure the service quality of the Iran Aseman Airline. The objective of this study is to provide a better understanding of passengers' satisfactions of the services provided by the airline and how managers can improve their service quality. The questionnaire was formulated and the study found that

in all 5 dimensions there was a gap, concluding that passengers were dissatisfied with the provided level of service by the airline.

Namin et al proposed a study using SERVQUAL instrument focusing on five service quality dimensions in a form of a questionnaire consisting of 22 to find the impact of service quality of a civilized cooperative bank. The study used to show the satisfaction level of the bank customers and helped the managers in the same organization to improve the quality of the services provided. The result demonstrated that the overall customers' perception of the level of service quality provided by the bank is within the acceptable limit for the five dimensions. Nevertheless, there were some differences between the expectations and perceptions, which require improvement by the bank management.

Yousapronpaiboon proposed a SERVQUAL model to measure the service quality of the higher education in Thailand. This study examined the five popular dimensions of SERVQUAL instrument (reliability, assurance, tangibles, empathy, and responsiveness). The same study also used to test the validity and reliability of SERVQUAL to evaluate the higher education service in Thailand. The questionnaire consisted of two main parts. The first part was the demographic characteristics. The second part used to assess expectations and perceptions of students with 9-point Likert scale. Cronbach alpha method was used to test reliability. 350 students completed the questionnaire. The results of the study indicated that there was a gap between service perception and expectation in all dimensions measured and for that, the service improvements were necessary.

Zainuddin, Kahmis, Muhamed and Mamat conducted a study of a service quality in a research university in Malaysia to identify and analyze the gap between students' expectations and perceptions. Then the study looked at the relationship between the

SERVQUAL five dimensions known as (independent variables) against the overall service quality which known as (dependent variable). The questionnaire was circulated to 480 students. Section 1 contained questions on background of the student. Sections 2 & 3 contained 22 questions about SERVQUAL related to expectation and perception of service quality provided by the university. Section 4 consisted of questions related to student satisfaction and 5 comprised of personal suggestions. All scale items were measured using 6 point Likert scale. Cronbach alpha was used to test validity. The results of the study found there were gaps between students' expectations and perceptions.

Basheer et al proposed a study using a SERVQUAL model to assess the relationship between the higher education service quality dimensions and overall students' satisfaction. Manual questionnaire was used in this study to collect the required data to establish the relationship between service quality and student satisfaction in higher education. Data were collected based on the original SERVQUAL instrument through distributing 301 questionnaires among conveniently selected undergraduate students in the Faculty of Business at the University of Jordan. The findings of this study showed that the assurance and the reliability dimensions of service quality were the two most important dimensions and had significant positive relationship with student satisfaction. Recommendations and suggestions were presented for further research work.

2.3 Service Quality in University Housing Facilities

In today's global economy, universities are competing in an international arena to attract and retain students (Yousapronpaiboon, 2014; Bashir et al., 2012). Education has become a business (Yousapronpaiboon, 2014). Not only does it involve the education of

countries next generation, but it is also a means of contributing to the greater national economy, bringing with its research and innovation (Yousapronpaiboon, 2014). A number of academics have discussed the importance for university facility management to be aware of its students' expectations in respect of university services (Price et al., 2003). Increased enrollment of students in university housing facilities has also directed researchers' attention to the provision of student housing in higher education facilities (Bondinuba et al., 2013).

Radder proposed a study of a service quality of on-campus student housing at South Africa. He used a modified model of SERVQUAL to assess the quality of services provided based on 430 responses received for students' expectations and perceptions. T-tests and ANOVA tests showed that neither age nor gender affected the service quality perceptions. The results provided a four-tier structure of service quality which guided residence managers to allocate limited resources to most important service dimensions and least satisfactory.

Nabilou proposed a study by using SERVQUAL tool to measure female students' perceptions of dormitory services in Urmia university of Medical Science. Data were collected using a SERVQUAL questionnaire and the sample size was determined randomly by 320 female students with 93% completion rate. Then data analysis was performed using different methods such as descriptive statistics and Independent T test, One-way analysis of variance and Pearson correlation coefficient. The outcome results showed that quality of residential services at the Urmia University of Medical Sciences was acceptable and satisfactory.

The literature on the topic has found that in order to recruit and retain students at

the university there is a need to enhance satisfaction towards the housing services that are provided (Najib and Sani, 2012). One of the main issues identified is the difficulty in knowing the perceptions of students towards the services that are provided in addition to a lack of awareness of student expectations (Zainuddin et al., 2014). In addition, many researchers have struggled with the task of defining quality in respect of university housing facilities (Radder and Han, 2009). It has been suggested that “education quality is a rather vague and controversial concept” and that furthermore, it is a “notoriously ambiguous term” (Khodayari, 2014). What makes this a particularly difficult task is that there are a number of different stakeholders and each may have his or her own opinion on what amounts to quality in the provision of educational services (Khodayari, 2014). These stakeholders include students, parents, alumni, legislators, and university management (Zainuddin et al., 2014). The prevailing literature holds that of these, the most important stakeholder is the student as they are akin to the customer in the provision of housing facility services (Nabilou and Khorasani-Zavareh, 2014).

The service quality of the housing facilities is a critical and integral part of the educational experience (Sanni-Anibire and Hassanain, 2016). Experts have agreed that *“all individuals have a right to a quality educational facility, a physical space that facilitates the learning process and demonstrates cost-effectiveness over time one that respects and is in harmony with the environment, and one that encourages social participation, providing a healthy, comfortable, safe, secure and inspirational setting for its occupants”* (Abend, p.18). In addition, the student housing facilities have been found to have an impact on student satisfaction in the broader educational arena (Foubert et al., 1998). Satisfied residential students are more likely to express overall satisfaction with

their undergraduate experiences and were found to be more satisfied with their relationships with students and faculties (Foubert et al., 1998). Analysts have calculated that high-quality university housing facilities can have a notable impact on student academic performance, estimating that living on campus can improve results from one-fifth to one full letter grade (Murry and Araujo, 2010).

2.4 Measuring Service Quality in University Housing Facilities

Several tools have been used to measure service quality in student housing facilities at universities. For instance, post occupancy evaluations, walkthroughs, focus group meetings, and SERVQUAL (Khodayari, 2014, Sanni-Anibire and Hassanain, 2016). Researchers have identified that one of the main challenges in assessing quality is choosing the correct instrument to do so (Ushantha and Kumara, 2016). SERVQUAL has proved to be very popular and applicable to a wide variety of service industries including university housing facilities (Khodayari, 2014, Bashir et al., 2012).

Parasuraman, Zeithaml, and Berry published an instrument used to measure service quality called SERVQUAL in 1988 (Parasuraman et al., 1988). Prior to this, the authors believed there was no quantitative yardstick by which to measure consumers' perceptions relating to quality (Parasuraman et al., 1988). The authors originally developed 10 dimensions by which to measure service quality (Parasuraman et al., 1988). Through testing, the dimensions were reduced to five, namely Tangibility, Reliability, Responsiveness, Assurance and Empathy (see Figure 1).

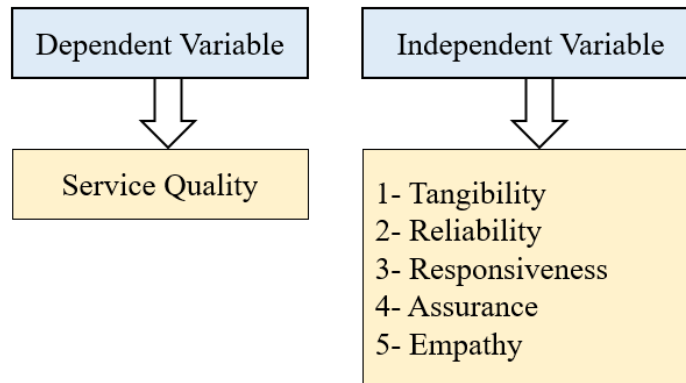


Figure 1. Variables of the SERVQUAL model (Parasuraman et al., 1988(modified))

The Tangible dimension refers to the tangible elements of service provision including physical facilities, the state of equipment, and the physical appearance of personnel (Parasuraman et al., 1988). The Reliability dimension refers to the ability of the service provider to perform promised services in an accurate manner (Parasuraman et al., 1988). The Responsiveness dimension refers to the ability of the service provider to quickly respond to the customer requirements. The Assurance dimension refers to the knowledge that the service provider has in respect of the service and to the courtesy of the staff and their ability to inspire trust and confidence (Parasuraman et al., 1988). Finally, the Empathy dimension refers to the individualized attention that the service provider gives its customers (Parasuraman et al., 1988).

In 1991, the original authors of SERVQUAL refined the instrument to add some questions and change some negatively worded statements to positive ones (Parasuraman et al., 1991). In addition, they rigorously tested the instrument for validity (Parasuraman et al., 1991). Through their work, they found that the instrument demonstrated face validity, convergent validity, discriminant validity and predictive or concurrent validity

(Parasuraman et al., 1991). The authors recommend that when using the SERVQUAL instrument as few, a number of changes as possible should be made to maintain the validity that has been established in the original SERVQUAL instrument (Parasuraman et al., 1991).

Since this time the instrument has been used to assess service quality in a number of business environments including the airline industry, information systems, and hotel services (MehdiBozorgi, 2007; Markovic and Raspor, 2010; Landrum et al., 2009). It has also been revised to take into account criticisms (Parasuraman et al., 1994). In particular, regarding how high customers' expectations are (Parasuraman et al., 1994). A revised format was produced by the authors in response (Parasuraman et al., 1994). In doing so, the authors created three alternative formats for the instrument. It contained the same 22 modified SERVQUAL items but questioned respondents' perceptions related to demanded service and perceptions relative to adequate service (Parasuraman et al., 1994). These results would provide a level of tolerance in respect of service to enable service providers to better target their resources in improving the elements of service quality which really mattered to their customer and which needed the most work (Parasuraman et al., 1994).

2.5 Effect of Demographics on Satisfaction with Student Housing Facilities

Previous research studies have demonstrated the impact of demographics on student satisfaction with university housing facilities (Najib and Sani, 2012). One found that gender was one of the indicators in determining students' satisfaction (Najib and Sani, 2012). In addition, with respect to ethnicity, discrimination between different races

did contribute to residential dissatisfaction.

However, most previous studies were guided by SERVQUAL tool to assess customer expectation and study their perception in different fields. This concluded that SERVQUAL instrument is very useful tool and rarely used in students housing facilities application. For that, the choice went toward using the same application with minor modifications to suit the HBKU students housing facilities case.

CHAPTER 3: RESEARCH METHODOLOGY

This chapter provides the research methodology details for this study. The questionnaire research method has been chosen to measure the gap between the expectation and the perception of the students at HBKU students housing facilities. The SERVQUAL model has been developed, and the gap model has been demonstrated. The data collection tool is also discussed in this chapter.

3.1 Research Problem Definition

The HBKU students housing facilities, established in 2013, provides accommodation for students from over 60 countries (Hamad Bin Khalifa University, 2016). The HRL team is committed to establishing a supportive and nurturing environment for supporting its students (Hamad Bin Khalifa University, 2016). The students housing facilities consist of two villages, *Shamali* and *Janoubi*, which are made up of a residential community center, apartments, and traditional resident halls, a coffee

house and dining hall (Hamad Bin Khalifa University, 2016).

HBKU does not just aim to provide a place where students can sleep (Hamad Bin Khalifa University, 2016). Through an understanding of the value of housing facilities, it wants to deliver a supportive environment where students can learn, grow, and develop (Hamad Bin Khalifa University, 2016).

For this study, the general research questions are expressed as follows:

- Question 1: Are the students of HBKU students housing facilities satisfied with the current perceived services?
- Question 2: What are the sources of imperfection of the service quality?

3.2 Research Contribution

This study would offer an enormous contribution to managers of HBKU-HRL in order for the organization to improve and grow further with their future services offering in order to decrease the gap between students' perceptions and expectations. Thus, the findings can be used as a guide for HRL managers to improve the crucial quality attributes and enhance service quality and business performance to retain students.

3.3 Research Objectives

The objective of this project was to use the SERVQUAL tool as one of the instruments to measure the service quality in HBKU students housing facilities. These objectives were obtained and formulated mainly from the research questions to get the required information on this specific topic, and they are expressed as follows:

1. To represent the impact of the SERVQUAL-Tangible dimension mainly in having:
 - Modern equipment
 - Attractive facilities
 - Good looking staff
 - Suitable overall appearance of the physical facility
2. To assess the effect of the SERVQUAL-Reliability dimensions by:
 - Fulfilling promises
 - Resolving students problems
 - Handling services the right way at the first time
 - Providing services at the promised time
 - Keeping error-free history
3. To evaluate the SERVQUAL-Responsiveness dimension through:
 - Providing precise timeline to perform the service to students
 - Giving instant service to students
 - Willing continuously to help students
 - Responding quickly to student' requirements
4. To test the SERVQUAL-Assurance dimension items and its impact on students' perception especially by:
 - Providing permanent sense of confidence to customers
 - Making customers feel safe and secure
 - Employees' politeness towards customers
 - Employees' levels of knowledge

5. To examine the SERVQUAL-Empathy dimension and its influence on students' satisfaction by:

- Providing students with the required individual attention
- Having Operating hours convenient to students' schedule
- Giving personal attention to students
- Understand students' specific needs
- Putting the interest of students at heart

3.4 Research Scope and Limitations

The essential goal of examining this project is to evaluate students' expectations and study their perceptions regarding students housing facilities provided by HBKU. For that reason, the scope of this project is to define if students of HBKU students housing facilities are pleased with the level of service quality provided by the HBKU HRL using the application of the SERVQUAL model.

In fact, to attain this previous scope, the examination involved surveying resident students at HBKU students housing facility by using the SERVQUAL questionnaire model modified by Parasuraman, Zeithaml, and Berry in the year of 1988. A Multiple-Item Scale used for assessing customers' expectations and measure that against their perceptions to investigate their level of service quality satisfaction. In addition, a thorough analysis of data obtained from the service quality questionnaire and literature review has been executed.

On the other hand, during the application of this project some limitations were

faced. The first limitation was related to accessing facilities within the Education City trying to find the right person to talk to gather as much information as possible about the different services offered to students. The second limitation was regarding the short timeframe assigned by HRL management team to residents of HBKU students housing facilities (12 days only) due to students' proximity to the end of the term exams period.

3.5 Proposed Methodology

The SERVQUAL instrument is based on the premise that service quality can be measured by the gap that exists between what the customer expects and what they have perceived they have received (Landrum et al., 2009). Perceived quality is determined by the size and direction of internal gaps between customer expectation and management perceptions of those expectations (Khodayari, 2014). The SERVQUAL model has differentiated between 5 different gaps (see Figure 2) that are qualified to produce the influence on the way that customers evaluate the level of quality of a service, and these gaps are shown as follows (Parasuraman, Zeithaml, and Berry, 1985):

1. **Gap 1:** The gap between customer expectation and the management perception:
This first gap appears when the management of any organization is failed to understand their customers' expectation.
2. **Gap 2:** The gap between the management perception and the service quality specifications: This gap arises when the organization management fails to match their design specification perception with their customers' expectation. For that, management of any firm has to identify the capability of their resources and correlate that with their customers' anticipation.

3. **Gap 3:** The gap between the service quality specifications and the service delivery: This gap originates with differences between the design of the service and the standard quality of the same service. This is due to individual human factor capabilities where the variation might be seen with the different level of training achieved and skills.
4. **Gap 4:** The gap between the service delivery and external communications: This type of gap results from measuring the variation between the actual service delivered versus the promised service. Over promising customers can influence their thoughts and increase their expectation. Thus, organizations should pay close attention to their commitments due to its significant part in affecting customers' expectations. By continuously pumping customer expectations, subsequently, will decrease their perceptions of the current services provided and that will not work for the benefit of the company reputation.
5. **Gap 5:** The gap between the customers' expected service and the actually perceived service: This gap represents the total results of all previous gaps with an accumulative effect. In this era, organizations are performing their best for meeting or even exceeding their customers' expectations. Customers' personal opinion will depend mainly on comparing how they perceive the actual service from their service provider against their expected level of service quality. This whole estimation will only focus on gap 5 since it is the only gap related to a customer.

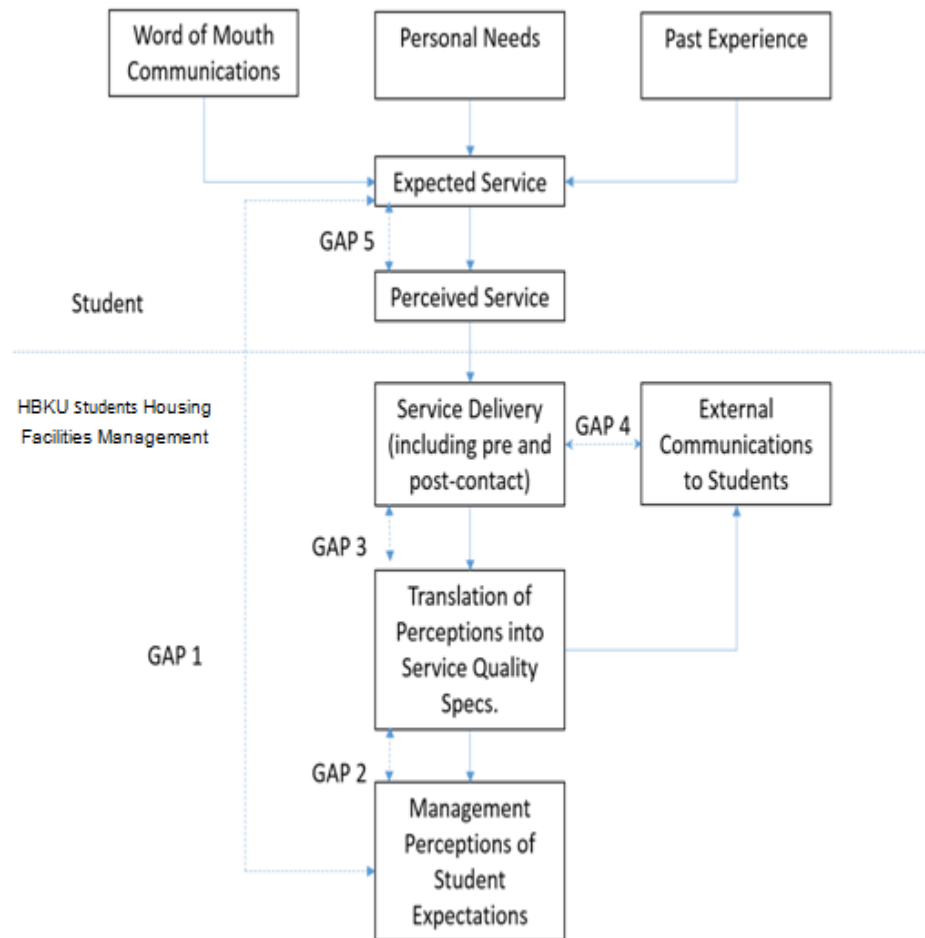


Figure 2. Gap model of service quality (Modified (Parasuraman et al., 1985))

3.6 Design of Questioner and Data Collection

Based on that, a proper questionnaire was prepared for essential data gathering. A research questionnaire was SERVQUAL (Parasuraman and Zeithaml, 1985), an instrument that consists of 5 dimensions including 22 statements to evaluate the quality of services. The conceptual framework for this study will focus on the five dimensions of quality that influence students' perceptions and expectations of HBKU students housing

facilities. These independent variables are also known as five dimensions of the instrument (see Figure 3).

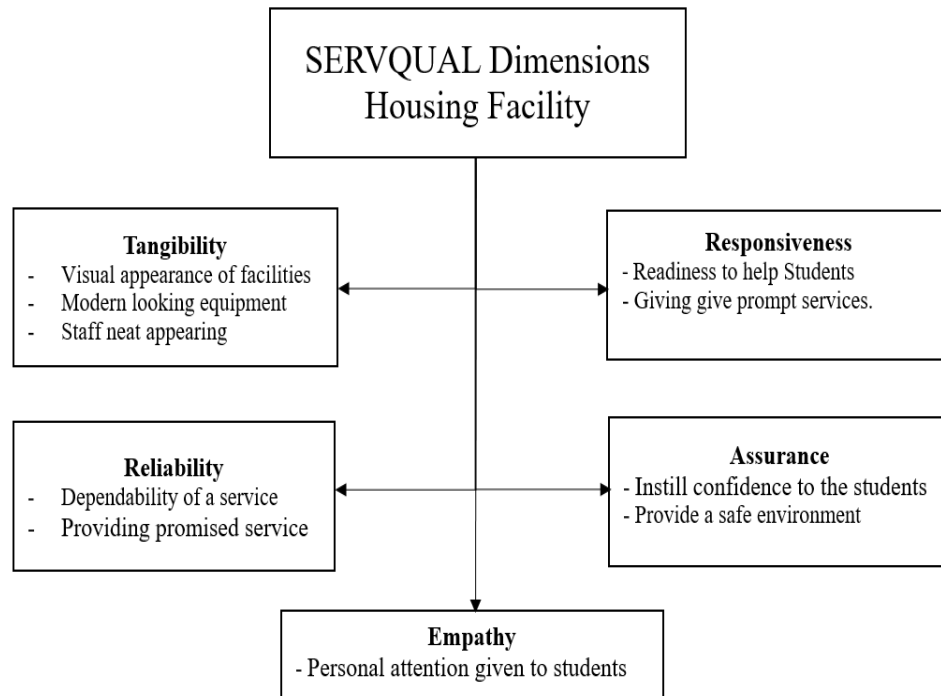


Figure 3. Dimensions of SERVQUAL

The instrument for the project was developed using the original SERVQUAL framework of questions adapted with minor modifications to be more applicable to HBKU students housing facilities case. The instrument used a 5 point Likert scale to respond to each question (0 = not applicable, 1 = not important at all, 2 = not important, 3 = neutral, 4 = important, 5 = very important).

Also, the instrument asked additional questions in respect of demographic

information including gender, age, nationality, and education level. The reason for this was to examine whether differences exist in the expectation and perception of the quality level of services offered by HBKU students housing facilities according to different demographic characteristics.

Finally, the survey questionnaire asked all the respondents about their overall assessment and experience of HBKU students housing facilities. Another 5-point Likert scale (very unsatisfactory; unsatisfactory; neutral; satisfactory; very satisfactory) was provided to respondents (see Appendix A).

Initially, the survey questionnaire version is prepared to be manually conducted. However, it required many setups by HBKU team prior distribution. After discussions with HBKU HRL team, another version of the survey was made electronically using Survey Monkey for easy distribution among all male and female residents.

The instrument was circulated with a close coordination of HRL management team by way of a link sent to residents' email. The timeline was decided by HRL management team, and it was limited due to the proximity of students' final exams. Only 12 days were given prior the beginning of their final tests period. The survey was completed by 194 students living in the HBKU students housing facilities of whom 164 completed the instrument in full, where the primary goal has been achieved in the number of responses required against 622 total number of male and female residents.

CHAPTER 4: DATA DESCRIPTION AND ANALYSIS

Data analysis process (DAP) is of great prominence for developing answers to key research questions through the examination, exploration, and interpretation of data. The data analysis process is extremely helpful in identifying which qualitative or quantitative techniques are the most appropriate for reaching the goals of the study. This section discusses the statistical and logical methods by which the collected data sample is organized, reviewed, verified, and interpreted to analyze the gap between the expectation and perception of students' housing services provided by HBKU.

4.1 Measuring Internal Consistency Reliability

Surveys are the most widely used method to collect information relevant to the purpose of the study. To be able to provide credible and dependable information, the survey results should always maintain an agreeable level of internal consistency reliability (ICR). Several ICR estimates are available in literature, for instance, the split-half adjusted, the Cronbach's alpha, and the Kuder-Richardson formulas 20 (KR-20). The Cronbach's alpha by Lee Cronbach (1951), however, the most widely used in practice due to its simplicity and easy applicability.

The Cronbach's alpha is often used as a measure of how closely that a set of items in a survey, usually a single statement or question, are highly correlated (or closely related) to each other. The Cronbach's alpha is expressed on a scale from 0 to 1. The Cronbach's alpha produces a high value when the items in the survey are correlated. The

ICR is affected by the number of items included in the survey; the more items included, the more ICR of the survey. One way to reduce the risk of using a small number of items in a survey is by enlarging the number of survey respondents. In this study, however, the Cronbach's alpha is estimated using the "Item Analysis" as one of the built-in functions of the Minitab software. The next sections detail the step and procedures of the Cronbach's alpha estimation.

4.1.1 Creating the score matrix (S-Matrix)

The SERVQUAL model is used here to assess both students' expectations and perceptions regarding service quality in student housing facility in HBKU. The expectations and perceptions of students are assessed using six scale points indicating their level of agreement or disagreement. For students' expectation, the scale is ranged from 0- Not applicable to 5- strongly agree. For the student perception, the scale is ranged from 0- Not applicable to 5- very good/excellent.

However, the score matrix (S-Matrix) is essential to initiate the estimation process. The *columns* of the S-Matrix represent the survey statements. In this study, the columns are coded using the letter "S" followed by the statement number. For instance, "S1" refers to the first statement. The rows of the S-Matrix represent how each participant responded to each of the survey items.

Moreover, one matrix is created for each of the SERVQUAL dimensions. Each of these matrices is a sub-matrix of the general S-Matrix (see Appendix B). Table 1 reports the survey statements listed under each of the SERVQUAL dimensions.

Table 1 SERVQUAL model dimensions and list of questions

Dimension	Statement Code	Statement Description
Tangibility	S1	- HBKU student housing facilities have modern-looking equipment and buildings.
	S2	- Physical facilities of HBKU student housing facilities are visually appealing.
	S3	- HBKU student housing facilities employees are neat appearing.
	S4	- The appearance of the physical facilities of the student housing facilities provided by HBKU is keeping with the type of student housing services.
Reliability	S5	- When HBKU student housing facilities promise to do something by a certain time, it does so.
	S6	- When you have a problem, HBKU student housing facilities shows a sincere interest in solving it.
	S7	- HBKU student housing facilities perform the service right the first time.
	S8	- HBKU student housing facilities provide its services at the time it promises to do so.
	S9	- HBKU student housing facilities insist on error-free records.
Responsiveness	S10	- Employees of HBKU student housing facilities tell you exactly when services will be performed.
	S11	- Employees of HBKU student-housing facilities give you prompt services.
	S12	- Employees of HBKU student housing facilities are always willing to help you.
	S13	- Employees of HBKU student housing facilities are never too busy to respond to your requests.
Assurance	S14	- The behavior of employees of HBKU student housing facilities instills confidence in you.
	S15	- You feel safe at the HBKU student housing facilities.
	S16	- Employees of HBKU student housing facilities are consistently courteous with you.
	S17	- Employees of HBKU student housing facilities have the knowledge to answer your questions.
Empathy	S18	- HBKU student housing facilities give you individual attention.
	S19	- HBKU student housing facilities have operating hours convenient you.
	S20	- HBKU student housing facilities have employees who give you personal attention.
	S21	- HBKU student housing facilities have your best interest at heart.
	S22	- Employees of HBKU student housing facilities understand your specific needs.

4.1.2 Estimating the Cronbach's alpha

The process of estimating the Cronbach's alpha was simply done using the Minitab computer software. Below we report the Minitab outcomes, as well as evaluate the ICR of the survey output results. Table 2 reports the Cronbach's alpha coefficients for both expectation and perception responses for the five SERVQUAL dimensions. The same results were graphically shown in Figure 4. The average of Cronbach's alpha coefficient of the class i is given as follows:

$$AC_i^\alpha = \frac{1}{n} \sum_{j=1}^n C_{ij}^\alpha$$

where C_{ij}^α is the Cronbach's alpha coefficient of the j th dimension and the i th class, and n is the number of dimensions.

The C_{ij}^α coefficient is computed by correlating the score of all survey statements listed under the same SERVQUAL dimensions; see Table 1. The C_{ij}^α coefficient has a lower bound of 0.70. If the $C_{ij}^\alpha \geq 0.70$, the survey statements may be reasonably correlated with each other. Table 2 below shows the Cronbach's alpha coefficient (C_{ij}^α) for all five dimensions and the average Cronbach's alpha coefficient (AC_i^α) for each class.

Table 2 Cronbach’s alpha coefficients of the SERVQUAL dimensions

Class, i	Dimension, j	Cronbach’s alpha, C_{ij}^α	Average of Cronbach’s alpha, AC_i^α
Expectation	Tangibility	0.831	0.865
	Reliability	0.916	
	Responsiveness	0.889	
	Assurance	0.805	
	Empathy	0.886	
Perception	Tangibility	0.817	0.851
	Reliability	0.897	
	Responsiveness	0.873	
	Assurance	0.805	
	Empathy	0.864	

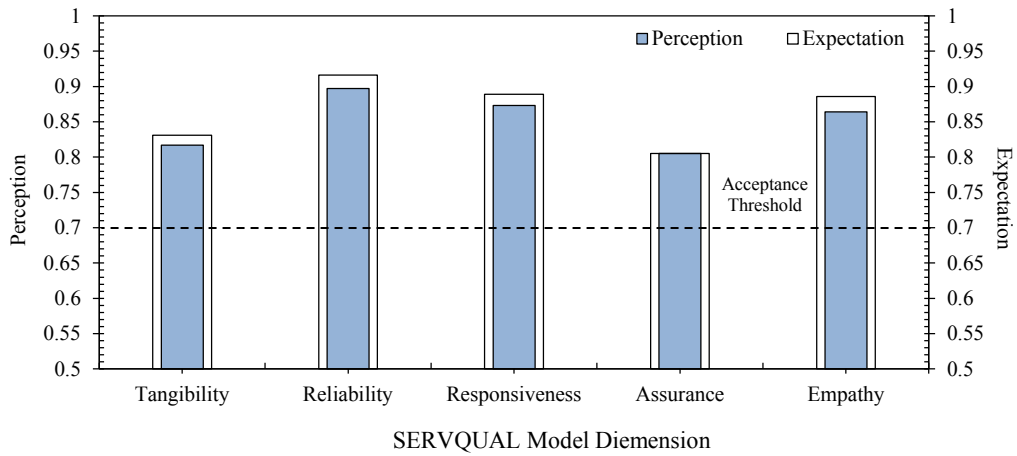


Figure 4. Graphical illustration of Cronbach’s alpha coefficients of the SERVQUAL dimensions

As seen in Table 2, the AC_i^α coefficient for the “Expectation” and “Perception” classes are 0.865 and 0.851, respectively, indicating an overall satisfied reliability. In addition, Reliability dimension has the highest C_{ij}^α coefficient comparing with all other

dimensions. All dimensions considered in this study showed C_{ij}^{α} coefficients higher than the threshold 0.7, which means that these dimensions are very appropriate to measure the service quality at the students housing facilities of HBKU.

4.2 Descriptive Analysis of Survey Data (DASD)

Survey data description (DASD) is the process of systematically applying qualitative or quantitative methods to provide deeper insight into the data structure and features. Several methods can be used to summarize and represent a survey data. However, selecting the most appropriate data description method will help in extracting the most useful information and making the right decision.

One common way to enhance the quality of the survey data is by identifying and removing faulty records –or outliers. The term “outlier” is used here to refer to a data record that significantly distant from other records. The outlier data can cause tremendous damage to the arithmetic average of the data. Some of the well-known outlier detection techniques, not limited to, are Box-Plot (Box and Whisker), Grubbs test, and Dixon test.

The results of applying the Box-Plot methods for detecting potential outliers in the score results of the “Tangibility” under the “Expectation” class are shown in Figure 5 and Figure 6. As it can be seen from Figure 5, one outlier record was detected. The average score of this record is “0”.

Table 3 and Table 4 report the results of applying the Box-Plot test to all SERVQUAL dimensions under the “*Expectation*” and “*Perception*” classes. However, only one outlier was detected and removed under both the “Expectation”

and “Perception” classes.

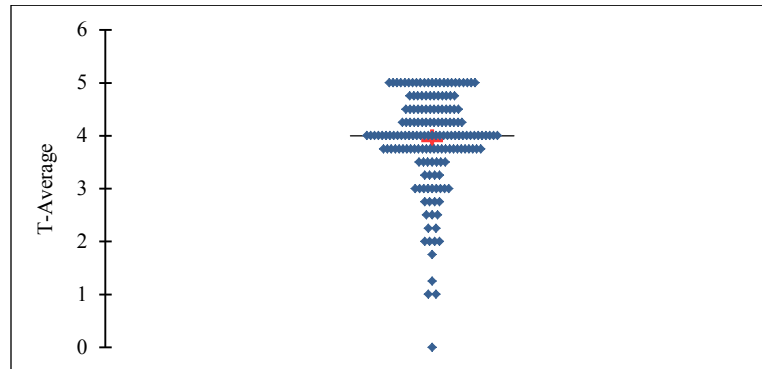


Figure 5. Scattergram for the Tangibility under the Expectation class

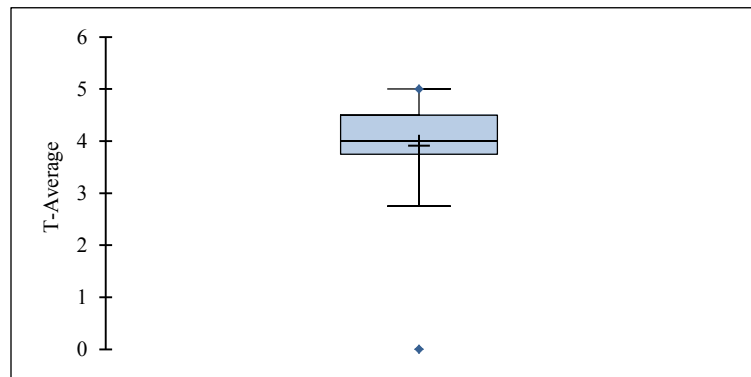


Figure 6. Box-Plot test for outliers for Tangibility under the Expectation class

Table 3 The results of the Box-Plot test for all dimensions under the *Expectation* class

Statistic	T-Average	R-Average	RE-Average	A-Average	E-Average
No. of observations	164	164	164	164	164
Minimum	0	0	0	0	0
Maximum	5	5	5	5	5
1st Quartile	3.75	4	3.75	4	3.2
Median	4	4.6	4.25	4.25	3.9
3rd Quartile	4.5	5	5	5	4.45
Mean	3.909	4.228	4.171	4.195	3.757
Variance	0.793	1.091	0.961	0.727	1.034

Table 4 Summary of the results of the Box-Plot test for all dimensions under the *Perception* class

Statistic	T-Average	R-Average	RE-Average	A-Average	E-Average
No. of observations	164	164	164	164	164
Minimum	0	0	0	0	0
Maximum	5	5	5	5	5
1st Quartile	4	2.8	2.75	3	2.75
Median	4.5	3.4	3.75	4	3.2
3rd Quartile	5	4	4.25	4.5	4
Mean	4.285	3.332	3.497	3.72	3.218
Variance	0.562	1.318	1.251	1.106	1.29

4.3 Mean Scores of SERVQUAL Dimensions

Table 5 and Table 6 report the score-frequency matrices under both the “Perception” and “Expectation” classes, respectively. The maximum and minimum score averages are highlighted using grey color.

Table 5 The average score of the survey statements under the *Expectation* class

Dimension	Statement	0	1	2	3	4	5	Average-Score
Tangibility	S1	0	8	8	28	54	65	3.98
	S2	0	5	11	29	75	43	3.86
	S3	2	6	6	26	61	62	3.99
	S4	1	4	6	35	70	47	3.90
	S5	6	0	2	12	38	105	4.40
Reliability	S6	5	3	8	10	26	111	4.34
	S7	3	2	8	8	50	92	4.31
	S8	5	2	5	13	39	99	4.31
	S9	7	3	7	30	49	67	3.91
	S10	2	1	8	16	41	95	4.32
Responsiveness	S11	4	3	7	19	48	82	4.15
	S12	4	0	6	12	55	86	4.28
	S13	4	4	5	22	62	66	4.04
	S14	8	3	8	26	53	65	3.89
Assurance	S15	1	0	3	9	28	122	4.63
	S16	2	1	4	28	55	73	4.16
Empathy	S17	2	1	7	18	59	76	4.20
	S18	5	6	17	37	56	42	3.59
	S19	4	2	6	26	62	63	4.02
	S20	8	8	15	48	47	37	3.40
	S21	3	3	8	29	53	67	4.01
	S22	4	3	10	32	56	58	3.88

Key: 0= Not Applicable 1 = Not Important at all, 2 = Not Important, 3 = Neutral, 4 = Important, 5 = Very Important

Table 6 The average score of the survey statements under the *Perception* class

Dimension	Statement	0	1	2	3	4	5	Average-Score
Tangibility	S1	0	4	2	12	38	107	4.50
	S2	0	3	5	11	44	100	4.45
	S3	1	3	5	19	59	76	4.23
	S4	1	3	7	26	65	61	4.07
	S5	4	15	23	32	52	37	3.39
Reliability	S6	5	16	24	28	53	37	3.36
	S7	4	10	22	40	52	35	3.44
	S8	6	15	16	39	47	40	3.40
	S9	13	12	16	45	51	26	3.17
Responsiveness	S10	4	12	22	33	49	43	3.49
	S11	4	9	18	34	61	37	3.55
	S12	5	9	18	23	58	50	3.67
	S13	6	14	19	36	56	32	3.36
	S14	14	12	12	39	57	29	3.25
Assurance	S15	2	7	4	13	39	98	4.31
	S16	4	10	8	27	53	61	3.85
	S17	6	9	12	43	49	44	3.56
	S18	12	9	19	42	49	32	3.26
Empathy	S19	6	12	16	31	60	38	3.50
	S20	12	10	17	43	50	31	3.26
	S21	9	17	22	34	51	30	3.19
	S22	11	19	24	42	45	22	2.98

Key: 0 = Not Applicable, 1 = Very Poor, 2 = Poor 3 = Neutral, 4 = Good, 5 = Very Good/Excellent

The Wilcoxon signed-rank test (paired difference test) is a non-parametric test used for comparing two related samples or matched samples. The Wilcoxon test is often preferred when the data does not satisfy the normality assumption. However, the Wilcoxon test is also valid for data from other distributions. The Wilcoxon test for paired samples firstly ranks the absolute values of the differences between the two samples and then calculates a test statistic based on the number of negative and positive differences. One advantage of the Wilcoxon test over the two-sample t-test is in that it is less sensitive

to outliers.

The Wilcoxon test is applied here to examine whether the average score (AS) of the “Expectation” and “Perception” classes are equal (i.e.; $H_0: \mu_{AS1} - \mu_{AS2} = 0$ versus $H_1: \mu_{AS1} - \mu_{AS2} \neq 0$). Table 7 summarizes the statistics of the compared samples. The results of the Wilcoxon test using the XLSTAT software are reported below.

Table 7 Summary statistics of the compared sample

Class	Observation	Minimum	Maximum	Mean	Standard Deviation
Expectation	22	3.40	4.63	4.07	0.277
Perception	22	2.98	4.50	3.60	0.44

As mentioned earlier, in the Wilcoxon test, the differences for all the pairs is calculated, then they are ordered and finally the positive differences $\{PO_1, PO_2, \dots, PO_p\}$ and the negative differences $\{NE_1, NE_2, \dots, NE_m\}$ are separated; where p and m are the number of positive and negative differences, respectively.

The statistic used to test whether the examined samples are significantly different is defined as the sum of the PO_i 's as follows:

$$\omega = \sum_{i=1}^p PO_i$$

The expected value and the variance of the test statistics (ω) are as below:

$$E(\omega) = \frac{n(n+1)}{4}$$

$$V(\omega) = \frac{n(n+1)(2n+1)}{24}$$

The summary of required calculations of the Wilcoxon signed-rank test (two-tailed test) are shown in Table 8

Table 8 Summary statistics of Wilcoxon signed-rank test (two-tailed test)

Statistic Description	Statistic-Value
Test-Statistic (ω)	231.50
Expected Value, $E(\omega)$	126.50
Variance, $V(\omega)$	948.63
P-Value	0.001
Level of Significance (α)	0.05

As the computed p -value (Table 8) is lower than the significance level $\alpha = 0.05$, one should not accept the null hypothesis H_0 , and accept the alternative hypothesis H_1 . That means the received and expected service quality levels are significantly different. One statistic that can provide a deep understanding of the situation is the gap between the expected and received service quality.

The difference between expectations and perceptions represents the gap-scores that are practically useful to evaluate the level of service quality and customer satisfaction. However, the negative sign of the gap scores indicates that the quality of received service is low (low customer satisfaction) while the positive sign indicates an acceptable quality level (high customer satisfaction)

From Table 9, it was found that the highest gap scores were for Reliability and Responsiveness, -0.90 and -0.68, respectively. This situation provides a specific starting

point for service improvements. Moreover, the students' expectations under the Reliability, Responsiveness, Assurance, and Empathy exceed the perceived level of service. Negative gap score indicates this scenario.

The Empathy dimension received the lowest importance (expectation score), indicating that it is of least importance to the students. In general, the overall average score of “Expectation” class is greater than the overall average score of “Perception.” The overall gap score is equal to -0.44. This, for sure, reveals that the students are asking more than what they are receiving.

Table 9 Summary of the calculations of the quality gap study

Dimension	Average Score		Gap-Score = (P – E)
	Expectation, E	Perception, P	
Tangibility	3.93	4.31	+0.38
Reliability	4.25	3.35	-0.90
Responsiveness	4.20	3.52	-0.68
Assurance	4.22	3.74	-0.48
Empathy	3.78	3.24	-0.54
Overall average score	4.07	3.63	Overall-Gap = -0.44

Table 10 illustrates the gap score of all the survey statements. The same results were graphically shown in Figure 6.

Table 10 The gap score of the 22 survey statements

Dimension	Statement	Gap-Score
Tangibility	S1	0.52
	S2	0.59
	S3	0.24
	S4	0.17
	S5	-1.01
Reliability	S6	-0.98
	S7	-0.87
	S8	-0.91
	S9	-0.74
	S10	-0.83
Responsiveness	S11	-0.6
	S12	-0.61
	S13	-0.68
	S14	-0.64
Assurance	S15	-0.32
	S16	-0.31
	S17	-0.64
	S18	-0.33
Empathy	S19	-0.52
	S20	-0.14
	S21	-0.82
	S22	-0.9

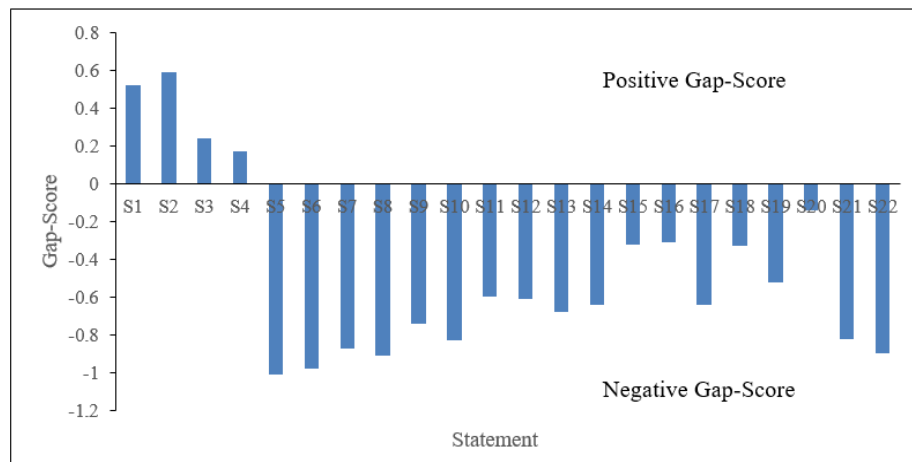


Figure 7. Plotting the gap-score for the 22 surveys' statements

4.4 Demographic Data-based Mean Scores of SERVQUAL Dimensions

The demographic data refers to the characteristics of a human population. Three types of demographic data were considered in this study including gender, age, and level of education.

However, this kind of data is necessary to deliver a better understanding of the relationship between the human characteristics of the respondent and their expectations and perceptions. The survey data shows that the majority of the respondents are males (51.53%), while the remaining were females (48.46%); see Table 11.

Table 11 Male and female gender-based counts

Gender	Count	Response Percentage, %
Female	79	48.46
Male	84	51.54
Total	163	100

Table 12 and Table 13 report the female and male gender-based score statistics extracted from the survey data. The results in these two tables show that the gap scores of the Tangibility dimension for both female and male students are 0.13 and 0.43, respectively. These results clearly indicate that the male students are more satisfied than the female students. However, under the other service quality dimensions, both of the genders give a low score for their perception resulting on negative gap score.

Table 12 Female gender-based score statistics under the Expectation and Perception classes

Dimension	Average Score		Gap-Score = $(P - E)$
	Expectation, E	Perception, P	
Tangibility	4.06	4.19	0.13
Reliability	4.42	3.33	-1.09
Responsiveness	4.31	3.48	-0.84
Assurance	4.40	3.75	-0.65
Empathy	3.89	3.32	-0.57
Overall average score	4.07	3.63	Overall-Gap = -0.60

Table 1 Male gender-based statistics under the Expectation and Perception classes

Dimension	Average Score		Gap-Score = $(P - E)$
	Expectation, E	Perception, P	
Tangibility	3.90	4.32	0.43
Reliability	4.27	3.43	-0.84
Responsiveness	4.21	3.62	-0.59
Assurance	4.22	3.79	-0.43
Empathy	3.84	3.34	-0.50
Overall average score	4.07	3.63	Overall-Gap = -0.39

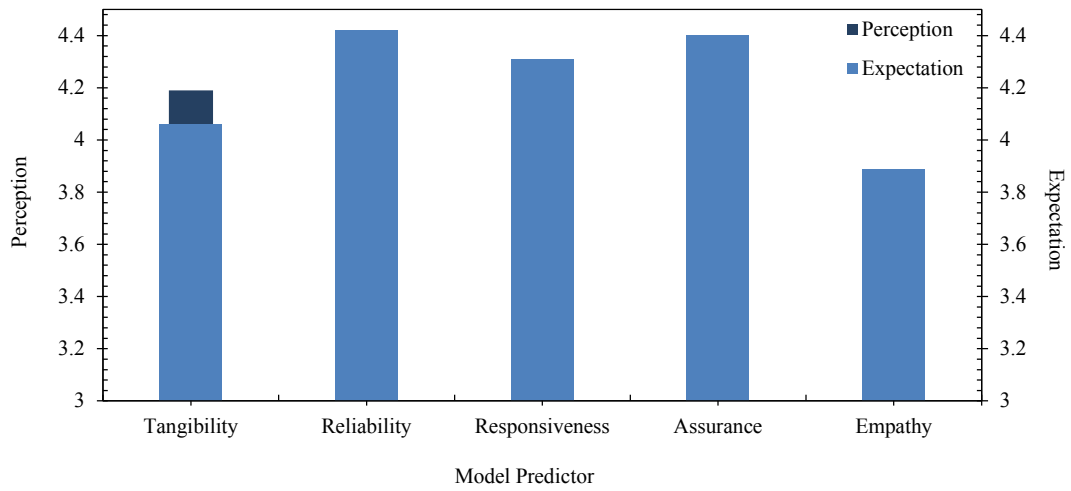


Figure 8. Female gender-based Expectations and Perceptions classes

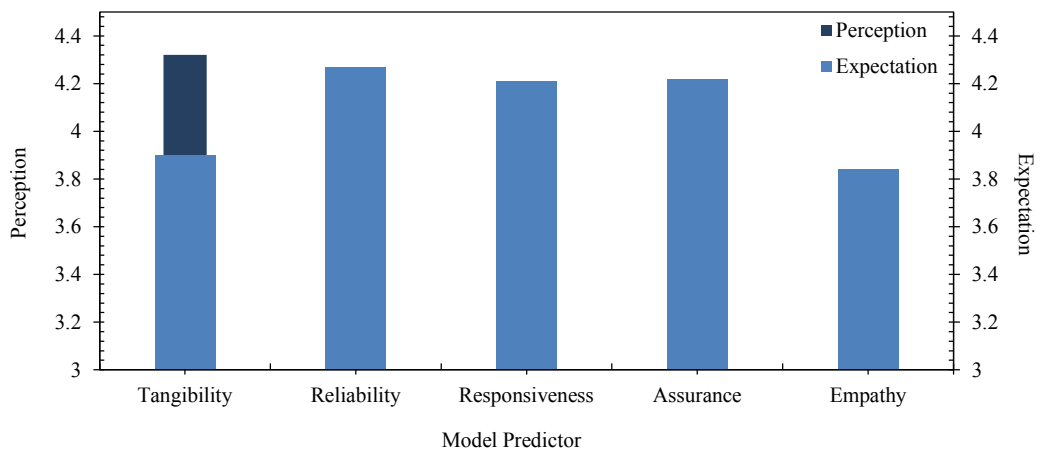


Figure 9. Male gender-based Expectations and Perceptions classes

The gap scores of both the female and male students under these dimensions (see Figure 8 and Figure 9) show slight differences. The Wilcoxon-paired samples test is applied again to check the significance of the difference between the service scores of female and male students. The results of the test are used to investigate whether the female and male students' expectations and perceptions are statistically similar (i.e.; $H_0: \mu_{F-E} - \mu_{M-E} = 0$ versus $H_1: \mu_{F-E} - \mu_{M-E} \neq 0$). Table 14 summarizes the Wilcoxon test under both the expectations and perceptions classes.

The results in Table 14 reveal that the female and male expectations are statistically similar. This finding is confirmed as the computed p -value=0.512 of testing the F-expectation versus M-expectations is greater than the significance level $\alpha = 0.05$. Another important finding is that there is a significant difference between the perception scores of the two genders (p-value=0.015<0.05).

Table 15 reports the results of applying the Wilcoxon signed-rank test to examine the effect of the education level on the significance of the difference between graduate and undergraduate expectations and perceptions.

Table 2 Gender-based Wilcoxon signed-rank test (two-tailed test)

F-expectation Vs. M-expectation	
Statistic Description	Statistic-Value
Test-Statistic (ω)	616.5
Expected Value, $E(\omega)$	689.0
Variance, $V(\omega)$	12046
P-Value	0.512
Level of Significance (α)	0.050
F-perception Vs. M-perception	
Test-Statistic (ω)	439.5
Expected Value, $E(\omega)$	715.5
Variance, $V(\omega)$	12750
P-Value	0.015
Level of Significance (α)	0.050

Table 3 Education level-based Wilcoxon signed-rank test (two-tailed test)

Graduate-expectation Vs. Undergraduate-expectation	
Statistic Description	Statistic-Value
Test-Statistic (ω)	515.0
Expected Value, $E(\omega)$	451.5
Variance, $V(\omega)$	6390
P-Value	0.431
Level of Significance (α)	0.050
Graduate-perception Vs. Undergraduate-perception	
Test-Statistic (ω)	684.5
Expected Value, $E(\omega)$	473.0
Variance, $V(\omega)$	6854
P-Value	0.011
Level of Significance (α)	0.050

It can be seen in Table 15 that the graduate and undergraduate expectations are statistically similar (p -value=0.431). From the same Table, we can also conclude that there is a significant difference between the perception scores of the graduate and undergraduate students (p -value=0.011<0.05).

Table 16 and Table 17 illustrate the gap score calculations based on the education level, graduate and undergraduate, respectively. The results show that both of the graduate and undergraduate students are not satisfied of the service at the HBKU students housing facility. This finding is extracted from negative sign of the overall-gap score under the two classes of education level. Moreover, the reliability dimension has the highest negative gap among all the other dimensions.

Table 4 Graduate students' gap under the Expectation and Perception classes

Dimension	Average Score		Gap-Score = $(P - E)$
	Expectation, E	Perception, P	
Tangibility	4.11	4.48	+0.37
Reliability	4.57	3.77	-0.80
Responsiveness	4.44	3.87	-0.57
Assurance	4.46	4.13	-0.33
Empathy	4.01	3.63	-0.38
Overall average score	4.32	3.98	Overall-Gap = -0.34

Table 5 Undergraduate students' gap under the Expectation and Perception classes

Dimension	Average Score		Gap-Score = $(P - E)$
	Expectation, E	Perception, P	
Tangibility	4.01	4.16	0.16
Reliability	4.33	3.41	-0.92
Responsiveness	4.28	3.58	-0.70
Assurance	4.32	3.74	-0.58
Empathy	3.94	3.43	-0.51
Overall average score	4.18	3.64	Overall-Gap = -0.51

4.5 Expectation-Perception Matrix (EPM) Analysis

The Expectation-Perception matrix is of extreme importance to understand the gap score of the service quality dimensions and direct improvements to those service dimensions where the level of perception is relatively low and the expectation is high.

The EPM is divided into four different zones as follows:

- 1- **Zone A** (Less Importance): This zone contains the dimensions that do not significantly affect the student perceptions. The service quality dimensions located in this area are characterized by below average perception and below average expectations. No intervention is required from the management for improving dimension in this zone.
- 2- **Zone B** (Dimension of Concern): This zone contains the dimensions in which the management should invest more time and resources for enhancing the students' perceptions (high perception scores).
- 3- **Zone C** (Exceeding Quality): This zone contains the dimensions in which the housing facility management has invested more than the students' expectations.

However, all the dimensions in this zone have below-average expectations and high perception scores.

- 4- **Zone D** (Meeting Requirements): This zone contains the dimensions in which the HRL management was capable of meeting the students' expectations. The dimensions in this zone have a significant impact on the student satisfaction level. All the dimensions in this zone have above average expectations and above average perceptions.

The EPM was developed, and the expectation and perception score of all the dimensions of the SERVQUAL model were plotted versus each other (see Figure 10). The four zones were identified by using two zone limits (the red lines). These are the Zone-Horizontal (ZH) and Zone-Vertical (ZV) limits. However, in this study, we set the ZH and ZV limits at the overall average score of both the students' expectation and students' perception. The ZH and ZV limits used in Figure 10 are 4.07 and 3.63. These values were previously reported in Table 9.

However, the results show that there is at least one dimension in each zone. Two dimensions are located in the zone B. These are the Reliability and the Responsiveness. This finding indicates that the students housing management should give more attention to these dimensions since they are classified as “Dimension for Concerns”. The Reliability dimension is very critical comparing with the Responsiveness due to its location. The results also show that the student housing management is doing a good job in meeting the students' expectations under the Assurance dimension.

According to the EPM matrix, the Tangibility dimension is rated as “Exceeding

Quality”, which indicates that the student are highly satisfied with the items listed under this dimension such as the visual appearance of the facilities and the neat appearance of the employees. However, comparing that with the other SERVQUAL dimensions, the Empathy dimension is of the less importance as its average of expectation and average of perception are relatively low.

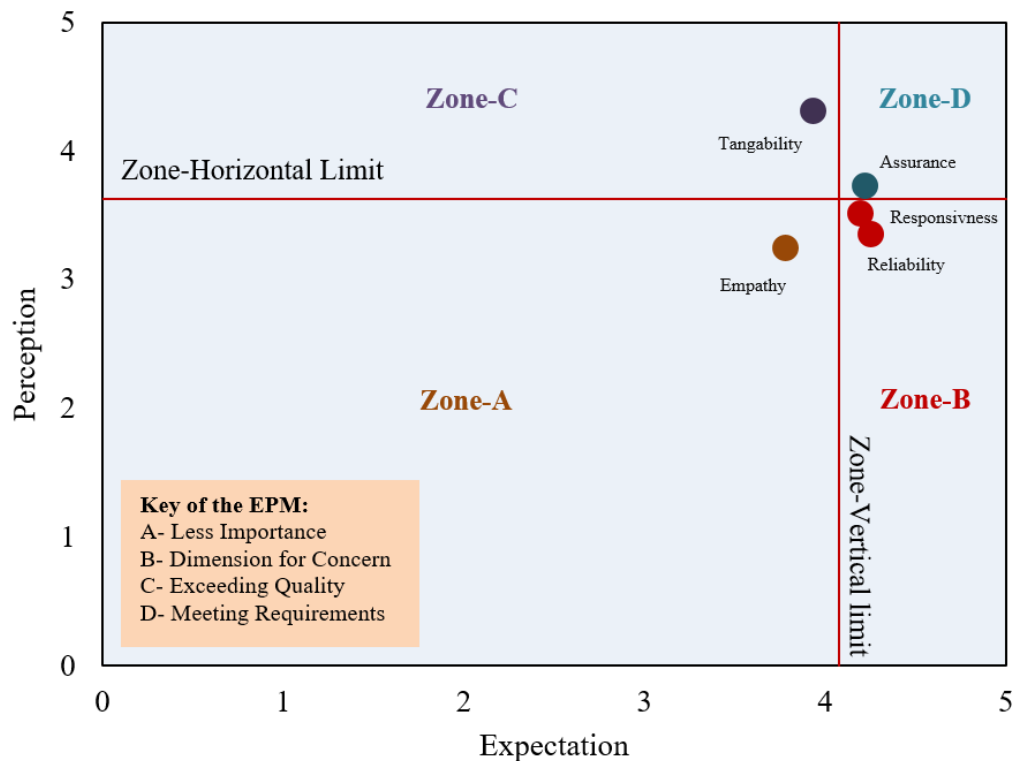


Figure 10. Expectation-Perception Matrix of student housing service at HBKU

Now, we develop the EPM based on the student gender-class. The reason for doing such analysis is to provide the students housing management more detailed information about to what extent that the expectations and the perceptions of both the

female and the male students are related (see Figure 11 and Figure 12).

As it can be seen from the two Figures below, the Assurance dimension is the only dimension that is located in the “Meeting Requirements” zone. Moreover, both the Reliability and the Responsiveness need more attention from the management of the students housing facilities of HBKU.

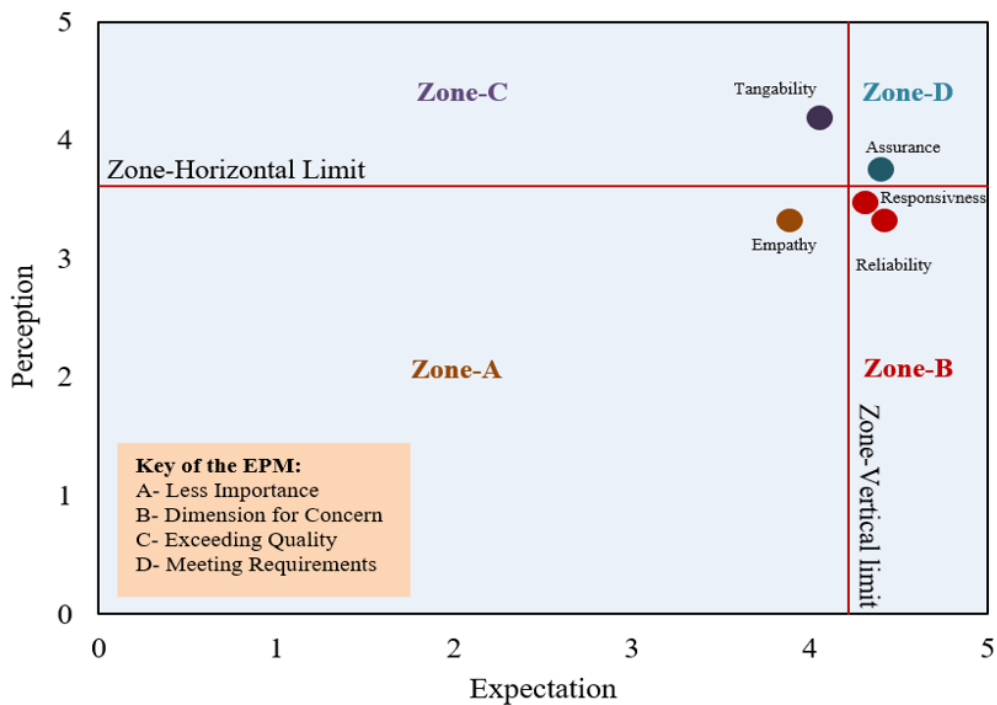


Figure 11. Expectation-Perception Matrix based on female students' rating

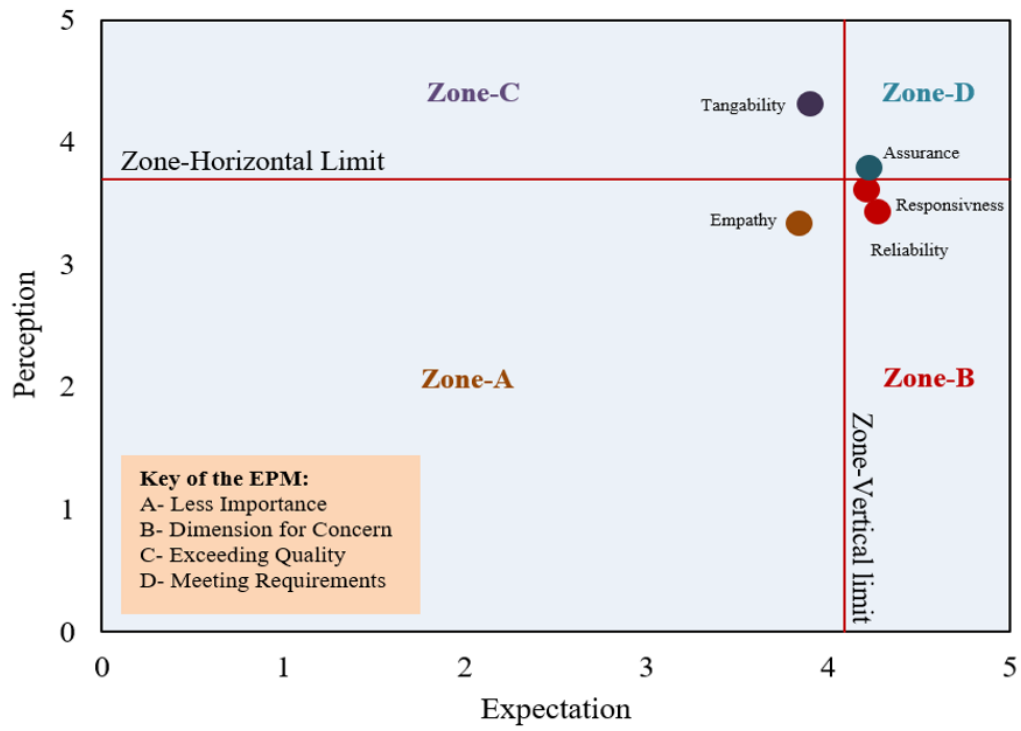


Figure 12. Expectation-Perception Matrix based on male students' rating

Chapter 5: CONCLUSIONS AND RECOMMENDATION

The study has initially discussed the need for high level of service at a university accommodation facility. Furthermore, it identified a method of measuring service quality at HBKU students housing facilities.

This part of the research study is presented in order to summarize the results of the data analysis and discussion with the purpose to provide a proper conclusion for the study. At the end of this part, some pertinent recommendations are given for further related investigations.

5.1 Research Study Conclusions

However, the most important conclusions related to the key question were extracted and summarized as below:

- 1- The survey results analysis have shown, in general, that significant differences exist between expectations and perceived service quality for the majority of SERVQUAL dimensions.
- 2- The only exception of the above conclusion is the case of the Tangibility dimensions. More specifically, the results showed that the HRL management is capable to meet the students' requirements under all statements of the Tangibility dimensions. These statements included, for example, whether HBKU students housing facilities had modern-looking equipment and whether they were visually appealing.
- 3- The results of the study showed that the Reliability dimension has the highest expectations in comparison to the other dimensions. In addition, the largest gap was demonstrated for the fifth statement (gap score = -1.01), namely HBKU doing the

- things it promises to do so on time and having a sincere interest in solving residents' problems. These results demonstrate that HBKU students housing facilities are not meeting the expectations of its residents in respect of the reliability dimension.
- 4- The results of the study showed that in respect of every item considered, HBKU students housing facilities was not meeting its residents' expectations in respect of Responsiveness. The largest gap was in respect of telling residents exactly when services would be performed.
 - 5- The results of the study showed that there is a negative gap between students' expectations and perceptions for all the statements in respect of the Assurance dimensions. This gap is the smallest in the results (gap score=-0.48). This finding indicates that HBKU students' housing facilities service is not meeting the expectations of its residents under this dimension.
 - 6- In terms of the Empathy dimension, the results of the study showed that the HBKU students housing facilities service is also not capable to meet the students' expectations in respect of all the statements.
 - 7- The results of this study showed that there is no statistical difference between the expectations of the female and male students. Hence, the difference we have observed is mainly due to white noise. In contrary, the results showed that their perceptions are significantly different.
 - 8- For both student genders, the Reliability dimension has the highest gap score.
 - 9- Under the female gender class, the lowest gap score occurs under the Empathy dimension, while it occurs under the Assurance dimension in the case of the male gender class.

- 10- The overall-gap scores of the female and male students are -0.60 and -0.39, respectively, which indicates that the female students, in general, are more unsatisfied of the quality of the service at the students housing facility of HBKU.
- 11- The results of this study showed that the expectations of the graduate and undergraduate student are statistically the same. On the other hand, their perceptions are compared and found there are significant difference.
- 12- The overall-gap scores of the graduate and the undergraduate students are -0.34 and -0.51, respectively, which indicates that the undergraduate students, in general, are more unsatisfied of the quality of the service at the students housing facility of HBKU.

5.2 Recommendation and Future Work

The primary objective behind this research was to measure and evaluate students' expectations and study their perceptions regarding the services provided by HBKU students housing facilities. For that, below are some recommendations based on previous findings:

1. The results of the highest gap score appeared between the two dimensions, reliability and responsiveness can suggest useful tips to HRL team to focus their efforts, budget and any resources on these dimensions to improve them by lowering the gap score.
2. Since it was clearly visible that the male students are more satisfied with the services provided by HBKU students housing facilities than the female students with minimal differences. For that, a clear indication given to HRL team to

centralize their interest on female facility and extend their support required to meet female students' perceptions.

3. Dimensions under the concern zone in the EPM matrix is the zone where concerns are mostly located, it is very critical and required further attention by HRL team to intensify their work and control the resources in this area.
4. This project could be extended further to focus on different services provided by the HBKU students housing facilities to assess the students' expectations and perceptions based on different demographics data. These services can zoom in to the level of residential community center, apartments features, traditional resident halls, a coffee house or dining hall and benchmarking the results worldwide to retain the best for HBKU students housing facilities.

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Appendix A: SERVQUAL INSTRUMENT

HBKU STUDENT HOUSING FACILITIES QUALITY SERVICE

Introduction

This survey forms part of a service quality analysis of Hamad Bin Khalifa University (HBKU). In particular, the survey will measure service quality as part of the student housing facilities services HBKU provides.

The information obtained will be useful to advance the understanding of quality service measurements in general and at HBKU in particular. All responses given will be treated with the absolute confidence. The results will be used for research purposes only and no attempt will be made to identify any individual completing the survey.

Instructions: This questionnaire consists of (3) main sections. Please read the questions carefully before answering them. Where appropriate, tick in the box or complete the answer in the space provided.

SECTION 1: GENERAL INFORMATION

In this section, we would like to know about yourself in general.

1. What is your Name? [Optional only for the purpose of incentives withdraw] _____
2. What is your gender? Male Female
3. What is the range of your age? 16-22 23-26 27-30 30+
4. What is your nationality?
 Qatari GCC Arab Asian European/North America Others
5. In which University are you enrolled? [QF universities are arranged alphabetically please choose one]
 CMU-Q HEC GUSFS-Q HBKU NU-Q TAMUQ UCL VCUQ WCMCQ
6. Are you an Undergrad or Graduate student? Undergraduate Graduate
7. For how long have you been in HBKU student housing facilities?
 Less than 1 year 1-2 years 3-5 years 6 years or more
8. Are you married? Yes No
9. Do you live with your spouse in HBKU student housing facilities? Yes No
10. Have you previously lived in other student housing facilities locally or internationally other than
11. HBKU student housing facilities? Yes No [If Yes, please specify]

SECTION 2: EXPECTATIONS AND PERCEPTIONS ON QUALITY OF SERVICES AT HBKU STUDENT HOUSING FACILITIES

Directions: The following set of statements will determine your Expectations- (Important for quality of services) or Perceptions- (Current practice and the extent to which the current service is actually delivered) of HBKU's student housing facilities quality of services. Please use the following scales:

- (1) **Expectations – Importance of having the service:** 0 = Not Applicable, 1 = Not Important at all, 2 = Not Important, 3 = Neutral, 4 = Important, 5 = Very Important.
- (2) **Perceptions - Actually delivered service:** 0 = Not Applicable, 1 = Very Poor, 2 = Poor, 3 = Neutral, 4 = Good, 5 = Very Good/Excellent

	(1) Importance of the services to you Not Important To Very Important	(2) Level of actual services delivered Very Poor To Very Good
TANGIBLES		
1. HBKU student housing facilities has modern-looking equipment and buildings.	0 1 2 3 4 5	0 1 2 3 4 5
2. Physical facilities of HBKU student housing facilities are visually appealing.	0 1 2 3 4 5	0 1 2 3 4 5
3. HBKU student housing facilities employees are neat appearing.	0 1 2 3 4 5	0 1 2 3 4 5
4. The appearance of the physical facilities of the student housing facilities provided by HBKU is keeping with the type of student housing services.	0 1 2 3 4 5	0 1 2 3 4 5
RELIABILITY		
5. When HBKU student housing facilities promises to do something by a certain time, it does so.	0 1 2 3 4 5	0 1 2 3 4 5
6. When you have a problem, HBKU student housing facilities shows a sincere interest in solving it.	0 1 2 3 4 5	0 1 2 3 4 5
7. HBKU student housing facilities performs the service right the first time.	0 1 2 3 4 5	0 1 2 3 4 5
8. HBKU student housing facilities provides its services at the time it promises to do so.	0 1 2 3 4 5	0 1 2 3 4 5
9. HBKU student housing facilities insists on error-free records.	0 1 2 3 4 5	0 1 2 3 4 5
RESPONSIVENESS		
10. Employees of HBKU student housing facilities tell you exactly when services will be performed.	0 1 2 3 4 5	0 1 2 3 4 5
11. Employees of HBKU student-housing facilities give you prompt services.	0 1 2 3 4 5	0 1 2 3 4 5
12. Employees of HBKU student housing facilities are always willing to help you.	0 1 2 3 4 5	0 1 2 3 4 5
13. Employees of HBKU student housing facilities are never too busy to respond to your requests.	0 1 2 3 4 5	0 1 2 3 4 5
ASSURANCE		
14. The behaviour of employees of HBKU student housing facilities instils confidence in you.	0 1 2 3 4 5	0 1 2 3 4 5
15. You feel safe at the HBKU student housing facilities.	0 1 2 3 4 5	0 1 2 3 4 5
16. Employees of HBKU student housing facilities are consistently courteous with you.	0 1 2 3 4 5	0 1 2 3 4 5
17. Employees of HBKU student housing facilities have the knowledge to answer your questions.	0 1 2 3 4 5	0 1 2 3 4 5
EMPATHY		
18. HBKU student housing facilities gives you individual attention.	0 1 2 3 4 5	0 1 2 3 4 5
19. HBKU student housing facilities has operating hours convenient you.	0 1 2 3 4 5	0 1 2 3 4 5
20. HBKU student housing facilities has employees who give you personal attention.	0 1 2 3 4 5	0 1 2 3 4 5
21. HBKU student housing facilities has your best interest at heart.	0 1 2 3 4 5	0 1 2 3 4 5
22. Employees of HBKU student housing facilities understand your specific needs.	0 1 2 3 4 5	0 1 2 3 4 5

SECTION 3: OVERALL ASSESSMENT OF HBKU STUDENT HOUSING FACILITIES

1. Costs associated with the housing facilities provided by HBKU student housing facilities are reasonable:

Strongly Disagree	Disagree	Neutral (Neither Agree nor Disagree)	Agree	Strongly Agree
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. Your overall experience of the student housing facilities of HBKU can be best described as:

Very Unsatisfactory	Unsatisfactory	Neutral (Neither Unsatisfactory nor Satisfactory)	Satisfactory	Very Satisfactory
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. If you would like to add any additional information about the quality of services delivered by HBKU in respect of its student housing facilities, please feel free to use the space below: _

THANK YOU FOR PARTICIPATING IN THIS STUDY. ALL RESPONSES WILL BE TREATED WITH THE UTMOST CONFIDENCE AND NO SINGLE SET OF RESPONSES WILL BE READILY IDENTIFIABLE.

Appendix B

This section illustrates the correlation matrices of both the expectation and perception of the SERVQUAL model dimensions.

B.1 Correlation Matrices of Expectation of SERVQUAL Dimensions

$$\text{Tangibility_Expectation Correlation (TEC-Matrix)} = \begin{bmatrix} - & 0.735 & 0.444 & 0.577 \\ 0.735 & - & 0.479 & 0.574 \\ 0.444 & 0.479 & - & 0.586 \\ 0.577 & 0.574 & 0.586 & - \end{bmatrix}$$

$$\text{Reliability_Expectation Correlation (REC-Matrix)} = \begin{bmatrix} - & 0.838 & 0.756 & 0.787 & 0.437 \\ 0.838 & - & 0.785 & 0.851 & 0.542 \\ 0.756 & 0.785 & - & 0.836 & 0.588 \\ 0.787 & 0.851 & 0.836 & - & 0.542 \\ 0.437 & 0.542 & 0.588 & 0.542 & - \end{bmatrix}$$

$$\text{Responsiveness_Expectation Correlation (REEC-Matrix)} = \begin{bmatrix} - & 0.759 & 0.704 & 0.619 \\ 0.759 & - & 0.719 & 0.580 \\ 0.704 & 0.719 & - & 0.650 \\ 0.619 & 0.580 & 0.650 & - \end{bmatrix}$$

$$\text{Assurance_Expectation Correlation (AEC-Matrix)} = \begin{bmatrix} - & 0.455 & 0.533 & 0.502 \\ 0.455 & - & 0.582 & 0.477 \\ 0.533 & 0.582 & - & 0.627 \\ 0.502 & 0.477 & 0.627 & - \end{bmatrix}$$

$$\text{Empathy_Expectation Correlation (EEC-Matrix)} = \begin{bmatrix} - & 0.610 & 0.802 & 0.525 & 0.413 \\ 0.610 & - & 0.635 & 0.647 & 0.571 \\ 0.802 & 0.635 & - & 0.607 & 0.563 \\ 0.525 & 0.647 & 0.607 & - & 0.723 \\ 0.413 & 0.571 & 0.563 & 0.723 & - \end{bmatrix}$$

B.2 Correlation Matrices of Perception of SERVQUAL Dimensions

$$\text{Tangibility_Perception Correlation (TEC-Matrix)} = \begin{bmatrix} - & 0.749 & 0.534 & 0.442 \\ 0.749 & - & 0.477 & 0.537 \\ 0.534 & 0.477 & - & 0.460 \\ 0.442 & 0.537 & 0.460 & - \end{bmatrix}$$

$$\text{Reliability_Perception Correlation (REC-Matrix)} = \begin{bmatrix} - & 0.678 & 0.724 & 0.790 & 0.449 \\ 0.678 & - & 0.692 & 0.677 & 0.494 \\ 0.724 & 0.692 & - & 0.779 & 0.607 \\ 0.790 & 0.677 & 0.779 & - & 0.505 \\ 0.449 & 0.494 & 0.607 & 0.505 & - \end{bmatrix}$$

$$\text{Responsiveness_Perception Correlation (REEC-Matrix)} = \begin{bmatrix} - & 0.616 & 0.553 & 0.544 \\ 0.616 & - & 0.676 & 0.622 \\ 0.553 & 0.676 & - & 0.791 \\ 0.544 & 0.622 & 0.791 & - \end{bmatrix}$$

$$\text{Assurance_Perception Correlation (AEC-Matrix)} = \begin{bmatrix} - & 0.455 & 0.533 & 0.502 \\ 0.455 & - & 0.582 & 0.477 \\ 0.533 & 0.582 & - & 0.627 \\ 0.502 & 0.477 & 0.627 & - \end{bmatrix}$$

$$\text{Empathy_Perception Correlation (EEC-Matrix)} = \begin{bmatrix} - & 0.399 & 0.820 & 0.669 & 0.609 \\ 0.399 & - & 0.397 & 0.448 & 0.343 \\ 0.820 & 0.397 & - & 0.574 & 0.600 \\ 0.669 & 0.448 & 0.574 & - & 0.709 \\ 0.609 & 0.343 & 0.600 & 0.709 & - \end{bmatrix}$$