

APPLICATION OF SERVQUAL IN CAMPUS SHUTTLE SERVICE

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ABSTRACT

The study is to apply SERVQUAL scale in assessing campus shuttle bus service. The methodology was opinion survey of simple randomly selected 300 respondents at the two designated stations for the shuttle service. The cronbach's alpha of the attributes ranges from 0.903-0.907. Frequencies, percentage, mean and paired sample t-test was used for the data analysis. The results of the study indicates that 55% of the respondents are male; 70.2% are aged between 20-24 years; 67.3% use the shuttle every other day; 50.5% use the campus shuttle because of the lower transport fares; 83.7% use the campus shuttle for educational reasons; all the five dimensions have negative gap scores and 17 attributes are statistically significant with $p\text{-value} < 0.005$. The study makes recommendations for better service delivery.

Keywords: Campus shuttle, service quality, SERVQUAL

Introduction

Public transport as a means of transport enables people to move from one location to the other. In developing countries, public transport is either funded by the government, operated by the private sector or the synergy between the two. But the private sector plays a dominant role in providing public transport services. This is because some of the state funded public transport

service providers have folded up while others have been established to replace the old ones. A couple of researches have been conducted to look at issues concerning these government funded agencies (Abane, 2009; Ojo et al., forthcoming). One enviable phenomenon about these government funded agencies is the economic nature of their fares. The fares are comparatively cheaper.

Amongst all the forms of public transport, bus is noted to carry a large number of passengers at a go. Passengers rely on it for social or entertainment, education, religious, official and business purposes. Bus transport is not just about moving passengers or goods from one place to another, but a service business and are provided by different bus agencies with their own specific aims. In University of Cape Coast, bus service is provided by both the school management and the private sector. The private operators are located at the old site and new sites car parks in the school. The operators queue to pick passengers at these stations with no schedules. The bus leaves whenever all the seats are occupied. But the Campus shuttle operates from the shuttle bus park provided by the management at both old and new sites. The campus shuttle fare is comparatively cheaper than that of the private operators. This makes students commuting within the school patronize the campus shuttle more. As a result of this patronage, palpable queues are observed in the morning from 8-9am on weekdays at Old site and 4-5pm at new site. There are also no shelters and seats provided for the passengers at the stations. This invariably affects perception of service quality. More so, Ojo et al (forthcoming) assessed students' satisfaction of campus bus service using the QUALBUS scale. The study focused on the perception of service quality neglecting the expectation of the students. It is in this vein that this study seeks to adopt the SERVQUAL scale by comparing the passengers' expectations and perceptions of campus shuttle bus service.

The main objective of the study is to apply SERVQUAL developed by (Parasuramum, et al) in assessing campus bus service in the University of Cape Coast. The specific objectives are to assess the expectation and perception mean scores for the SERVQUAL scale; compute the gap scores of the five SERVQUAL dimensions and to ascertain the attributes of service quality. The research questions are:

1. What are the differences in mean scores for expectations and perceptions of service quality?
2. Which of the attributes of SERVQUAL influences perception of service quality?
3. How do the gap scores of SERVQUAL dimensions differ from one another?

Literature review

Campus shuttle service as a program is necessitated by a couple of important factors. One of such is off-campus housing based on student density (Juarez, 2011). The University of Cape Coast accommodates 37.8% of its students' population in halls of residence (SRMIS, 2011). The remaining students live in private hostels dotted round the campus. The campus shuttle bus conveys both residential and non-residential students to/from the old site and the new site. Krizek, et al (2012) observes that this service should become a solution to sustainable transport in future for university campuses because students heavily depend on this service. Hashim et al (2013 a) posit that poor quality of service campus shuttle service will cause students to miss classes, waste precious time and discourage them from riding the shuttle buses. Hashim, et al (2013 b) in a different study note that other discomforts such as tardiness of bus services, unpleasant rides, as well as issues on safety, unsupportive personnel fuel the users' negative perception on campus transport services. Juarez (2011) identifies four practical ideal models in assessing universities' transit services- (1) operations model, (2) funding model, (3) scope of service model, and (4) environmental responsiveness model. Hashim et al (2013 b) in a study on twelve universities (8000 respondents) in Malaysia provided empirical evidence for campus shuttle service efficiency leading to a greener and conducive environment on the university ground.

This study adopts the scope of service model to assess UCC campus shuttle bus service. This is accomplished by using the SERVQUAL scale which has been universally applied in public transport studies (Ojo et al., forthcoming; Mercangöz et al., 2012). The universality of SERVQUAL scale has come under a couple of criticisms. Notably is the number of dimensions and attributes constituting the SERVQUAL scale. For instance Ojo et al (forthcoming) maintained the five dimensions but used 26 attributes on intercity bus passengers in Ghana, Miguel et al., (2010) administered a ten-item SERVQUAL questionnaires on 105 customers and

21 managers of a vehicle repair service chain in Brazil and Mercangöz et al (2012) used a 28-item SERVQUAL questionnaire administered on passengers to analyze service quality of a fast ferry company in Turkey.

SERVQUAL is based on the “GAP model” of service quality which facilitates quantification of the gap between customers’ expectations of a service and their perceptions of the actual service delivered. These three or five numbered attributes (21 attributes) on the modified SERVQUAL scale (see table 1) are used to measure each dimension based on expectations and perceptions of services rendered. To achieve these measurements the respondents are asked to indicate their degree of agreement with certain statements bordering on each of the 21 items on a 5-point Likert-type scale (1 = strongly disagree and 5= strongly agree. There are three ways to arrive at the gap score- viv-a-vis the averages of either for each of the attribute(Perception(P)- Expectation(E) divided by one), dimension by dimension analysis($(P1+P2+P3+P4)-(E1+E2+E3+E4)/4$), where P1 to P4, and E1 to E4, represent the four perception and expectation statements relating to a single dimension and all the 22-item attributes($((P1+P2+P3+P4...+P22)-(E1+E2+E3+E...+E22))/22$), the so-called SERQUAL gap.. The greater the “gap score” (calculated as $G = P-E$) the higher the score for perceived service quality.

Table 1: SERVQUAL Dimensions with definitions

Dimension	Definition	attributes
Reliability	The ability to perform the promised service dependably and accurately	5
Assurance	The knowledge and courtesy of employees and their ability to convey trust and confidence	3
Tangibility	The appearance of physical facilities, equipment, personnel and communication materials	5
Empathy	The provision of caring, individualized attention to customers	3

Responsiveness The willingness to help customers and to 5
provide prompt service

Source: Parasuraman et al., 1988; Ojo et al., (forthcoming)

The following are the noteworthy purposes for measuring service quality with SERVQUAL (Zeithaml et al., 2006):

- For the assessment of quality performance on each SERVQUAL dimensions;
- For the assessment of service performance contrast to direct competitors;
- For the categorization of different customer segments; and
- For the records of changes in service quality perception among customers over a specified time period.

Research methodology

Three hundred copies of pre-tested questionnaires were administered through a face to face method. The questionnaire was divided into two parts with the first part containing the basic characteristics of the students and the second part addressing the 21 attributes SERVQUAL scale divided into five dimensions. The measurement and analysis method that is used consist of reliability test, descriptive analysis and paired sample t-test. Finally a five-point likert scale has been applied in the questionnaire. The 300 students were randomly selected at the two stations where students board the campus shuttle bus. The students were accosted while waiting for the bus early November, 2013 from 8am-6pm.

Results and analysis

Majority of the respondents are males representing 55% and 45% are females. The highest percentage of the respondents representing 70.2% is aged between 20-24 years, 21.1% are aged between 15-19 years, 6.2% are between 24-29 years and the rest are above 30 years. The highest percentage of respondents representing 67.3% use the campus shuttle every other day, 21.6% use it about twice a week, 16.7% are occasional users and 5.6% use it once a day or more than once a day. The highest percentage of respondents representing 50.5% use the campus

shuttle because of the lower transport fares, 15.3% use it because of safety/security, 11% use it because of the location of stations/locations, 8.1% use it for scheduling, 7.9% because of comfortability of the seat and the ample legroom of the buses, 5.7% use it because of speed and 1.4% use it because of disability friendliness. The highest percentage of respondents representing 83.7% use the campus shuttle for educational reasons, 7.9% use it for recreational, 6.4% for religious activities and 2.4% use it for reasons apart from these three.

Table 2 indicates that the cronbach's alpha of the perception and expectation attributes range from 0.903 -0.907. For expectation, the lowest cronbach's alpha's of 0.905) was recorded by "drivers are willing to help passengers" and the highest cronbach's alpha of 0.907 was recorded by the attribute "Transport section always look after the best interest of their customers". For perception, the lowest cronbach's alpha 0.903 was recorded by attributes "the shuttle buses have regular schedules and "drivers are always willing to help passengers" and the highest cronbach's alpha of 0.906 was recorded by attribute "transport section always look after the best interest of their customers". These cronbach's alpha are high scores and are reliable indicated 0.7 to be an acceptable reliability coefficient.

The perceived service quality, or gap, score (denoted as Q) is calculated for each attributes by subtracting the E score from the P score, implying a gap score for each attribute ranging between -5 and +5. A negative gap score indicates a level of service quality which is below that which is expected by the customer. Conversely, a zero to positive gap score indicates a level of service which is equal to or exceeds customer expectations.

Table 2: Reliability of 21 SERVQUAL attributes

SERVQUAL Dimensions	Cronbach's Alpha	
	expectation	Perception
Reliability		
1. The shuttle bus always arrives on time		
2. Bus never breaks down on the road		
3. Customers don't queue		
4. The shuttle buses have regular schedules	.906	.903
5. Drivers are always polite		
Assurance		
6. customers feel safe in their transactions with staff		
7. drivers have in-depth occupational knowledge of their jobs		
8. Behaviour of staff instills confidence in the passengers		.905
Tangibles		
9. Drivers are neatly dressed and smart		
10. Shuttle Bus companies have adequate shed for passengers obtaining tickets		
11. Bus companies have spacious seats for passengers on board	.906	.904
12. Shuttle buses are well maintained and neat		
13. Shuttle buses have ample legroom and foot space		
Empathy		
14. Transport section always look after the best interest of their customers	.907	.906
15. Transport section have operating hours convenient to all their customers		
16. It is easy to find and access the bus station/terminals/waiting points		

Responsiveness

- 17. Drivers provide individualized attention to help customers
- 18. Transport section always inform people of availability of services and changes in prices in advance
- 19. Transport section can provide timely and efficient services
- 20. Communication with customers is clear and helpful
- 21. drivers are always willing to help passengers .905 .903

Source: fieldwork, 2013

According to Table 3, the least gap score (-0.41) was recorded by tangibility dimension, followed by reliability and assurance dimensions with gap score -0.33 each. Empathy dimension has a gap score of -0.30 and the highest mean was recorded by responsiveness dimension. This analysis indicates that mean difference between expectations for all the five dimensions are higher than the mean perceptions. It implies that the mean score for expectations of passengers are more than that of perceptions.

Table 3: Mean ofSERVQUAL dimensions

Dimensions	Perception Mean	Expectation Mean	Gapscore
Reliability	2.95	3.28	-0.33
Assurance	3.30	3.63	-0.33
Tangibility	3.14	3.55	-0.41
Empathy	3.22	3.52	-0.30
Responsiveness	3.06	3.34	-0.28

Source: fieldwork, 2013.

Table 4 shows that seventeen attributes are significant with the p-value less than 0.005. Three reliability attributes comprising the bus never breaks down, the schedule buses have regular schedules and drivers are always polite have p-value 0.000 each. All the three assurance attributes comprising customers feel safe in their transaction with staff, drivers have in-depth occupational knowledge of their jobs and behavior of staff instills confidence in the passengers have p-value 0.000. More so, all five tangibility attributes comprising drivers are neatly dressed and smart, shuttle bus companies have adequate shed for passengers obtaining tickets, bus companies have spacious seats for passengers on board, shuttle buses are well maintained and neat and shuttle buses have ample legroom and foot space have p-value 0.000. Two empathy attributes of transport section always look after the best interest of their customers and transport section have operating hours convenient to all their staff are significant. All the five responsiveness attributes are significant.

Discussion and implications

The impetus for this research came from the observations of queues in the sun by students of the University of Cape Coast from 8-9am and 3-5pm at the two stations provided for the campus shuttle service. The approach was from student's perspective and sought for intervention to improve service delivery from the transport management. Nevertheless, the results revealed significant implications such that:

1. 67.3% use the campus shuttle every other day, 21.6% use it about twice a week, 16.7% are occasional users and 5.6% use it once a day or more than once a day. This analysis is supported by Hassim et al's (2013) study which posited that students who leave on campus are highly dependent on public transport specifically bus services (such as shuttle service). This shows that 50.5% use the campus shuttle because of the lower transport fares, 15.3% use it because of safety/security, 11% use it because of the location of stations/locations, 8.1% use it for scheduling, 7.9% because of comfortability of the seat and the ample legroom of the buses, 5.7% use it because of speed and 1.4% use it because of disability friendliness. The highest percentage of respondents representing

83.7% use the campus shuttle for educational reasons, 7.9% use it for recreational, 6.4% for religious activities and 2.4% use it for reasons apart from these three.

2. The gap scores for all the five dimensions indicate that mean difference between expectations are higher than the mean perceptions. It implies that the expectations of passengers are more than the perceptions. The mean scores further show that perceptions and expectations are above average (2.5-3.5). This expectation may have been formed by previous experience, word of mouth or any other reason. Efforts should be directed at working on these dimensions to improve service quality.
3. Seventeen attributes are significant with the p-value less than 0.005. These attributes are bus never breaks down, the schedule buses have regular schedules and drivers are always polite customers feel safe in their transaction with staff, drivers have in-depth occupational knowledge of their jobs and behavior of staff instills confidence in the passengers, drivers are neatly dressed and smart, shuttle bus companies have adequate shed for passengers obtaining tickets, bus companies have spacious seats for passengers on board, shuttle buses are well maintained and neat and shuttle buses have ample legroom and foot space, transport section always look after the best interest of their customers and transport section have operating hours convenient to all their staff, drivers provide individualized attention to help customers, transport section always informs people of availability of services and changes in prices in advance, transport section can provide timely and efficient service, communication with customers is clear and helpful, drivers are always willing to help customers. All attempts to improve service delivery should be directed at these attributes. Muthuoandian&Vijayakumar (2012) similarly used pair sampled t-test to ascertain if there is a significant difference in passenger's expectation and perception of State Road Transport Understakings (SRTUs) in Tamil Nadu. The results demonstrate that insignificant differences in passengers perceived service quality with $p > 0.005$.
4. All the twenty one attributes have expectation mean scores higher than the perception mean score. The mean scores of perceptions and expectations are merely above average for almost all the attributes ranging from 2.78-3.82.this indicates low perceived quality.

Muthuoandian & Vijayakumar (2012) study of State Road Transport Understakings (SRTUs) in Tamil Nadu found no gap between expectations and perceptions of all the 25 service quality attributes of SRTUs. Hence perceived quality is neutral. Only one attribute in the current study has greater mean score of 2.40 for expectation and 2.28 for perception. This attribute is on whether students queue or not at the point of boarding the campus shuttle. More attention should be directed at providing more buses at these observed peak period to curtail the formation of queues.

Table 4: Comparisons between expectations and perceptions

Quality dimensions	Quality attributes	Expectations		Perceptions		Pair-wise t-test	
		Mean	Standard Deviation	Mean	Standard Deviation	t-value	p-value
Reliability	1. The shuttle bus always arrives on time	3.58	1.320	3.42	1.276	1.973	.049
	2. Bus never breaks down on the road	3.43	1.380	2.95	1.198	5.045	.000
	3. Customers don't queue	2.40	1.521	2.28	1.406	.998	.319
	4. The shuttle buses have regular schedules	3.42	1.279	2.94	1.208	4.872	.000
	5. Drivers are always polite	3.59	1.236	3.16	1.120	4.745	.000
Assurance	6. Customers feel safe in their transactions with staff	3.66	1.158	3.37	1.109	3.673	.000
	7. Drivers have in-depth occupational knowledge of their jobs	3.70	1.098	3.38	1.099	4.522	.000
	8. Behaviour of staff instills confidence in the passengers	3.52	1.138	3.15	1.055	4.513	.000
Tangibility	9. Drivers are neatly dressed and smart	3.57	1.196	3.12	1.156	5.031	.000

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	10. Shuttle Bus companies have adequate shed for passengers obtaining tickets	3.29	1.411	2.78	1.311	4.676	.000
	11. Bus companies have spacious seats for passengers on board	3.72	1.208	3.40	1.139	3.818	.000
	12. Shuttle buses are well maintained and neat	3.59	1.308	3.22	1.181	4.060	.000
	13. Shuttle buses have ample legroom and foot space	3.56	1.216	3.15	1.128	5.301	.000
Empathy	14. Transport section always look after the best interest of their customers	3.41	1.270	3.01	1.164	4.265	.000
	15. Transport section have operating hours convenient to all their customers	3.35	1.311	2.93	1.199	4.455	.000
	16. It is easy to find and access the bus station/terminals/waiting points	3.81	1.200	3.72	1.216	1.211	.227
Responsiveness	17. Drivers provide individualized attention to help customers	3.52	3.140	2.97	1.204	3.035	.003
	18. Transport section always inform people	3.18	1.436	2.82	1.301	3.353	.001

of availability of services and changes in prices in advance						
19. Transport section can provide timely and efficient services	3.56	1.227	3.22	1.185	3.670	.000
20. Communication with customers is clear and helpful	3.50	1.132	3.20	1.069	3.662	.000
21. Drivers are always willing to help passengers	3.58	1.181	3.10	1.159	5.626	.000

Source: fieldwork, 2013.

Conclusions

The study provides the empirical evidence on the application of SERVQUAL scale in assessing campus shuttle bus in a Ghanaian university. Results from the analysis provided the empirical evidence for campus shuttle bus service quality. Concerted efforts should be made to work on all the dimensions of service quality. But more attention should be accorded the seventeen attributes highlighted in the analysis.

References :

1. Abane, A. M. (2009). The metro mass transportation scheme in Ghana: Issues, challenges and the way forward. *Oguaa Journal of Social Sciences*,4(4), 35-58.
2. Abane, A. M. (2011). Travel behaviour in Ghana: Empirical observations from four metropolitan areas. *Journal of Transport Geography*, 19 (1), 313-322.
3. Aidoo E. N., Agyemang W., Monkah J. E. & Afukaar F. K. (2013). Passenger's satisfaction with public bus transport services in Ghana: A case study of Kumasi–Accra route. *Theoretical and Empirical Researches in Urban Management*, 8(2), 33-44.
4. Hashim, R., Haron, S., Mohamad, S. & Hassan, F. (2013). Assessment of campus bus service efficacy: An application towards green environment. *Procedia-Social and Behavioral Sciences*, 105, 294-303.
5. Hashim, R., Haron, S., Hassan, F. Hassan, N. A. & Kasa, A (2013). students satisfaction with the campus bus service at UiTM Shah Alam, Malaysia. Proceedings of the 2013 IEEE business Engineering and Industrial Application Colloquium, 7-9 April 2013, Langkawi, Malaysia: 695-698.
6. Ibrahim-Adedeji, K. (2011). Determining the socio economic characteristics and user's perception of intra-urban transport system in Ayangbajupark, Ikorodu, Lagos State. *International Journal of Economic Development Research and Investment*, 2(2), 38-48.
7. Juarez, B. (2011). Best Practices for University Bus Transit Programs: Identifying Strategies for Success. *Applied Research Projects, Texas State University-San Marcos*. Paper 352.

8. Krizek, K.J, Newport, D., White, J., Townsend, A.R. (2012). Higher education's sustainability imperative how to practically respond?. *International Journal of Sustainability in higher education*, 13(1), 19-33.
9. Limtanakool, N., Dijst, M., &Schwanen, T. (2006). The influence of socio economic characteristics, land use, travel time considerations on mode choice for medium and long distance trips. *Journal of Transport Geography*, 14, 327- 341.
10. Mercangöz, B. A., Paksoy, M. &Karagülle, A. Ö. (2012).Analyzing the service quality of a fast ferry company by using SERVQUAL Scores: A case study in Turkey. *International Journal of Business and Social Science* 3(24).
11. Norzalwi, N & Ismail, A.(2011).Public approach towards sustainable transportation in UKM's campus.Australia. *Journal of Basic & Applied Sciences*, 5(5), 1332-1337.
12. Ojo, T.K Nutsugbodo, R. Y., Abane, A. M. &Amenumey, E. K. (forthcoming). Passenger's perspective of quality of intercity bus transport service on Cape Coast-Accra Route, Ghana: A SERVQUAL Approach.
13. Students Records Management and Information Service (2011).University of Cape Coast.
14. Pallant, J. (2005). *SPSS survival manual* (2nd ed.). Berkshire: Open University Press.
15. Ojo, T.K Nutsugbodo, R. Y., Abane, A. M. &Amenumey, E. K. (forthcoming). Passenger's perspective of quality of intercity bus transport service on Cape Coast-Accra Route, Ghana: A SERVQUAL Approach.
16. University of Cape Coast (2011).Students Records Management and Information Service (SRMIS)
17. Zeithaml, V. A., Bitner, M.J. &Gremler (2006).Services Marketing-integrating customer focus across the firm. New York.