# A Service Quality Gap Analysis: Evidence from External Customers of University of Cape Coast

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## Abstract

*The purpose of the study was to assess the outcome criteria of total quality management implementation in a University. It also aimed at timely identification of gaps in service quality to inform management of innovative ways of closing the gaps with the given scarce resources. The paper opted for explanatory research to addresses the outcome expected from the TQM implementation in the University institution. In all, 361 questionnaires out of the 434 administered were completed and usable. The 5 service quality dimensions with total of 26 items were measured on a Likert-scale of 1 to 5, while descriptive statistics were employed in the data analysis procedures. The results showed the existence of service quality gaps in all the quality dimensions. In general, students' expectations were more on human and non-human aspects of service delivery prior to admission, while the employer's expectations were more on service products and social responsibility. Generally, the magnitudes of effect on the service quality dimensions were found to be above medium. The research was limited to three selected external customers in one University Institution; therefore, the results may need further research for generalization. Institutional management should pay attention to existing service gaps, listen to the voices of institutional customers and factor their feedback into the decision-making processes. This paper identifies the strengths and weaknesses pertaining to the institution's service delivery and suggests how institutional resources could be better allocated to address the gaps.*

***Keywords:** total quality management, external customer, perception and expectation, service quality, service gap analysis*

## Introduction

Many organisations are making a good effort to achieve quality products and services that will meet customers' expectations. Service institutions are always searching for best approaches to manage resources and production systems that will ensure the transformation of inputs into quality output (Mang'unyi & Govender, 2014). Managers in the service sector are compelled to ensure that their services are customer-focused and that continuous improvement in their performance is being guaranteed. Given the resource constraints under which service institutions operate, it is necessary that customer expectations are properly understood

and measured from the customers' perspective. A large body of literature has been developed concerning quality approaches to ensure service quality in educational settings, namely: the quality is, 2014).

inspection, quality control (QC), quality assurance (QA) and total quality management (TQM), as shown in Figure 1 (Dale, Bamford, & Van der Wiele, 2016; Harvey, 2012; Sall
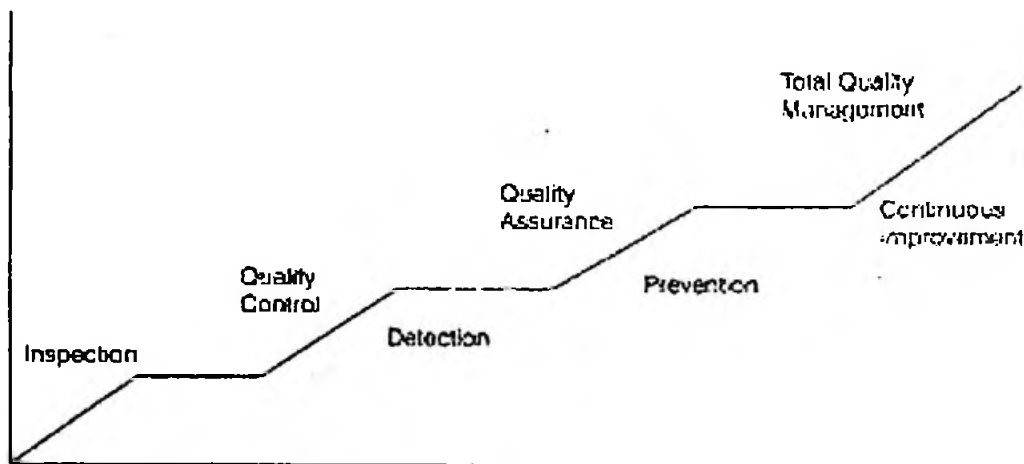


*Figure 1:* Diagram showing the Hierarchy of Quality Approach. From "Total Quality Management in Education, (3rd ed.)", by E. Sallis, 2014, Kogan Page. p. 18.

TQM being the final level is through an institution-wide continuous improvement working towards the satisfaction of customers. At this level, the activities involve all units; aims for continuous improvement; concerns processes, service, and product and the responsibilities lie with all workers, while delivery is through teamwork (Dale et al., 2016; Dale & Plunkett, 2017). Many researchers have examined how TQM principles and core concepts can be measured to provide a means of assessing the quality of services provided by education institutions

concerning various aspects of their internal processes. It has been revealed that the measurements of TQM principles have a relationship with institutional service performance (Talib, Rahman, & Qureshi, 2013; Gallear, Aldaweesh, & Al-Karaghouli, 2012). How management implements these TQM principles affects the institution's service delivery. To understand their customers' needs, it is imperative to understand the quality attributes embraced by the customers by listening to their voices. The involvement of various customers

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who have diverse views on service in institutional quality management system will inform management decision making.

The TQM concept discusses not only the quality aspects but also those to be involved to achieve quality. In most organisations, management establishes the vision that translates into customer service and builds the structures and organisational culture that empower staff to deliver quality service (Sallis, 2014; Van der Vleuten et al., 2012). Parasuraman, Zeithaml, and Berry (1985, 1988) defined service quality as the difference between institutional customers' expectations for service to be offered prior to the institutional encounter and their perceptions of the service received from the institution. They suggested that service quality is determined by comparison of expectation with perception. The possible differences are the service gaps that exist between expectations and perceptions in the context of service quality performance. Service quality theory predicts that customers will judge that quality is low if performance does not meet their expectations and quality is high if performance exceeds expectations (Oliver, 1980). Hence, customers' expectations serve as the foundation on which service quality will be evaluated by customers. The implication is that as service quality increases, satisfaction with the service also increases. Any gaps in

service quality need to be identified in time to inform management on new effective and efficient ways of closing the gaps with the given scarce resources.

## The Concept of Quality in Higher Education Institutions (HEIs)

It is important to have profound knowledge about the need for quality in HEIs first when talking about managing quality through the adoption of TQM approach and its relationship with service performances. Even though the concept of quality has existed from early times, the studies on definitions of quality have been given prominence only in the last century. The concept of quality was initially accepted to improve the management of manufacturing industries. It was in the early 1990s, that the concept of quality received meaning to service industries including the university institutions. the tremendous benefits to the provision of service to their numerous different customers (Sallis, 2005, 2014). This was happening at a point where the institutional customers' roles have received much attention in the HEIs.

During the past decade, higher education, worldwide, has undergone major changes as a result of public scrutiny directed at their contribution to national economic growth. These changes derived from a number of factors including globalization, which has increased

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the mobility and competitiveness of students and faculty members both within and between countries. Moreover, the massification and diversification of higher education have led to accelerated development of new programmes, while budgetary cutbacks of governments have increased competition among institutions of higher education. The demands for transparency and accountability of quality education service and institutional awareness of the diverse customers' needs have been accredited to the relevance of quality management in education. The universities are therefore subject to growing demands for transparency and are being held accountable for the quality of the education they provide. The requirements for a model that could allow university education to expand rapidly in the developing world are that it should be readily accessible (wide access), affordable (low cost) and academically credible (high quality). The University education systems in Ghana and Africa are being questioned at the job market about the quality of their graduates.

The expectation includes the provision of quality products with training and skills that are required to drive the economy forward. All these factors have increased the need to develop criteria for the evaluation of quality management system of the Universities with respect to the service quality delivery to their consumers (Becket & Brooks, 2008;

Dale, 2015). Different perspectives have emerged in terms of which definitions and categorisations of quality can be developed (Becket & Brookes, 2008). The current research looked at the customers-related definition of quality that defines quality as customers' satisfaction. In defining quality, different customers' views must be taken into consideration as quality should be defined by the institutional customers (Watty 2005; O'Neill & Palmer, 2004). Therefore, an institution's service provision should be based on its customers' specifications. According to Lagrosen, Seyyed-Hashemi, and Leitner (2004), understanding quality from the customers' viewpoint is essential, especially for HEIs.

**Institutional Customer-groups**
Universities have numerous customer-groups and these customers of the education service are different in their needs. If quality is about meeting and exceeding customer needs, it is important to be clear who the customers are (Sallis, 2005, 2014; Owlia & Aspinwall, 1996). Customer is defined as any person, group or institution that is affected by the service or by the process used to provide the service (Juran, 1990; Eno, 2015; Mitra, 2016). With regard to this, institutional customers are the consumers of the education services, since the university has established or made a deal with

them. From the existing literature, the word customer being used in this study has the equivalent meaning as institutional clients or stakeholders. Nonetheless, the terms are at times used interchangeably (Sahney, 2016). To implement a TQM model in education institutions, it is necessary to understand, through research, the needs of the customers and to be able to accurately forecast these needs into the near future (Spanbauer, 1995). The feedback from customers has to be addressed so that shortcomings could be identified and improvements put in place to remedy them.

According to Spanbauer (1995), the customers of HEIs could be classified in two ways; by the location of the customers (being internal or external) and also according to the frequency of interaction (primary, secondary and tertiary). The internal customers of an institution are those who work with management and assist them to provide services to their external customers, the final consumers of the service products (Madu & Kuei, 1993; Juran, 1988). Primary customers are the most beneficially of the services being provided or having most frequent interaction with the institution, followed by secondary and tertiary accordingly (Kanji, Malek, & Tambi, 1999). For Kanji et al., the customers of HEIs are in different groups of actors, who are linked to the educational process including: current students, potential students, employees, employers, government, society, and industry. Further, they also considered that the product of higher education is the education service to students and depending on the role of students by the institutions, they can be classified as internal or external. The classification made by the authors is depicted in Figure 2.
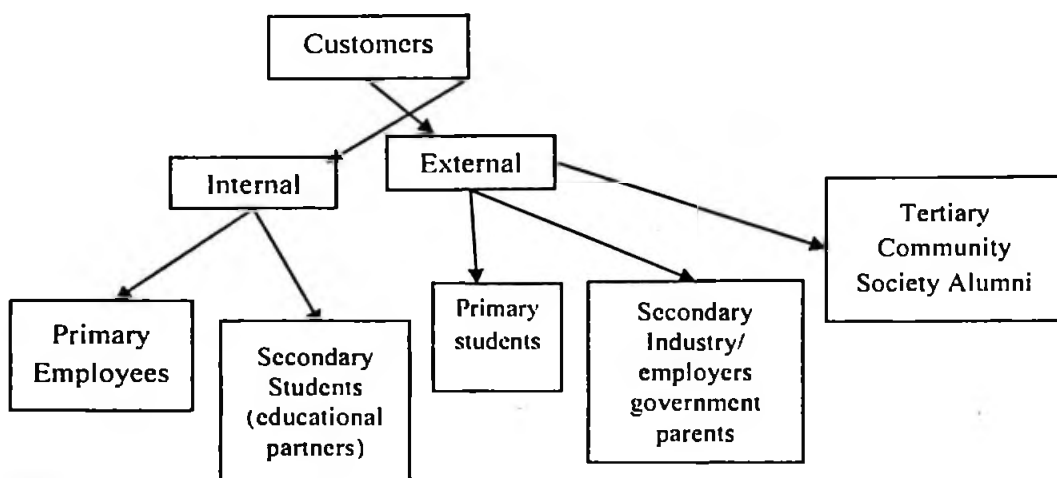
*Figure 2:* Diagram showing customers for higher education. From "Total quality management in UK higher education institutions" by G. K. Kanji, A. Malek, and B. A. Tambi, 1999, *Total Quality Management, 10*(1), 129-153.

Customers, on one hand, form expectations prior to their service encounter with the institutions, the service providers. On the other hand, the customers develop perceptions during the process of service delivery, and then, compare their perceptions to their expectations in evaluating the outcome of the services encountered. The customers' perception will inform how best the TQM is being practised in the University and the outcome of its implementation. Because of an open competition, students are considered more as primary external customers and consumers of education services (learners) than being secondary internal customers, educational partners (Roffe, 1998). Every university should negotiate and gather the views of its customers, which may differ from

the customer-groups and manage the possible conflicting situations (Rosa, Amaral, & Sarrico, 2012).

**Determinants of Service Quality Dimension in Education**
Njenge, Vermeulen, and Pretorius (2015) and Oduor (2015) pointed out that to measure quality performance, and consequently to improve quality, it is necessary to find out the service quality dimensions in relation to how TQM is being practised in an institution. Earlier, Owlia, and Aspinwall (1996, p. 12) pointed out that, "in order to measure quality performance, and consequently improve quality, it is important to find out the quality dimensions in relation to how TQM is being practiced in an institution". The study literature has revealed that different researchers have used

different quality dimensions to measure organisational service performance, and for that matter, there are no universally accepted defined variables (Fening et al., 2008; Zakuan et al., 2010). Owlia and Aspinwall (1996) interpreted the quality for higher education in terms of the quality dimension by using Garvin's (1987) eight quality framework, Watts' (1987) eleven software quality dimension and final five service quality dimension of Parasuraman, Zeithaml, and Berry, (1985, 1988). However, many researchers are familiar with the most popular service quality delivery model of Parasuraman et al. (1988), the SERVQUAL, used to measure quality performance. The SERVQUAL quality dimension is:

(a) Tangibility – Physical facilities, equipment, and appearance of personnel;

(b) Reliability – Ability to perform the promised service dependably and accurately;

(c) Responsiveness – Willingness to help customers and provide prompt service

(d) Assurance – (including competence, courtesy, credibility, and security). Management and employees' knowledge, courtesy and ability to inspire trust and confidence in the external customers, and finally,

(e) Empathy–(including access, communication, understanding the customer).

Comprising caring and individualised attention an institution provides to its customers.

Notwithstanding its widespread impact on business and academia, SERVQUAL has been subjected to a number of criticisms. But what is to be reconsidered is the fact that in spite of disagreement over the use of the expectations and performance measures as well as the dimensionality of the SERVQUAL instrument across different industrial settings, researchers and practitioners seem to generally agree that the 22 items are good predictors of the overall evaluation of service quality by consumers. However, it will be interesting to note that, the completeness of the 22-item scale proposed by Parasuraman et al. (1988) in addressing the critical dimensions of service quality is a subject of further investigation because a careful scrutiny of the scale items reveals that most of the items mainly focus on the human aspects of service delivery and the remaining on the tangibles of service (Sureshchander, Chandrasekharan, & Anantharaman, 2002).

The investigators of this study are in support of Sureshchander et al. (2002) who criticized that the four of the five SERVQUAL's dimensions, namely, reliability, responsiveness, assurance, and empathy, correspond to the factor of the human element in the service delivery only. The fifth

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dimension, which is 'tangibles', relates to the effect of the physical facility. equipment, personnel and communication materials on customers. Although the importance and relevance of these SERVQUAL factors in predicting service quality are, without any uncertainty, acclaimed by many. it is also worth noting that the highly subjective concept of service quality is not only confined to the realms of these two dimensions. Other factors identified by Sureshchander et al. (2002), namely; the core service or service product; systematisation or standardisation of service delivery (the non-human element) and the social responsibility of the service institutions need to be evaluated. This study, therefore, adopted the Sureshchander et al.'s (2002) three identified quality dimensions in addition to the previous two identified by Parasuraman et al. (1988). The five service quality dimensions with the symbols used and explanation of each of them are listed in Table 1.

Table 1

*The Five Service Quality Dimensions Used in this Study*

| Symbol of Dimension | Identified Dimensions | Explanation of the Dimensions |
|---|---|---|
| A | Core service or service product | The core service refers to the essence of service. Whatever service features are offered is as important as how it is delivered |
| B | The human element of service delivery | This factor refers to all aspects (reliability, responsiveness, assurance, empathy, moments of truth, critical incident and recovery) that will fall under the domain of the human element in the service delivery |
| C | Systematization of service delivery: non-human element | Systematization of service delivery refers to the non-human element in the service delivery in contrast to the human element. Service delivery processes should be perfectly standardized, streamlined, and simplified so that customers can receive the service without any disturbances |
| D | Tangibles of service (Services capes) | The tangible facets of the service facility (equipment, machinery, signage, and employee appearance) or the man-made physical environment. popularly known as the 'services capes' |
| E | Social responsibility | Social responsibility is an important concept, which is probably missed out completely in the |

quality management literature. With the entire business community undergoing a service quality
revolution this subtle aspect helps an organisation to lead as a corporate citizen in encouraging ethical behaviour in everything it does.

*Note.* Adapted from Parasuraman et al. (1988), Sureshchander et al. (2002).

The researchers of this current study are of the view that these five service quality dimensions could be used to measure levels of external customer perceived service quality and provide institutional management with a standard on which improvement efforts can be focused.

## Application of TQM and Service Performance in University of Cape Coast

The UCC is the first Ghanaian public University to establish a quality management system (UCC, Quality Policy, 2010). What is referred to as quality in the University of Cape Coast has acquired an ever-clearer shape and the university is implementing quality management vigorously. Over seventeen years (2001-2019) of ensuring quality, the expectation of the University is to have quality management system (QMS) that allows all units in the University to be service quality orientated. The University is ensuring quality through the TQM operation. There are some TQM tenets that identify the TQM institutions. In the case of UCC, the university has quality management policy in place; involves its institutional customers like students, the primary customers, and the local communities in the management and stakeholders' consultative meetings; alumni studies (tracer studies); having human resource policies that guide recruitment, admissions, staff training, and development. Other TQM tenets that identify UCC as TQM institution include: a corporate strategic plan that portrays the vision and mission, as well as the key thrust of the university and the establishment of Directorate for Academic Planning and Quality Assurance (DAPQA) to facilitate and promote the quality assurance system which is also a prerequisite for TQM philosophy. To investigate how TQM is actually being implemented in any University and for that matter the UCC, two issues need to be addressed. First is, how consistent are the implementations of TQM with the quality experts' defined principles? Second, in what ways do current practices differ from the principles prescribed and do those differences enrich the core ideas of quality management? Institutions that implement TQM are

consistent with the principles in developing means for assessing their customers' wants and obtaining data about the numerous customers they have. For institutions to improve quality services to their final consumers, first of all, there is the need to understand the TQM philosophy, acknowledge the principles, and implement them well enough to achieve its quality objectives, including the quality improvement and exceeding or meeting customer satisfaction. Another requirement for the implementation of TQM in education is that higher education institutions must ensure that they make the most effective and efficient use of limited resources.

It is necessary for UCC to address different perspectives of customers when dealing with quality issues because university education makes a tremendous contribution to the social and economic development of a country. However, most institutions in developing countries have often ignored this to the extent that they do not bother to consciously find out what their customers' expectations and perceptions are, with regard to service quality. In conducting a total evaluation of TQM implementation in an institution, the assessment of outcome criteria is one of the three distinct but related investigations to be conducted (Hackman & Wageman, 1995). The portion of the outcome criteria assessed is to

establish the possible service gaps from the University external customers' perspectives. The external customers are the final consumers of the education service and they developed expectation prior to having a relationship with their institutions. It is imperative, therefore, for education institution implementing TQM for the past 17 years to establish the proof of the gaps between their customers' expectation and their perception, if they exist, and find ways of bridging the gaps. These external customers ensure the success of the performance of TQM functions through their voices and promote awareness of customer requirements and the customers also have the right to perceive service quality.

Looking at it from the consumer behaviour theory in education, education institution is the provider of service with many diverse customers. Although systematic data are not available on the proportion of TQM institutions that directly assess customer preferences and satisfaction, TQM institutions use perception means to obtain customer data (Chua, 2004; Bhat, 2017). This is to ensure that they provide their customers with the best possible education in terms of technology, infrastructure, teaching methodologies, and support systems, and that the qualities of these are constantly and continuously improved. The need for the research is that the university has lacked

systematic tools to assess the services quality performance. This situation needs to be addressed given the fact that UCC needs to satisfy its customers in the face of national, continental and global achievement. Thus, data from external customer perceptions on service performance will inform the level of relevance of the TQM concept being practised by the University.

## Research Purpose and Questions

The purpose of the study was to establish the existence of service gaps in the service quality performance of University of Cape coast from the external customers' perspective. The study finds answers to the following two research questions to achieve its purpose.

1. What are the possible outcomes of the service gaps analysis on quality dimensions measuring the University service performance?

2. What is the magnitude of the effects on service quality gaps determined by the external customers?

## Hypothesis

$H_o$: There is no significant difference among the external customers' perception on the five quality dimensions used in measuring the service performance at UCC.

## Method
## Sample

The study is one aspect of the general investigation of the total evaluation of TQM implementation at the University of Cape Coast (UCC). To explore the statistical means differences between the expectation and perceptions of various external customer sub-groups for comparisons, a quantitative data collection procedure was adopted. The UCC was purposively selected as case study because it was the first University in Ghana to establish the Quality Assurance Unit (over 17 years in operation). The University customers were stratified into internal and external customers whereby this paper focused on the external ones. The respective institutional external customers of the university, therefore, constituted the targeted population. Before selecting the sample, the population was divided into sampling units. According to Cochran (1977), sample units should cover the whole of the population and they should not overlap, in the sense that every element in the population belongs to one and only one unit (Cochran, 1977). The construction of this list of sampling units, called a frame, is often one of the major practical complications which need to be addressed. The sample frame has been depicted in Table 2, indicating the subgroups of external customers under the three strata (Students, Employers, and Alumni) The

institutional external customer participants were then randomly selected from each stratum.

Table 2
*Sample Frame for the External Customer Sub-groups*

| Primary | Secondary | Tertiary |
|---|---|---|
| Students | Parents<br>Employers/Businesses<br>Students family members | Government<br>Local Community<br>Alumni<br>Society |

*Note.* This table is adapted from Sallis (2014); Kanji & Tambi (1999)

In the case of institutional customers by the frequency of interaction, the students' group is the only primary external customers, hence selected, while the other two, the Alumni and Employers, were randomly picked from their secondary and tertiary categories. In each stratum, a subgroup was randomly selected through the lottery method. Those external customer subgroups selected for the study were students (primary), employers (secondary) and alumni (tertiary). Table 3 shows the distribution of population and sample sizes of customer sub-groups selected. Krejcie and Morgan's (1970) table for determining the sample size for categorical data was used to arrive at a sample size of 377 for Students and the Alumni (20,485). However, the figure given by the table is the minimum and to reduce higher non-responses, the figure was increased by a small margin to 384. In the case of the employers/businesses which engaged the products (graduates) of the University within the last five years was known to be 50 according the 2017 directory of Registrar General Department, Ghana. This was followed by the selection of the participants from each of the sub-group selected, where the probability proportional allocation procedure was used in their selection.

Table 3
*Study Population and Sample Size of External Customer Sub-groups*

| External Customer Sub-group | Population | | | Sample Size | | |
|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total |
| Student (Regular) | 11,943 | 5,922 | 17,865 | 223 | 111 | 334 |
| Registered Alumni (Last 5 years: 2013-2017) | 1948 | 672 | 2620 | 36 | 14 | 50 |
| *Subtotal (Student and* | *13,891* | *6,594* | *20,485* | *259* | *125* | *384* |

| | | |
|---|---|---|
| *Alumni)* | | |
| Employers/Businesses (Last 5 years figure: 2013-2017) | 50 | *50* |
| Total Sample Size | | 434 |

*Note.* From Basic Statistics, UCC, 2017.

A total of 434 questionnaires were then administered in person to the three selected customer sub-groups (with 334 administered to students and 50 questionnaires administered to each of Alumni and Employers/Businesses groups). In all 364 questionnaires out of the total of 434 were returned, of which 361 were completed and usable, while 3 questionnaires were incomplete (see Table 4). The overall response rate was 84%, which is considered a very good response. According to Bryman and Bell (2007) and Saunders et al. (2003), the response rate is calculated by using the following formula: Total response rate = Total number of responses/ Total number in sample = (364/434)*100 = 83.9% or completed response/total number is sample less ineligible, which is equal to (361/ (434-3))*100 = 83.8% or approximately 84 percent. According to Saunders et al. (2003), 84 percent is high and adequate to carry out the data analysis.

Table 4

*Response Rate of External Customer Sub-group*

| Sub-group | Sample Size | Eligible responses (a) | Incomplete responses (b) | Total (a + b) | Response rate (%) |
|---|---|---|---|---|---|
| Alumni | 50 | 45 | 1 | 46 | 92.0 |
| Students | 334 | 268 | 2 | 270 | 80.8 |
| Employer | 50 | 48 | 0 | 48 | 96.0 |
| Grand Total | 434 | 361 | 3 | 364 | 83.8 |

*Note.* The response rate calculated for external customer sub-group

**Data Collection Instrument, Procedure and Analysis**

A survey instrument was developed to elicit quantitative data from the University's external customer-groups. The instrument was in three parts. The first part had items ranging from 3 to 6, with respect to each customer-group on respondents' background information. The second and third parts contained 26 items each, focusing on the customers' expectations and perceptions on service performances respectively. Options for the items on

expectations consisted of five-point Likert-scales ranging from highly unimportant (1) to very important (5), while those on perceptions ranged from very unsatisfactory (1) to very satisfactory (5). It is worth noting that, an ordinal measurement scale, which is a ranking of rating data that normally use integers in ascending order, was used in this study. The numbers assigned to the agreement scale (1, 2, 3, 4, 5) do not indicate that the intervals between the scales are equal, nor do they indicate absolute quantities (Naoum, 2012). The external customers were asked to rank how important and satisfactory they were using the items under service performances. The survey instrument was revised based on the feedback from the pilot survey conducted, making the instruments more refined and clearly worded.

Data analysis was done in two steps, the preliminary analysis, and the main analysis. The preliminary analysis involved mainly the demographic characteristics of the respondents. This was done using descriptive statistics, frequencies, and means to summarise the data. The second part was the main analysis which involved the techniques concerned with describing and characterising quantitative data collected. Calculation of expectation and perception means among customer-groups to establish the service gaps and Cohen's (1988) d statistics

computed for the magnitude of the effect. The arithmetic mean differences, the standard deviation, as well as standard error mean of the expected and perceived service were computed with the help of SPSS version 21 software.

**Service Gap Analytical Framework**

Of the seven service gaps identified by Parasuraman et al. (1995), three were more associated with the external customers namely: Gap1, Gap5, and Gap6 as they had a direct relationship with them (Luk & Layton, 2002). Nonetheless, the Gap5 definition is related to external customers (the final consumers) and as such was considered to be the true measure of service quality in this study. Service quality gap scores analysis was done by applying the descriptive statistics to summarise means of expectations and perceptions of the selected external customer-groups. The procedure for the computation has been analytically framed showing the service Gap in Figure 2.
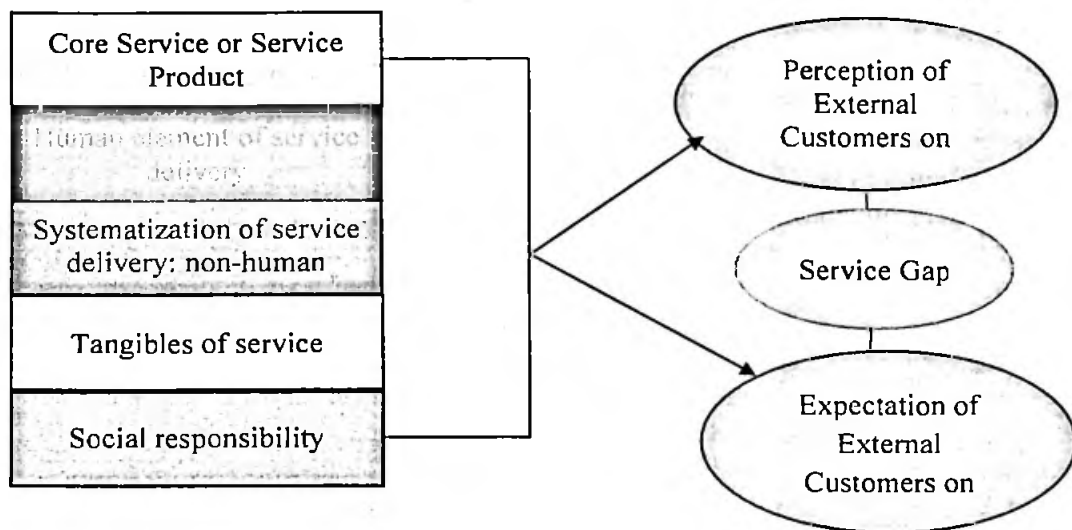
*Figure 3*: Analytical framework for service gaps

The framework depicts the level of gaps that exists between customers' expectations and perceptions among the selected external customers of the University in the context of service quality. Service quality gap (G) is obtained by subtracting Expectation (E) score from the Perception (P) score for each item (G=P-E). Three possible results are likely to happen. First is, either perception (P) exceeding expectation (E ), thus (P > E), which means service quality is very satisfactory to the customer; if perception (P) equals expectation (E), thus (P=E), then service quality is satisfactory, and finally, when customers' (P) is less than expectation (E ), (P< E), the service quality is poor or unsatisfactory to the customers.

However, while a *p*-value can inform the reader whether an effect exists, the *p*-value will not reveal the size of the effect. In reporting and interpreting research findings, both the statistical significance (*p*-value) and substantive significance (effect size) are essential results to be reported. The effect size is a statistical concept that measures the strength of the relationship between two variables on a numeric scale. Effect size calculated in this study is the magnitude of the difference between customers' expectations and perceptions. The greater the effect size, the greater the difference between the two variables. Basically, the standardized values of effect size are Small, when *d*= 0.2, Medium when *d*= 0.5 and Large effect, when $d \geq 0.8$, based on

benchmarks suggested by Cohen (1988).

## Results

**Research Question 1**: What are the possible outcomes of the service gaps analysis on quality dimensions measuring the University service performance?

To answer the first research question, validity and reliability of the survey instruments were conducted. The analysis of the study started from computation of validity and reliability of the instruments. For the consumers of research to have much confidence in the research the survey instrument should be both valid and reliable. The test-statistics indicated Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) values of 0.96 and 0.97 for internal and external customers' instruments respectively were reliable. The implication is that, the items were highly correlated with the factors they intended to measure and since each of the reliability coefficients was more than .70, they were considered acceptable

or reliable. Therefore, there was much confidence to conclude that each factor is a sufficiently reliable measurement of the TQM concept.

In addition, the homogeneity test of customer-perceived service quality using chi-square distribution was conducted to test if there are any differences in perceptions among the various external customer sub-groups. After data collected from individual participants of the various external sub-groups in the university, the Chi-square test of association was applied to assess if the relative means of perceived service quality with respect to the dimensions of service quality is associated with the selected sub-groups of the universities. The Chi-square test was utilised to determine whether customer-perceived service qualities that could be associated with the sub-groups. In determining the situation, the chi-square test was computed and as depicted in Table 5, the test statistics are statistically significant, with Chi-Square $(\chi^2)$, and degree of freedom (2) = 271.85[a] and p= 0.00 < 0.01.

Table 5
*Test Statistics Output of External Customer-groups*

| External Customer | Observed N | Expected N | Residual |
|---|---|---|---|
| Employer/Business | 45 | 120.3 | -75.3 |
| Student | 268 | 120.3 | 147.7 |
| Alumni | 48 | 120.3 | -72.3 |
| Total | 361 | | |
| Test Statistics | | | |
| Chi-Square | | 271.850[a] | |

| Df | 2 |
|---|---|
| Asymp. Sig. | .000 |

*Note.* a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 120.3.

Therefore, the null hypothesis was rejected and the conclusion was that there are statistically significant differences in the external customer sub-groups' perceptions on the five quality dimensions used in measuring the service performance at UCC. The deduction is that the University is serving diverse external customers and there is enough evidence to demonstrate that the various customer-groups have different views about the institutional service delivery.

Again, a paired sample t-test was used to test for evidence in support of the service gap analysis on quality dimensions. It is also referred to as repeated measure t-test, or the dependent-samples or paired t-test and could be used when you have data from one group of participants, the external customers and mean score differences are computed. Table 6 shows the overall customers' results of mean differences in expectations and perceptions

Table 6

*Paired Samples Test of Mean Score Differences*

| Dimension | Paired Differences | | | | | | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|
| | Mean | Std. Dev. | Std. Error Mean | 99% Interval Difference Lower | Confidence of the Upper | t | |
| PA-EA | -2.81 | 4.035 | 0.212 | -3.356 | -2.256 | -13.21 | 0.00 |
| PB-EB | -10.18 | 8.573 | 0.451 | -3.356 | -9.006 | -22.55 | 0.00 |
| PC-EC | -4.95 | 4.810 | 0.253 | -5.608 | -4.297 | -19.57 | 0.00 |
| PD-ED | -4.76 | 5.644 | 0.297 | -5.531 | -3.993 | -16.03 | 0.00 |
| PE-EE | -4.33 | 5.837 | 0.307 | -5.122 | -3.531 | -14.09 | 0.00 |

*Note.* Degree of freedom (df)=360, P=Perception, E=Expectation

It is evident from the results that the mean differences for the service quality range from -10.18 to -2.81 on the five dimensions (see column 2 of Table 6). The t-test results with the significance values (p-values = 0.00) for the service quality dimensions among all the external

customer sub-groups are statistically significant. The findings show that there exist gaps between service quality dimensions. The study can vividly conclude that there is a gap between service quality dimensions of customers' expectations and perceptions at the University of Cape Coast.

Table 7 shows the service gaps as portrayed by all the external customers together, with the means score differences per each dimension indicated at the last but one column.

Table 7

*Service Quality Gap Scores for Overall External Customers*

| Symbol | Service Quality Dimension | E-Mean | P-Mean | P-E | Effect size |
|--------|---------------------------|--------|--------|--------|-------------|
| A | Core Service or Service Product | 4.24 | 3.30 | (0.93) | 0.70 |
| B | The human element of service delivery | 4.36 | 3.03 | (1.33) | 1.19 |
| C | Systematisation of service delivery | 4.36 | 3.08 | (1.27) | 1.03 |
| D | Tangibles of service | 4.18 | 3.11 | (1.07) | 0.84 |
| E | Social responsibility | 4.14 | 3.04 | (1.10) | 0.74 |

*Note.* P-mean = Perception Mean, E-mean = Expectation Mean, P-E = Gap Score

All the differences for the overall external customers' gap scores of the five service quality dimensions were negative values. It is worth noting that the negative signs attached to the values are an indication of a significant shortfall in meeting customers' expectations across all service dimensions. The highest gap score was the "Human element of service delivery (1.33), followed by the Systematisation of service delivery: non-human element (1.27). The findings show that the customers together expect more from both the human and non-human service delivery of the University service, and therefore, perceived to be low. In general, the gap differences with the Core service or a service product was the lowest (0.93).

To interpret this effect, the common language effect size has been computed for all external customers and shown in the last column of Table 7. For instance, the human element of service delivery and Non-human service delivery had the largest effect size of 1.19 and 1.03 respectively for overall customers'

service gap. The magnitude of the effect on these two dimensions is so large on the service delivery of the university.

**Research Question 2**: What is the magnitude of the effects on service quality gaps determined by the external customers?

Since the institutional customers have diverse views as revealed by the hypothesis testing, the service gap analysis computed was not only on combined or aggregated form but also imperative to look at it in an individual sub-group level. Table 8 depicts the gap scores from the students' perspective alone, being the primary external customer sub-group of the University to ascertain

their views differently. However, the students' view is in line with the general perceptions of all the three sub-groups put together. Students attached more importance to the service delivery aspects of the service dimensions, giving human elements of service delivery (1.20) and non-human elements (1.17) service gaps, which is consistent with the trend of aggregated gap scores. Students were of the view that the University has more room to improve upon their human and non-human service delivery. In the case of the "core services", with the expected mean of 4.17, students perceived it (3.46) as the most satisfying service quality dimension with the lowest gap score of (0.71) and the lowest effect size of 0.68.

Table 8
*Service Quality Gap Scores and Effect Size for Students*

| Symbol | Service Quality Dimension | E-Mean | P-Mean | P-E | Effect size |
|--------|---------------------------|--------|--------|--------|-------------|
| A | Core service or Service product | 4.17 | 3.46 | (0.71) | 0.68 |
| B | The human element of service delivery | 4.33 | 3.13 | (1.20) | 1.24 |
| C | Systematisation of service delivery | 4.34 | 3.17 | (1.17) | 1.10 |
| D | Tangibles of service | 4.12 | 3.24 | (0.88) | 0.88 |
| E | Social responsibility | 4.05 | 3.19 | (0.86) | 0.79 |

*Note.* P-mean = Perception Mean, E-mean = Expectation Mean, P-E = Gap Score

On one hand, the Alumni customer-group attached importance to almost all the quality dimensions, however, the "core services or service

product" and "social responsibility" constituted the biggest gaps (1.02) each, as depicted in Table 9. The Alumni sub-group are of the view

that with the same gap difference of the above mentioned two dimensions, the core services

magnitude of the effect, 0.86 is large as compared to social responsibility 0.65.

Table 9
*Service Quality Gap Scores and Effect Size for Alumni*

| Symbol | Service Quality Dimension | E-Mean | P-Mean | P-E | Effect size |
|---|---|---|---|---|---|
| A | Core Service or Service Product | 4.14 | 3.12 | (1.02) | 0.86 |
| B | Human element of service delivery | 4.23 | 3.38 | (0.85) | 1.14 |
| C | Systematization of service delivery | 4.14 | 3.18 | (0.95) | 0.83 |
| D | Tangibles of service | 4.01 | 3.15 | (0.86) | 0.86 |
| E | Social responsibility | 4.14 | 3.12 | (1.02) | 0.65 |

*Note.* P-mean = Perception Mean, E-mean = Expectation Mean, P-E = Gap Score

On the other hand, Table 10 depicts the gap scores for employers only. It clearly shows that employers' perception fell short of their expectations since there is a vast difference as portrayed in all the five

service dimensions. The highest gap score was seen from social responsibility (2.79), followed by the core service or service product (2.51).

Table 10
*Service Quality Gap Scores and Effect Size for Employers*

| Symbol | Service Quality Dimension | E-Mean | P-Mean | P-E | Effect size |
|---|---|---|---|---|---|
| A | Core Service or Service Product | 4.77 | 2.26 | (2.51) | 0.62 |
| B | Human element of service delivery | 4.63 | 2.32 | (2.31) | 0.93 |
| C | Systematisation of service delivery | 4.55 | 2.24 | (2.32) | 0.86 |
| D | Tangibles of service | 4.54 | 2.23 | (2.31) | 0.61 |
| E | Social responsibility | 4.77 | 1.98 | (2.79) | 0.56 |

*Note.* P-mean = Perception Mean, E-mean = Expectation Mean, P-E = Gap Score

The implication is that the employers are of the view that, there is the need for the University to improve upon the service dimensions, more especially the social responsibility and core service. However, it is worth noting that, the magnitudes of effect on the two dimensions with the highest service gaps were found to be medium, as compared to human 0.93 and non-human 0.86 aspects of service delivery. It should be noted that the effect size would help readers understand the magnitude of differences found, whereas statistical significance examines whether the findings are likely to be due to chance. Both are essential for readers to understand the full impact of the research work.

## Discussion

In general, the study has looked at measuring service quality primarily from the perspective of how to meet or exceed the external customer's expectations. The service quality is viewed as a measure of how the delivered service level matches consumer's expectations (Kang, Jame, & Alexandris, 2002). In the first place, the study supported the service gap analysis with scientific proof, by computing the test hypothetically if the gaps actually exist with diverse views of the selected customers. The effect size of the gap to determine the magnitude of the effect was also calculated. The study has therefore established the levels of expectations at the aggregated level and each of the sub-group levels, as well as how effective the gap is between the expectations and perceptions.

On both the aggregate and individual group levels, there exists a gap between external customers' expectations of service quality and their perceptions of how they experienced the service quality delivered to them by the university. Expectations are found to be higher in the minds of the external customer group. Both human and non-human elements of service delivery had the highest service gaps. However, the three subgroups have varied expectations and perceptions as well. Thus, expectations and perceptions of the subgroups were found to vary with respect to each of the service quality dimensions.

Students were of the view that the human and non-human aspects of quality dimensions are more relevant to them when seeking admissions into the University; the same view was held by the alumni customer-group with past experience. However, students were satisfied with the core service more than anything else after being with the University for some period, while Alumni were not satisfied with the core service and social responsibility of the University. The employers and businesses that need the services of the institutional graduates considered the "core service" or

"service product", the most important dimension and their experience depicted a low level of satisfaction for it.

## Conclusion
Service quality and customer satisfaction are important concepts to academic researchers studying consumer evaluations and to practitioners as a means of creating competition. Service quality has been described as a form of attitude related to the satisfaction that results from the comparison of expectations with performance (Marshall & Shepherd, 1999). Quality has a long-term impact on the satisfaction of customers because customer satisfaction and service quality are interlinked and these create value for the customer and assist to make decisions as to whether the service justifies the cost. The gap analysis of the five service quality dimensions shows that the human and non-human elements of service delivery and core services are the dimensions having more gaps between customers' expectations and perception of service quality as indicated by the three subgroups, namely students, alumni, and employers. The diverse nature in the perception of the customers could be attributed to the relevance of the education service to the various customer-groups, students, being primary customers; employers, the secondary customers; and alumni being the tertiary customer-group.

The service quality dimensions involved in the evaluation process to depict the difference between customers' expectations and perceptions of service quality performances need particular attention by university management. To improve service quality, it is necessary to listen to the voices of institutional customers regularly and assess their experiences of services provided. Through their experiences gained and other information from colleagues, they have knowledge about the services being provided and therefore their views must be a factor in decision making. This can be done by involving these institutional customers in assessment processes, factoring their feedback into the decision-making process in the provision of education service.

The university should establish a quality assurance outfit at the Department, Faculty, College and Administrative and Support Units to liaise with the University Quality Assurance unit (Directorate of Academic Planning and Quality Assurance) to address the service quality gaps identified by the external customers. Again, the University should recognise its customers through constant interactions and know their expectations. The university needs to monitor and maintain quality service by identifying strengths and weaknesses pertaining to the dimensions of an institution's service quality. Above all, the

university could better allocate resources to provide better service to their external customers.

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