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STUDY MODE DIFFERENCES IN STUDENT'S PERCEPTION OF EDUCATION SERVICE QUALITY IN SELECTED POLYTECHNICS IN NORTHERN NIGERIA

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Abstract

This investigation was designed to determine student perception of Polytechnic education service quality dimensions in relation to their mode of study in Northern Nigeria. Six null hypotheses were constructed to guide the study. The quantitative research adopted the descriptive survey design method. The target population are all Polytechnic students studying different programs in Northern Nigeria. A sample size of 441 respondents were determined based Krejice and Morgan Table, and sampled using stratified random sampling technique. A structured questionnaire (SERVPERF) was adopted consisting of 27 items used in similar studies (Brochado, 2009; Cronin & Taylor, 1994, etc.) as tool for data collection. The tool was structured on five point Likert rating pattern ranging from strongly disagree (1) to strongly agree (5). The composite reliability of the tool was .980 coefficient determined using Cronbach alpha method. Copies of the instrument were personally administered during classes and data were analyzed using both descriptive and inferential; statistics with the help of SPSS. The findings reveal that the level of students' satisfaction was negative and insignificant, while the perceived level of loyalty was significant. There was significant relationship between each of the service quality dimension and student's satisfaction, student satisfaction and loyalty. Students in evening/weekend and distance learning mode of study are more satisfied compared to their counterparts on full-time basis. Equally, older students who are more matured and experienced complain less than the younger ones. Based on all these, recommendations were made towards improving the service quality and customer satisfaction in Polytechnic education by the institution's managers, administrators and policy makers and implementers.

Keywords

Polytechnic, Service Quality. Mode of study, SERVPERF.

INTRODUCTION

Higher Education Institutions (HEIs) can be defined as post-secondary schools training, teaching and learning at Universities, Polytechnics and Colleges of Education with the main goal of equipping individual person with sound knowledge, creative ideas, skills and societal understanding. In Nigeria, the growth and development of tertiary institutions right before independence into the 21st century had been confronted with series of challenges. One of the greatest issues to HEIs throughout the ages has been how to effectively manage and deal with changes while maintaining focus, value, funding and quality (Mcfarlane, 2011).

For more than a decade now, the Northern Nigeria nation has been exposed to all kinds of socio-political needs and social vices which have been reported in some national newspapers and international media. Among the vices are cases of insecurity in nooks and crannies of the societies, inter-ethnic wars and conflicts, land disputes, arson, rape, crude-oil bunkering and vandalism, willful vandalization of oil pipelines, Boko-Haram insurgencies, assassination of political opponents, political thuggery, incessant strikes by workers and lecturers of tertiary institutions, cultism in educational institutions, examination misconducts, graduate unemployment to the recent COVID-19 pandemic (Yusufu, et al., 2014; Adekuyi, et al., 2019). It was noted that concerted efforts made by the three tiers of Government to alleviate these economic, socio-political problems have proved abortive. Hence, it has become inevitable to use the highly cherished tertiary education system as an intervention strategy (Adegge, et al., 2015).

However, for the system to live up to these expectations, there is need for availability of adequate service-oriented facilities backed by efficient personnel and a sound problem-solving culture which in most cases are presumably inadequate and unsatisfactory in the Universities, Polytechnics, Colleges of Education, Monotechnics and other corresponding institutions (Odioriyi, 2014). Emphasizing, challenges such as repaid technological, economic, political and socio-cultural transformations, associated with the current phase of globalization and commercialization calls for a more efficient tertiary educational system whose ability to deliver key internal services that should be qualitative and satisfying and must be such that stand out both at the national and international levels. This is done to the fact that the quality of services rendered by these institutions is critical to national competitiveness and development. Based on this assertion, it is only quality educational systems that can sharpen the minds of the individuals and help transform the society economically, socially and politically. Framed in another way, an effectively and efficiently functioning tertiary education system must be such that adapt the concept of service quality as a corner stone across all areas of its operation in the present 21st century.

It should be noted that service quality in tertiary education institutions is essential not only for ensuring effective human capital development (necessary for socio-economic progress) but also for survival of each competing training institutions'. It is in this regard that important stakeholders, policy makers and managers are well informed and their attention drawn on the different mode of study perception of quality and its consequences (Napitupulu, et al., 2018; Sultan & Wong, 2018; Uppel, et al., 2018). Available empirical literature indicates that there is a positive relationship amongst service quality, students' satisfaction and loyalty, however, while there is scarcity of such researches in African context (except sparingly for South Africa, Schalkwyk & Steenkmap, 2014; Jager & Gbadamasoi, 2010; in Zambia, Mwuiya, et al., 2006, in Northern Nigeria, Adekiya, et al., 2019; Usman & Mukhtar, 2016), but there are plenty of such researches in developed countries such as UK (Dogleas, et al., 2006), Australia (Sultan & Wong, 2018), Spain (Mariam, et al 2018).

In addition, academic scholars indicated that there is a shortage or scarcity of literature highlighting where there are differences in quality perception based on type of study mode in tertiary educational institutions. This question requires answers' using empirical researches because educational managers and policy makers need to consider whether there is a need to vary implementation of quality issues based on difference in study mode by students. This is coming at a crucial period in trying to determine strategies and alternative techniques to deal with the consequences of post-COVID-19 pandemic that have reversed all sectors of human endeavor, educational institutions inclusive, now that the pandemic is moving from one phase to another. It is a fact that universities and other tertiary institutions like the Polytechnic education are about knowledge generation through research and development, teaching and extension services (community services) through consultancy as well as commercialization (Mwuiya, et al., 2017, Schalkwyk & Steenkamp, 2014). It is in this regard students are clients as well as consumers interacting with tertiary institutions, paying fee for purpose of knowledge acquisition and competencies development (Sultan & Wong, 2018). Thus, in this highly competitive market for both public and private tertiary institutions, monitoring and evolution of customer perception of service quality and satisfaction become important for survival (Douglas, et al., 2006; Gupta & Kaushirk, 2018).

The concept of service quality in higher education had attracted the attention of many researchers and scholars worldwide. Prior studies exploring service quality in higher education in Colombia (Cordona & Brave, 2012), in Jordan (Twaissi & al-Kilani, 2015), Portugal (Brochado, 2009), in Northern Nigeria (Adekiya, et al., 2019), suggest that customer satisfaction can be explored by perceived service quality dimensions. Very importantly, there are few researches in African countries focusing on tertiary education service quality and this consequently limits the generalizability of prior research conclusion. Studies exploring higher education quality suggest that perceived service quality positively influence not only students' satisfaction but also loyalty and positive words of mouth (Arambewela & Hall, 2006; Gyupta & Kawuice, 2018; Lim, 2018, Mariam, et al., 2018). Recently, Mwuiya, et al., (2017) conducted a research exploring Zambian context regarding the influence of service quality on customer satisfaction. Furthermore, Sultan and Wong (2018) in their research in Australia and Douglas, et al., (2006 in UK found no moderating influence of study mode in the service quality satisfaction link. Therefore, there is scarcity of empirical researches examining study differences in Africa. This study is geared towards filling this lacuna by testing one of the many higher education quality models (i.e SERVPERF) in relation to study mode differences among Polytechnic students in Northern Nigeria. Thus, the main purpose of this study is to determine student perception of Polytechnic education service quality dimension in relation to their mode of study in Northern in Nigeria.

LITERATURE REVIEW

Service Quality in Education

Service Quality has been described in a number of ways by academic scholars. This makes it difficult to have a generalized definition for the concept. However, Crosby (1979) in Foser and Owusu (2015) provides one of the earliest definitions of quality, suggesting that it is "the confirmation for specifications". Lewis and Booms (1983) defined Service Quality as a measure of how well the service level delivered matches customers' expectations. In addition, according to Eshghi, et al., (2008), Service Quality is the overall evaluation of service by either a customer or any other stakeholder as he/she passes judgment as to whether or not the services meet/exceed expectations. Put in other words, the customer is asking herself/himself if the service is fit for purpose. Besides facilitating retention of current customers, perception of high Service Quality helps to attract new

ones as a result of positive recommendations to other stakeholders such as prospective students, employers, guardians, sponsor and regulators (Ladhari, 2009; Negi, 2009).

Thus, Service Quality in Polytechnic education could be operationalized as student's measurement or evaluation of how services delivered by an educational institution matches with the expectations of the students. This further indicates that the quality of services delivered is defined by the students and not the institution. Therefore, educational institutions like the Polytechnic must first understand students' expectation as the fundamental basis for developing and delivery of quality services. This also entails that institutions operating in a competitive environment have to consider how to deliver high quality services to meet and exceed the needs of stakeholders (De shields & Kare, 2005; Joo, 2017). Buttressing further, Adekiya, et al., (2019) listed four major attributes for classifying products/services has good quality, namely (i) conformance of expectations, (ii) conformance to requirement, (iii) conformance to excellence and (iv) value and loss avoidance. No wonder these days, institution-wide feedback about the quality of the services experiences is an area of research activities growing globally among tertiary institutions (Cordona & Bravo, 2012; Zinaldin, et al., 2011). This is a gap to be filled specifically in the Polytechnic sector of education in Northern Nigeria.

Service Quality Frameworks in Higher Education

There exist a number of models used to measure Service Quality. These frameworks were developed by various scholars to be used to measure Service Quality in different service sectors of human endeavors. Education is essentially a service industry, consequently its management practice is typically concerned with uses such as quality. Service delivery and customers' satisfaction in a Polytechnic educational environment are dependent on the personal interaction between students and staff and this personal interaction and the labour intensive nature of the service translates into a potentially high heterogenous quality service experience (De Jager & Gbadamasoi, 2010 cited by Mangwuyi, 2014).

Extant literature had revealed that some studies have used SERVQUAL (SQ) Model, been the earliest developed by Parasuraman, et al., (1988) meant for measuring Service Quality as part of their research in America. Initially, ten criteria were used to measure Service Quality., which are reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding the customers and tangibles. Later the scholars reduced the ten to five attributes/dimensions namely reliability, assurance, tangibility, empathy and responsiveness. The main reason behind the reduction was that the ten criteria make study questionnaires too long and for that matter, there was the need for a shorter version. Basically, the focus of the SERVQUAL model is evaluated by comparing customer perceptions with expectations. While customer perceptions are subjective evaluation is actual service experiences, expectations are reference points against which actual service is judged (Brochado, 2009). Despite its popular application, the SERVQUAL model has been criticized by some scholars (Cronin & Talor, 1992; Iwaarden & Wiele, 2002, etc) for its shortcomings at both conceptual and operational levels.

To overcome the shortcomings of SERVQUAL, the SERVPERF (Service performance) model was developed, which is a variant of the former SERVQUAL model that tends to embrace a performance-based approach in measuring Service Quality, by focusing on perceptions only. More recently, some other frameworks have been suggested in a quest to improve accuracy in assessing tertiary education institutions Service Quality. Icli and Anil (2014), proposed a new scale called HEDQUAL (Higher Education Quality) which has only been used in assessing Master of Business Administration (MBA) programmes. As key dimensions, the scale focuses on academic quality, administration service

quality, library service quality, quality of providing career opportunities and supporting services (Icli & Anil, 2014).

In addition, other researchers have employed the use of HEdPERF model (Higher Education Performance only) developed by Firdaus (2005), specifically for higher education. This new instrument of Service Quality captures the authentic determinants of Service Quality within higher education sector. The aim of this new model is to capture a context-specific view of Service Quality in higher education, enabling the whole student experiences to be measured. This new instrument is a 41-item scale focusing not only on academic aspects but also on the services environment (Khoole, 2010). The 41-items instrument was empirically tested for its reliability and validity using both Exploratory and Confirmatory Factor Analysis. The items were on academic quality classified into five (5) factors, namely non-academic aspects, academic aspects, reputation of learning institution, access and programmes issues.

Another framework proposed is the 5Qs comprising of quality of object, quality of process, quality of infrastructure, quality of interaction and communication as well as quality of atmosphere (Zineldin, et al., 2011). Quality of object implies the education services is the reasons students are studying, while quality of process refers to how the object is delivered. Whereas quality of infrastructure focuses on the basic resources needed to deliver educational services, the quality of interaction and communication alludes to the relationship between the institution and the students. Lastly, quality of atmosphere refers to trust, security and competitive positioning reflecting the institution.

It is noted that despite the lack of consensus in the measurement methodologies for service quality in higher education among scholars, the SERVQUAL framework has been widely recognized and utilized in assessing quality dimension from the students' perspective (Abil & Thani, 2012; Saadeti, 2012). However, making comparative analysis of the two models, namely SERVQUAL and SERVPERF indicates through empirically tested research had proven that the latter to be a better measure of Service Quality compare to the former (Adil & Gbeswuneh, 2012; Brochado, 2009). Furthermore, some scholars suggest that the SERVPERF model is more appropriate if the objective is to determine casual relationship for service quality dimensions (Deshalkar, et al., 2002). Thus, based on these convincing reasons, the current research also utilized the SERVPERF model to assess quality dimensions in the Polytechnic education in Nigeria.

Researches exploring higher education quality suggest that perceived service quality positively influences students satisfaction and loyalty (Cardona & Bravo, 2012; Naik, et al., 2010). Satisfaction is the central point in the study of customer loyalty in any business institution (Chan, et al., 2003; Kenney & Khanfer, 2009). Indeed, quite a number of previous studies have shown that student satisfaction is a significant predictor of student loyalty. Buttressing further Mwiya, et al., (2017) expressed the Zambia context regarding the influence of service quality or customer satisfaction. In addition, Sultan and Wong (2018) in Australia and Douglas, et al, (2006) in the United Kingdom studies found no moderating influence of modes of study in the service quality-satisfaction link. It should be noted that there is shortage or scarcity of studies involving service quality perception into the under-researched phenomenon of study modes difference especially in the Polytechnic education sector in Northern Nigeria. This current study aims at filling this gap by empirically testing one of the many tertiary education quality models, i.e. SERVQUAL in relation to study mode differences among Polytechnic students. Very importantly, this research is under taken at a crucial stage as a result of the numerous consequences and implication of post COVID-19 pandemic affecting educational sector.

Service Quality, Customer satisfaction and behavioral outcome (Loyalty)

Available extant literature indicates that quality of service is an antecedent to overall student satisfaction as customers in tertiary educational institutions (Zineidin, 2007). According to Jager and Gbadamosi (2010), quality of service, affects students overall experience and success of programmes as it tends to ensure continued students patronage. Buttressing further Jiewanta, et al., (2010) also submitted that service quality has a positive impact on student satisfaction at tertiary institutions. Furthermore, previous studies had shown that there is a relationship between service quality dimensions and behavioral outcomes (Jager & Gbadamosi, 2010; Jiewanta, et al., 2010). It is in this regard that service quality in the educational sector, particularly in Polytechnic higher educational institution is been considered as the fundamental aspect of tertiary institution excellence, Hence, service quality is considered a significant research topic in view of its important association to customer satisfaction (Kwek, et al., 2010), customer retention (Kwek, et al., 2010). In a study conducted by Twaissi and Al-Kilani (2015) exploring the impact of perceived quality on students' behavioral intentions found that the perceived reliability, tangibility and assurance dimension had an effect in the students' intentions to recommend their University to others.

Satisfaction is the central point in the study of customer loyalty in any business institution (Chan, et al., 2003; Kenny & Khanfar, 2009). In addition, previous studies in the service sector had reported positive effects of customer satisfaction on purchase intention (Chan, et al., 2003) as well as referrals (Haskett, et al., 2008). Similarly, other researchers like Gustafsson, et al., (2003) reported in customer or student retention, Kwek et al., (2010) on profit and return on investment.

Thus, it can be seen that scholars in marketing indicates that there is a nexus between customer satisfaction and customer loyalty (Welsh, et al., 2009). Corroborating this assertion Usman and Mokhar (2016) opined that quite a number of previous researches have shown that student satisfaction is a significant predictor of student loyalty. Student satisfaction increased revenue or reduced cost for higher educational institutions (Grossman, et al., 2009). In addition, students satisfaction and relationship continuity through students undertaking continued education (Alak, 2006; Helgesen & Nerret, 2007). Several other studies conducted by Alak (2006), Athiyaman (1997) and Grossman (2007) have shown that a student satisfaction has explains proportion of the variance on student's willingness to make recommendation of the tertiary institution to others. No wonder, the secondary student loyalty a times do have a loss of benefits which he follows from high levels of satisfaction from such as the attraction of new students, retention of existing students to continue patronizing, donation behaviour from Alumni and membership of alumni (Helgesen & Nettet, 2007).

Finally, students' satisfaction with the service delivery of quality products and services had been suggested and previously documented empirically as the ways and manner affecting buyer's decision with a relationship (Anderson, et al., 1994). Thus, whenever students are satisfied, the likelihood of exit from negative words of mouth is greatly reduced and on the other hand tends to increase the good relationship and positive words of mouth. This is in line with the Confirmation and Disconfirmation Theory (Churchill & Surprenant, 1982; Oliver, 1980). Buttressing on this, that satisfaction is achieved when the real expectations are fulfilled (confirmed) that negative disconfirmation on any form of expectations will result in dissatisfaction and that positive disconfirmation will result into enhanced satisfaction. In other words, when it comes to students of tertiary institution, it is expected that those students who express satisfaction with the services offered by institutions, would also express loyalty and engage in positive words of mouth to others about the institution. Practically, this entails that loyalty will be reflected or shown in the intention to pursue further studies with the same tertiary

institution and positive words of mouth would be reflected in the intention to recommend the institution to other people such as friends and relatives.

Service quality, student satisfaction and mode of study differences

The concept of satisfaction has been extensively studied in many ways of human life. However, researchers cannot reach the common ideal and framework for this construct. Three main disagreements on satisfaction definitions have been expressed namely (a) whether satisfaction were a process of reaction to a process., (b) satisfaction is either a cognitive or an effective response, (c) who is a decisive satisfier or a final consumer(s) in general (Son, et al., 2018). Similarly, according to Hum (2002), researchers are facing a challenge in creating a standard definition for the concept, student satisfaction, and therefore there is a need for a customer satisfaction theory to be selected and modified so that it can explain the meaning of student satisfaction.

The concept of student satisfaction in the context of higher education focuses on the student community. Hence student satisfaction can be defined as a short-term attitude resulting from an evaluation of student educational experiences (Ellioot & Healy, 2001, Yusuff, 2011, Salinda, et al., 2017). Oliver and Desarbo (1989) defined student satisfaction as the favorability of a student subjective assessment of the numerous outcomes and experiences related with educating and being shaped continually and repeated experiences in campus life. Institution of higher education like the Polytechnic tends to be concerned with student's satisfaction due to it impact on student motivation, recruitment of new students and relating on existing students as the key customers of higher education institution. Illias, et al., (2008) opined that student satisfaction is built continually with experiences on campus during their study period. Student satisfaction is crucial since satisfied student could end up going back to their previous institution for further studies or to enroll for new courses (Helgesen & Nettet, 2007). In view of this, higher education institutions, should make every efforts towards meeting and exceeding the expectations of their students in order to ensure the sustainability of their operation (Anderson, et al., 1994).

In addition, student satisfaction is a continually changing construct in the higher education environment due to repeated interactions and it is a dynamic process that requires clear and affective action as a result of an institution listening to it students (Elliott & Shin, 2002). Therefore, student satisfaction is also defined as a function of relative level of experiences and perceived performance about educational services during the study period (Mukhtar, et al., 2015). Meanwhile, some other definition emphasized students' satisfaction as a result of an overall evaluation after using education services (Wierslenessen, et al., 2012, Li, Mei, 2001).

It should be noted at this juncture that student satisfaction is a multidimensional process which is influenced by different factors. Appleton in Knapp and Krentler (2006) cited by Son, et al., (2018) identified two groups of influences on students' satisfaction in higher education as personal and institutional factors. Personal factors cover age, gender, employment, preferred learning style, student's GPA, while institutional factors cover quality of institution, promptness of the instruction feedback, clarity of presentation, teaching style. Researchers like Wilkins and Balakrishnan (2013) identified quality of lecturers, quality of physical facilities and effective use of technology as key determinant of student satisfaction. Furthermore, student satisfaction in Universities is greatly influenced in quality of classroom, quality of feedback, lecturer-student relationship, interaction with fellow students, concomitant, available learning equipment, library facilities and learning material (Gard, 2009; Sojkin, et al., 2012).

In addition, there are many other factors found to have exert influence on student satisfaction in many other studies used. One of them is the difference in perception of mode of study for each student. Since time immemorial, the mode of study available in some higher educational institutions tends to provide variety of options to the students in order to satisfy the students. Some students are full-timers, i.e. they spend morning and afternoon each day of the academic calendar in school, attending to all activities. Other students engage in their academic activities only in the evening after working hours, e.g. after 5pm. The majority of such students have full-time or part-time jobs during the day and only attends to academic activities over the weekend and after work hours in the work-week. Thirdly, there is a group of students that engage in distance education, once they enrolled, they carry out their studies in different location of the country after receiving their teaching module materials either in hard copy or soft copy as the case may be. With the availability and utilization of modern ICT coupled with the emerging COVID-19 pandemic, stakeholders in higher education institutions have to diversify means of satisfying their teeming students' population by making some strategic adjustment towards teaching-learning process.

In a study conducted by Sultan and Wong (2018) in Australia found that study mode does not moderate the influence of service quality on students' satisfaction. This empirical finding notwithstanding, the current research suggests that there is still a need for further exploration on mode of study differences in service quality perceptions among students because of some theoretical underpinning. In the first instance, management theorists believed using resource-based view of the firm indicates that firms with access to more resources will outperform those who have less resource (Penrose, 1959, cited by Mwiya, et al, 2019). It thus follows that at personal level, individuals (students' customers) with more resources will outperform those with less resources. Human capital theory propounded by Becker (1962) suggest that individual who have more knowledge, experiences, relevant habits and skills in any discipline/careers will outperform those who have less.

This empirical paper suggests that these theories can be applied to explore differences in higher education institutions study mode perceptions of service quality and performance, most especially at this period of high unemployment opportunities coupled with COVID-19 consequences. Full-time students, because of the amount of time they spend in schools, engage with the educational activities more than evening and long distance students. Therefore, full-time students are expected to outperform the other groups of students both in the outcomes of education and perception. This investigation believes that full-time students are more likely to perceive higher service quality in all dimensions and therefore are more likely to be satisfied because they have more time and resources to interact with administrative and academic staff as well as other institutional facilities. Additionally, such students have more time to consult lecturers, more time to interact with the course materials and therefore delve deeper into each subject and have more time to develop social support mechanism necessary for academic success.

HYPOTHESIS POSTULATION

The tenability of five null hypotheses will be tested at .05 levels of significance

1. The levels of student satisfaction and perceived loyalty to the institutions will not be significantly high in Northern Nigeria
2. There is no significant relationship between each of the service quality dimensions (tangibility, assurance, reliability, empathy and responsiveness) and student satisfaction in Northern Nigeria

3. Significant association does not exist between students' satisfaction and perceived loyalty to the institution (i.e. intention to participate as Alumni, return for further studies, etc).
4. There is no significant association between student satisfaction and perceived positive words of mouth about the institution.
5. Perceived service quality will not differ significantly based on the student's mode of study and Geo-political zones
6. Student satisfaction will not differ significantly based on the student's mode of study and Geo-political zones

METHODOLOGY

Research Design: This quantitative research employed a descriptive survey research design. Survey research involves developmental study that not only reveals or unveils the current or prevailing state of affairs, but also discovers changes that occur in certain features, characteristics and variables about a specific population by closely examining the nature, direction and rate of the changes, the how, which, what, who, where, when and partial why of the changes over a period of time (Kpoloive, 2010). Related to the current investigation; the main purpose of this study is twofold: to examine the relationship between each of the five service quality dimensions of higher education and customer satisfaction on one hand, while on the other hand to also explore the study mode differences among the students.

Population and sample of the study: The target populations for this study consist of all students in Polytechnic spread in the Northern Nigeria. The Northern Nigeria covered the three Geo-political zones of this Nation, namely North West, North East and North Central. In these Polytechnics, either Federal or State, large number of students are offering numerous academic programs ranging from Certificates, Ordinary Diploma, National Diploma, Higher National Diploma, and Postgraduate Diploma among others.

The total students' population will be determined for each selected Polytechnic and the sample size to be sampled will be determined using Krejice and Morgan Table. (Academic Affairs Division,, 2023). Krejice and Morgan (1970) table for determining the sample size, is based on the minimum required representative samples, at a confidence level of 95% and margin error of 5%. However, to reduce the likelihood of lower response rate and boost the precision of statistical analysis, 460 copies of questionnaire will be distributed. In the words of Kpolovie (2011), this table for determination of the relationship between sample and the total population has since remained the best, easiest and most appropriate tool for determination of minimum suitable sample size in a study when the probability sampling procedures are to be used with a chosen confidence interval of 95% certainty as representativeness.

Kpolovie (2011:30) further emphasized that with other things being equal; there is a greater likelihood that a larger sample (increase in samples) will be a good representative of the population than a small sample because as the number of subjects in the study increases, the **power of statistical tests** also increases. Statistical test power is the ability of the statistical test to detect a significant differences or relationship where it actually exists.

Students in ND and HND will be particularly targeted because they had been at the institutions for at least one-two years and thus had more experiences with the quality of various services rendered. The

study employed proportionate stratified random sampling technique to select the sample elements using the different modes of study as well as the College strata, hence achieving greater representativeness.

Research Instrument: To assure internal validity, a structured internationally-developed questionnaire comprising of 27-items was adapted from prior similar studies in Portugal, South Africa and Jordan (Brochado, 2009; Cronin & Taylor, 1994; van Schalkwyk & Steenkamp, 2014), as tool for data collection. This tool is at the public domain to be used in conducting researches. The tool consists of two sections. Section A elicited the demographic profile of the students such as Geo-political zones, programs, class, sex, age bracket, mode of study, etc. Section B covers the research variables consisting of five service quality dimensions (tangibility, 4 items, reliability, 5 items, responsiveness, 4 items, assurance, 4 items and empathy, 5 items).

In addition, there was one item that measured an overall satisfaction (“I am satisfied with overall educational experiences at this Institution”). Furthermore, two other items were incorporated to assess the behavioral intentions of loyalty, (“I intend to later come back and pursue my further study at this institution” and “After I graduate, I intend to participate and financially contribute to the Alumni initiatives to help my Institution”). At last, two questionnaire items were also included assessing the likelihood of spreading positive words of mouth about the Polytechnic (“I would recommend to employers to employ graduate from my Institution” and “Based on my experience at the institution, I would recommend this Polytechnic to my friends and family”). All the items were rated on a Five-point Likert scale format ranging from 1=strongly disagree to 5=strongly agree. The questionnaire items are 27 in numbers. In terms of internal consistency reliability for the research tool, this was determined using the famous Cronbach alpha technique which produced the following coefficients: tangibility, = .763, reliability, =.853, responsiveness, =.708, assurance, =.830 and empathy, .869. All the Cronbach alpha values were above the minimum threshold of .70 recommended by scholars (Pallant, 2016, Fields, 2010, Gliem & Gliem, 2003).

Method of Data Collection: For data collection, a survey will be undertaken and the copies of the questionnaire will be administered with the help of colleague lecturer to the students at the various institutions. A letter of introduction will be obtained from the RITTO that will assist the researchers during data collection. With the cooperation of professional colleagues, it expected that data collection will be smooth based on the research plan. Completing the self-administered tool will take about 10-20 minutes. Before administering the questionnaire, the purpose of the study will be explained to the respondents. Participation is voluntary and student can decide to withdraw at any time if they so feel uncomfortable. Ethical considerations were ensured in order to protect confidentiality and anonymity of the participants.

Method of Data Analysis: Data gathered will be properly cleaned for errors, preliminary analyses on assumptions of normality, linearity, missing data, outliers, homogeneity of variance, etc will be performed. Both descriptive and inferential statistics will be utilized in testing the null hypotheses. The statistical analyses will be facilitated with the help of computer software called IBM SPSS (version 23).

RESULTS PRESENTATION

Table 1: Demographic profile of the study Respondents

Demographic profile	Frequency	Percentage
<i>Geo-political zone</i>		
North West	134	30
North East	119	27
North Central	188	43
Total	441	100
<i>Sex</i>		
Male	220	50
Female	221	50
<i>Age Bracket</i>		
16-20 Years	99	22
21-25 years	185	42
26-30 years	102	23
31 years & above	56	13
<i>Marital status</i>		
Single	220	50
Married	127	29
Separated	94	21
<i>Class Levels</i>		
ND 1	72	16
ND 2	181	41
HND 1	116	26
HND 2	72	16
<i>Mode of study</i>		
Full time	130	30
Evening/weekend	136	31
Distance learning	178	40
TOTAL	441	100

Table 1 shows the detailed description of the demographic profile of the respondents.

Hypothesis-by-hypothesis presentation

HO1: The level of students' satisfaction and perceived loyalty to the institutions will not be significantly high in Northern Nigeria.

In subjecting the first hypothesis to tenability testing, the researcher reasoned that for the level of students' satisfaction and perceived loyalty to be significantly high, the scores made on the two scales should be significantly higher than 3.00 and 6.00 (which is the midpoint between Strongly agree and Undecided, which implies 3 X 1 and 3 X 2 respectively, the number of items measuring the variables). The null hypothesis is that the mean score representing students satisfaction is not significantly higher than 3 .00 and 6.00 . The hypothesis was tested with a t-test of One- sample mean (otherwise called population t-test) The results are presented in Table 1

Table 2: Population t-test analysis of level of students' satisfaction and perceived loyalty in Northern Nigeria Polytechnics

Variable	N	Sample Mean	Standard Deviation	Reference Mean	T	P – value	Remark
Students Satisfaction	441	2.97	1.207	3	-.513	.608	NS
Perceived Loyalty	441	6.445	2.299	6	4.08	<.001	S

The data analysis results presented in Table 2 reveals a mixed result. Students satisfaction levels indicated non-statistical significance ($M=2.97$, $SD=1.21$), $t(440) = -.513$, $P=.608$. it could be seen that the t-value is indicating negative direction, implying that the students are unsatisfied generally. The magnitude of the difference in the mean is $-.029$, 95% CL: $-.14$ to $.08$ was very small (eta squared =000). On the other hand, perceived loyalty reveals a statistically significant high level of students loyalty to the institutions ($M= 6.445$, $SD = 2.299$), $t(440) = 4.08$, $p < .001$, The magnitude of the difference in the mean $=0.447$, 95% CI: 0.23 to 0.66 was very small (eta squared = 0.00). With these results, while the student's satisfaction was supported and retained, the perceived loyalty of the students was therefore not supported and hence rejected for the alternative. The conclusion is that the level of student's satisfaction is unsatisfactory, while the student levelof loyalty is significantly high.

HO 2: There is no significant relationship between each of the service quality dimensions (tangibility, assurance, reliability, empathy and responsiveness) and student's satisfaction in Northern Nigeria,

Table 3: Pearson correlation coefficient between Satisfaction with Life and three other variables

Variables	Mean	SD	1	2	3	4	5	6
1.Tangibility	12.05	3.95	1.00					
2.Reliability	15.22	5.14	.802**	1.00				
3.Responsiveness	12.29	4.20	.696**	.818**	1.00			
4.Assurance	11.93	4.19	.815**	.804**	.786**	1.00		
5.Empathy	14.74	5.11	.819**	.787**	.757**	.877**	1.00	
6.Students satisfaction	2.97	1.21	.688**	.715**	.681**	.694**	.761**	1.00

*Correlation is significant at the .05 level

Pearson Product moment correlation coefficient was employed to determine the relationship between each of the service quality dimensions and student Satisfaction and also between the independent variables. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity and homoscedasticity. Cohen's (1988) in Boset, et al., (2017) classification of correlation strength has been used in the present study. Cohen (1988) suggested that a correlation is considered small/weak when $r= .10$ to $.29$, medium/moderate when $r= .30$ to $.49$ and large/strong when $r=.50$ to 1.00 .

. The results in Table 3 reveals and a statistically significant and positive relationship between students Satisfaction and each service quality dimensions of polytechnic education, i.e. Tangibility $r(439) = .688$, $P=<.001$., Reliability $r(439) = .802$, $P < .001$, Responsiveness $r(439) = .696$, $P < .001$, Assurance $r(439) = .815$, $P<.001$, and Empathy $r(439) = .819$, $P<.001$ respectively. Similarly, inter-correlation among the independent variables produced similar results. The effect sizes are generally

large based on Cohens criteria (1988). The significant positive correlation indicates that the higher is the level of each service quality dimension, the higher is the students level of satisfaction. With these results, the null hypothesis two is hereby not supported and rejected for the alternative. The conclusion is that there is significant relationship between each of the service quality dimensions and student's satisfaction in Northern Nigeria.

HO3: significant association does not exist between student's satisfaction and perceived loyalty to the institution (i.e. intention to participate as Alumni, return for further studies, etc).

Table 4: Pearson Correlation analysis of the relationship between student's satisfaction and perceived loyalty to the institutions in Northern Nigeria

Variable	N	Mean	SD	R	P	Remark
Students satisfaction	441	2.97	1.21	.679**	<.001	S
Perceived Loyalty	441	6.45	2.29			

**Correlation is significant at the .01 level (2-tailed)

In testing the third null hypothesis, the Pearson Product Moment Correlation Coefficient technique was utilized in determining the relationship student's satisfaction and perceived loyalty to the institutions in Northern Nigeria. The results in Table 4 reveals a strong and positive correlation between the two variables, $r(439) = .679$, $p < .001$, leading to the non-support of the hypothesis. It is then implying that there is a significant association between student's satisfaction and perceived loyalty to the institutions in Northern Nigeria. In other words, increases in the students' satisfaction will lead to corresponding increase in the perceived loyalty in the study area.

HO 4: There is no significant association between students satisfaction and perceived positive words of mouth about the institutions

Table 5: Pearson Correlation analysis of the relationship between student's satisfaction and perceived positive words of mouth about the institutions

Variable	N	Mean	SD	R	P	Remark
Students satisfaction	441	2.97	1.21	.634**	<.001	S
Perceived positive words of mouth	441	6.45	2.37			

**Correlation is significant at the .01 level (2-tailed)

In testing the fourth null hypothesis, the Pearson Product Moment Correlation Coefficient technique was utilized in determining the relationship between student's satisfaction and perceived positive words of mouth about the Polytechnic institutions in Northern Nigeria. The results in Table 5 reveals a strong and positive correlation between the two variables, $r(439) = .634$, $p < .001$, leading to the non-support of the hypothesis. It is then implying that there is a significant association between student's satisfaction and perceived positive words of mouth about the Polytechnic institutions in Northern Nigeria. In other words, increases in the students' satisfaction will lead to corresponding increase in the positive words of mouth about the Polytechnic in the study area.

HO 5: Perceived service quality will not differ significantly based on the student's mode of study and geo-political zones.

Table 6: A two-way ANOVA on the influence of student's mode of study and geo-political zones on Perceived Service Quality Dimensions

Source	Type III Sum of Squares	Df	Mean Square	F	Sig	Partial Eta squared
Corrected Model	14852.469	4	3713.117	9.325	<.001	.079
Intercept	887072.214	1	887072.214	2227.764	<.001	.836
Mode of study	3968.641	2	1984.321	4.983	.007	.022
Geopoliticalzone	1778.288	2	889.144`	2.233	.108	.010
Mode study*GeoPZ	.000	0				.000
Error	173610.633	436	398.190			
Total	2122152.000	441				
Corrected Total	188463.102	440				

a.R square =.079 (adjusted R square =.070)

A two - way between groups ANOVA was conducted to explore the influence of mode of study and Geo-political zones on Perceived Service Quality dimension. Participants were divided into three groups of full-time, evening/weekend and distance learning based on mode of study, while there are three different geo-political zones of North west, North east and North central. The statistical results reveal that the interaction effect between mode of study andgeopolitical zones was not statistically significant, However there was a statistically significant main effect for mode of study, $F(2,441) = 4.983$, $P=.007$. The effect size was small = .022. Mean statistics of evening/weekend in North East ($M=3.50$, $SD=1.213$) is better/higher in terms of perceived service quality than that of North Central ($M=3.33$, $SD=1.16$) and North West zones ($M= 2.75$, $SD=.96$) respectively. But, there was no significant main effect for geo-political zone $F(2,441) = 2.233$, $P=.108$. The effect size was small = .010.

HO 6: Students satisfaction will not differ significantly based on the students mode of study and geo-political zones.

Table 7: A two-way ANOVA n the influence of mode of study and geo-political zones on Student Satisfaction

Source	Type III Sum of Squares	Df	Mean Square	F	Sig	Partial Eta squared
Corrected Model	54.258	4	13.564	10.086	<.001	.086
Intercept	1752.216	1	1752.216	1302.899	<.001	.749
Modeofstudy	2.506	2	1.253	.832	.395	.004
Geopolitizone	2.361	2	1.181`	.878	.416	.004
Studymode*GeoPZ	.000	0				.000
Error	586.359	436	1.346			
Total	4632.000	441				
Corrected Total	640.617	440				

- a. R Square =0.85, (adjusted R Square= .076)

A two-way between groups ANOVA was conducted to explore the influence of mode of study and Geo-political zones on student satisfaction. Participants were classified into three groups of full-time, evening/weekend and distance learning based on mode of study, while there are three) different Geo-political zones of North West, North Central and North East. The results indicate that the interaction effect between mode of study and geo-political zones was not statistically. There was also a non- statistically significant main effect for mode of study $F(2,441) = 0.832, P = .395$. The effect size was small = .004. In addition, there was a non- significant main effect for Geo-political zones, $F(2,441) = 0.878, P=.416$. The effect size computed via partial eta squared indicates small size.

DISCUSSION OF FINDINGS

The findings of this study in relationship to hypothesis one is a mixed one. While student's satisfaction reveals a non-statistical and negative significance, perceived loyalty reveals the opposite. The conclusion is that the level of students' satisfaction is unsatisfactory while the student level of loyalty is significantly high. This finding is in line the submission of Mwuiya, et al., (2019 that revealed a similar finding in Zambia. The second hypothesis reveals that there is significant relationship between each of the Service Quality dimensions and students' satisfaction in Northern Nigeria. This finding is in line with previous researches conducted by Cardona and Bravo (2012), Twaisi and Al-kilani (2015) and Brochado (2009) that found customer satisfaction is significantly influenced by the five Service Quality dimensions.

The findings of hypotheses three and four indicates a positive and significant relationship between students' satisfaction and perceived loyalty to the institution and perceived words of mouth. Lastly, hypothesis five and six reveals statistical significance in relation to mode of study. This research finding is contrary to the previous results that found not study mode differences conducted by Sultan and Wong (2018). The finding of this study which reveals that evening/weekend and distance learning students are more likely to report higher satisfaction is very interesting and has theoretical implication to the institutional administrator and managers. Among the reasons is that older students' may be less interested in choices, they are more matured, experienced and are after smooth graduation in order to enhance their career pathway in their working stations. Other explanations may be viewed from the class size which might be smaller thereby enabling the student to interact more positively with their lecturers better. Smaller class size entails that distance and evening students get better accommodation possibly in hotels whenever they come around compared with the regular students who tends to stay in the hostels. Furthermore, evening and distance learning students' have work experiences, thus relate to the material curriculum content, while full –time students' have to read more textbooks, they have to buy recommended textbooks in high cost. Finally, evening/weekend and distance learning students tends to see the immediate benefit of education, because for those already working or employed, promotion is expected upon graduation compare to the full-time regular students' who will have to join the labor markets later after graduation.

LIMITATIONS AND FUTURE STUDIES

This empirical investigation, being a cross-sectional type, the research findings can be regarded to only have offered a snapshot on the magnitude of the research problem. In future research, it is suggested that a longitudinal study be conducted annually as an all-encompassing, holistic and recognized higher education service quality evaluation system would actually help the Polytechnic sector to assess and monitor their service quality performance. Additionally, since sample size was

only limited to the Northern Nigeria regions, in future, samples be drawn to incorporate other Polytechnics in the Southern part of Nigeria made-up of 3 geo-political zones. Furthermore, future studies should involve a comparative analysis of the public and private polytechnics, since this one only involved public or Government-owned polytechnics. All these limitations if taken care of properly would help to ipve the generalizability of the research findings and conclusions. Finally, instead of the quantitative approach used in this study, qualitative or mixed approach would also help to unearth the reasons why evening/weekend and distance learning students are more satisfied than the full-time students

INSTITUTION'S ADMINISTRATIVE IMPLICATIONS

The findings from this research have institutional implication for academic scholars and researchers alike, polytechnic administrators, managers and policy makers and implementers. It is obviously clear that the Service Performance Model (SERPERF) used in this research is a valid and useful conceptual framework for assessing, monitoring and evaluating how the primary stakeholders (students) for their Service Quality Perception of higher education, most especially the Polytechnic sector. Therefore, customer satisfaction is a function of perception or performance in the service quality dimensions of tangibility, reliability, responsiveness, assurance and empathy. Indeed, students who are satisfied with the education service are more likely to pursue further studies at the same institutions, support the institution as alumni and engage in positive words of mouth to friends, family, employers and other stakeholders about the institution.

In terms of study mode evening/weekend and distance learning students are more satisfied. Equally, the students from the North East geo-political zone are more satisfied. This implies that due to the inflationary trends and high level of unemployment in Nigeria, more secondary school levers and candidates who are working could be encouraged to consider distance and evening/weekend learning modes, most especially in this 21s5 century where ICT packages like AI are available and accessible to and sundry, this is even very important because National Statistics shows that only very limited number of candidates can find spaces in our higher education like Polytechnics, Colleges of Education and Universities.

The last implication tends to provoke a curious question as to whether full-time students who are always in the campus are short changed and less satisfied compared to their distance and eveningstudents, periodic comparative exploration of study mode differences in academic results would also help to put the study mode differences in service quality perception into a better perspective.

CONCLUSION

The main purpose of this research was two folds. Firstly, it sought to assess the Service Performance (SERVPERF) model in Northern Nigeria Polytechnic sector and determine student's perception of Polytechnic Education Service Quality Dimensions. Secondly, the research sought to explore study mode difference in Service Quality Dimensions and customer satisfaction. The investigation was based on a quantitative, cross-sectional survey design were primary sample data were collected from 441 polytechnic students spread across three geo-political zones in Northern Nigeria. The main findings indicate that the level of students' satisfaction was not statistically significant ant the over customer satisfaction was negative. However, the level of loyalty was statistically significant. While series of positive e and significant relationship exist between each of the service quality dimensions and student satisfaction, and students' satisfaction and perceived loyalty, the evening/weekend and

distance learning students tends to have more satisfied compared to the full-time students' who tends to stay longer in the institutions.

The contribution of this research can be classified into two folds. Firstly, previous researches exploring Service Quality in high education conducted by (Cordona & Bravo, 2012; Twaissi & Al-Kilani, 2015; Brochado, 2009; Adekiya, et al., 2019; Mwuiya, et al., 2017) suggest that customer satisfaction can be explained by Perceived Service Quality. However, it is pertinent to mention that African countries, especially the Polytechnic sector of higher education are grossly under-researched in this area and this limit the generalizability of research conclusion. .In fact, literature with a Nigeria context are hard to find with the exception of Adekiya, et al., (2019). The effect of shortages of researches in the Nigeria context entails that stakeholders have no bases for developing strategies and setting resource allocation priorities to improve Service Quality based on context-specific conclusions. Therefore, this study contributed towards filling this knowledge gap, thus extending the generalizability of previous research findings and conclusion and improving external validity (Eden, 2002; Evanschitzky, et al., 2007; Miller & Bomberger, 2016). Basically, the research has further confirmed the applicability of the SRVPERF model in higher education, especially in the polytechnic sector in Nigeria.

Secondly, besides the inconclusive and insignificant results from previous researches conducted by Sultan and Wang (2018) and Douglas, et al., (2006) that explored the moderating role of study modes on the Service Quality and Customer Satisfaction relationship, this current study can be regarded among the pioneers to examine the study mode differences in Nigerian with significant results in level of evening/weekend and distance learning students'. The study also contributes empirical evidence that older students tend to report higher customer satisfaction. Consequently, older students', those in North East and those attending evening/weekend and distance learning would be less inclined to complain about dissatisfaction with service quality due to their maturity and life experiences.

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