The Link between Perceived Service Quality Dimensions and Customer Satisfaction: An Empirical Study of Public Higher Education Sector of Khyber Pakhtunkhwa

Nisar Muhammad, Shahid Jan Kakakhel, and Qadar Bakhsh Baloch

Abstract

The purpose of this research study was to explore the link between service quality dimensions and customer (students) satisfaction. Service quality (SQ) is a gateway to customer (students) satisfaction. (SQ) is considered imperative when it comes to define institutional achievement. This is a winning and persuasive strategy to deliver best service quality to students. Service quality dimensions can be improved if the universities direct their improvements efforts on the dimensions which students consider most important when assessing the quality of service. A structured questionnaire was adopted and modified for higher education industry. The hypotheses were simultaneously tested on a sample of 245 students of 10 selected universities of Khyber Pakhtunkhwa (Pakistan). Responses of students were examined with the help of SPSS and AMOS software. Structural equation modelling analytical technique was used to investigate the relationship among variable under investigation. The findings of the present study have shown significant relationship among the variables under investigation. The study suggested that empathy, assurance, responsiveness and reliability dimensions of service quality have more effect on customer satisfaction. It means that students are more conscious and sensible towards these dimensions. The current study reveals that students are satisfied from the service quality of their respective universities but still even not a single Pakistani university ranked in top five hundred universities of the world. There is a dire need for further research in this grey area in future to highlight the problem.

Keywords: Service Quality (SQ), Tangibility, Reliability, Responsiveness, Assurance, Empathy, Customer Satisfaction (CS), Higher Education Institutions / Industry (HEI)

Introduction:

In present competitive higher education market place, where students have a variety of choices and picks available (Edden, Khalfatias & Mathioudakis, 2011). The variables that empower universities to attract and retain students became increasingly considered with the implementation of market oriented concept become popular in higher

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education institutions in order to survive at regional and global level higher education (Edden, Kalafatis, & Mathioudakis, 2011).

Students’ satisfaction has become a key concern for higher education institutions and it has been identified that students’ satisfaction is a crucial source of competitive advantage and this satisfaction lead to students’ retention, attraction of new students, mouth marketing, market goodwill and better image of the institutions (Arambewela & Hall, 2006). The review of literature depicts that long-term survival and achievements of the higher education institutions subject to the quality of service which differentiates one institution from other institutions (Aly & Akpovi, 2001).

The HEI in Pakistan has experienced massive growth in recent years and it is generally recognised that future achievement in a worldwide economy belongs to those organizations that go the additional distance in providing students first-class customer service. Higher education institutions should assess their service quality on regular basis. Higher education industry is one of the most significant industry and playing fundamental role in state development. Education is considered the backbone of economic development of a nation, therefore, ultimate destination of Pakistan to join the top 10 economies of the world by 2047 on the centennial year of independence (HEC, 2014). The Pakistan higher education industry faces more competitive market structure, therefore it is more essential to investigate customer satisfaction in HEI, as institution of higher education could greatly benefit from being able to raise the level of customer satisfaction (Bolton & Drew, 1991), satisfaction can provide an institution with a type of competitive advantage (Channoi, 2014), particularly at a positive word of mouth which build a brand name of the institution (Khalifa & Mahmoud, 2016; Stimac & Simic, 2016; Feldman et al., 2014; Kim & Periyayya, 2013). Excellent SQ as perceived by the customers can give any firm a competitive advantage (Albrecht, 1991).

Objectives of the study:
- To find out the relationship between tangible and customer satisfaction.
- To find out the relationship reliability and customer satisfaction.
- To find out the relationship between responsiveness and customer satisfaction.
- To find out the relationship between assurance and customer satisfaction.
- To find out the relationship between empathy and customer satisfaction.

Research Hypotheses:
H1: There is significant relationship between tangible and customer satisfaction in higher education institutions.

H2: There is significant relationship between reliability and customer satisfaction in higher education institutions.

H3: There is significant relationship between responsiveness and customer satisfaction in higher education institutions.

H4: There is significant relationship between assurance and customer satisfaction in higher education institutions.

H5: There is significant relationship between empathy and customer satisfaction in higher education institutions.

Literature Review

Service quality:

Quality refers to the totality of features and characteristics goods / services that have the ability to satisfy the current and potential needs of the customers (Kotler et al., 2002). One of the most cited definition of service quality is the comparison between customers’ expectation and perception of service experience. If the perception of the customers is higher than the customer expectations, the perceived service quality will be higher and vice versa (Parasuraman, Zeithaml, & Berry, 1988). Service quality in higher education context refers to the students’ subjective evaluation of the service provider performance level with the students’ expectation level (Meštrović, 2017). He further suggested that service quality in higher education industry refers to a set of dimensions, attributes and characteristics that related to the service provider. The purpose of the study was to identify the major dimensions of service quality in the higher education institutions of Pakistani context that have the most influence on students perceived service quality and satisfaction level. SERVQUAL is the most acknowledged and commonly used instrument for evaluating service quality in higher education sector. There is a substantial body of evidence in higher education literature (Datta & Vardhan, 2017; Ibraheem, 2016; Truong et al., 2016; Donlagic & Fazlić, 2015; Ghotabadi, Feiz, & Bahar, 2015; Twaissi & Al-Kilani, 2015; Yousapronpaiboom, 2014; Chopra, Chawla, & Sharma, 2014; Kanakana, 2014; Shaari, 2014; Cheruiyot & Maru, 2013; Shah, 2013; Vaz & Mansori, 2013; Bharwana et al., 2013; Cerri, 2012; Govender & Ramroop, 2012; Rasli et al., 2012; Khan, Ahmed & Nawaz, 2011; Khodayari & Khodayari, 2011; Mosahab, Mahamad, & Ramayah, 2010) recommending SERVQUAL scale is effective in measuring SQ in HEI.

Tangible:

According to Parasuraman et al., (1988) tangible refers to appearance of physical facilities, equipment, personnel & written
materials. The tangibility dimension of service quality refers to the physical surrounding, facilities, equipment, and appearance of staff and the way of communication. In higher education sector the tangibility refers to the goods and services that customers perceive to judge a service (Mwiya et al., 2017). The tangibility dimension is related to the first impression is last impression. Every organization wants to win the hearts of their customers with a unique and never forgetting first hand impression to retain the customer for a long period of time (Delgado&Ballester, 2004). Other studies (Twaissi& Al-Kilani, 2015; Kundi et al., 2014) establish that tangible has a significant effect on students’ satisfaction in higher education industry.

*Reliability:*

Parasuraman et al., (1988) defines reliability as the ability to accomplish the promised service dependably and accurately. Reliability is an important dimension of service quality. Other empirical studies (Hassan & Ibrahirum, 2010; Sultan & Wong, 2012) suggested that reliability has effect on student’s satisfaction. In higher education industry, reliability aspects reveals the institutions ability to deliver the service at the promised times, keeping students’ academic and results records (Mwiya et al., 2017).

*Responsiveness:*

Responsiveness is a significant dimension of SQ which denotes to the readiness of the institute to help its students in providing them with best quality and prompt services (Parasuraman et al., 1988). In today competitive global market every customer feel more value if they get the best possible quality in service. In the higher education context it explains that how much the university system is alert towards the quality service providing to the students (Mwiya et al., 2017).The customers judges the performance of an organization by the speed with which their desires and grievances are handled (Zeithaml et al., 2006).The employees` actions and attitude toward service performance play a significant role in customer satisfaction (Kundi et al., 2014; Jiewanto et al., 2012).

*Assurance:*

Parasuraman et al., (1988)define assurance as employees`understanding, familiarity, knowledge, courtesy and their ability to stimulate trust and confidence. It shows the levels of the services provided to customers that is credible and can be trusted or the ability of the staff to inspire trust and confidence (Parasuraman et al., 1988). It means that the services provided by the organizations for which they assured the customers (Mwiya et al., 2017). Assurance has a significant relationship with customer satisfaction (Jiewanto et al., 2012).
Empathy

The word empathy refers to show care and provide individualized attention to its customer (Parasuraman et al., 1988). With regard to higher education institutions empathy implies such things as giving individualized consideration and caring the needs of students by all the employees of the organization staff that interact with the students (Mwiya et al., 2017). It means that how much university feels and cares the needs of the students. According to Kundi et al., (2014) empathy has a significant effect on students’ satisfaction.

Customer Satisfaction

Customer satisfaction is a comparative judgement between expectancy and received services (Oliver, 1981). Kotler & Clarke, (1987) define satisfaction as an outcome that fulfils a person expectation or a state felt by a person who has experience performance. It shows that satisfaction is an output of relative level of perception and expectation. According to Kotler & Armstrong (2012) urged that satisfaction is a post purchase assessment of product or services taking into consideration the expectation. Customers usually depend on extrinsic cues like image to determine and perceive SQ (Gronroos, 1984). According to Hazlina et al., (2011) service quality is one of the most important tools to measure customer satisfaction. The expectation develop before the students even enter into university, therefore it is imperative for the scholars to define first what the students expect before entering the university. Service quality was only one of many dimensions on which satisfaction is based (Clemes, 2008). Empirical study of Sulieman (2011) mentioned that reliability, tangibility, assurance and responsiveness have significant association with customer satisfaction. Students are considered the key stakeholder of higher education institutions.

Service Quality (SQ) and Customer Satisfaction in HEI

The prevailing higher education is a dynamic and competitive one (Dehghan, Dugger, Dobrzykowski, & Balazs, 2014), where higher education institutions need to increase their efforts to improve their service quality (Clemes, Cohen, & Wang, 2013). Service quality in higher education sector is a combination of different inside and outside class room activities such as class room based activities communication with lecturers and other staff (Asaduzzaman, Rahman, & Hossain, 2013). In the present scenario there are numerous factors forcing universities to adopt quality education because of internationalization of higher education (Rasli, Shekarchizadeh, & Iqbal, 2012; Sultan and Wong, 2010), increase in the number of private universities (Halai, 2013) and availability of different measurement tool for assessing service quality such as SERVQUAL, SERVPERF, HEdPERF, HESQUAL (Parasuraman et al., 1988).
Relatively few research studies have attempted to measure service quality in higher education industry, (Datta & Vardhan, 2017; Ibraheem, 2016; Kara, Tanui, & Kalai, 2016; Twaissi & Al-Kilani, 2015; Donlagic & Fazlic, 2015; Porral & Levy-Mangin, 2013; Chopra, Chawla, & Sharma, 2014; Shah, 2013; Rasli, Shekarchizadeh, & Iqbal, 2012). Around the world, higher education industry are facing declining enrolment and retention problems (Rowley, 2013).

Service quality (SQ) in HEI is not only essential but also it is a significant parameter of education excellence. Alves & Raposo (2010) urged that positive perception of service quality has a significant effect on students’ satisfaction and satisfied students would attract more students through mouth marketing. According to Sapri, Kaka & Finch, (2009) consumers are the life blood of any organization and students considered the key customers of higher education institutions; therefore, academic performance of the faculty members and efficiency of the administration can inspired and motivated the students which lead to students’ satisfaction. Various researchers (Rasli, Shekarchizadeh, & Iqbal, 2012; Ahmed, et al., 2010; Elliot & Shin, 2002) suggested that service quality is a strategic variable for higher education institutions to make a strong perception in students mind and also a significant measurement tool in educational excellence.

**Methodology**

**Geographical Scope**

This research study is restricted to investigate the relationship between service quality and customer satisfaction. The higher education institutions which have been selected for collecting the responses of students include public sector universities of Khyber Pakhtunkhwa, Pakistan.

**Population**

In this research students of public universities in Khyber Pakhtunkhwa served as the population of the study.

**Sample and sampling technique:**

A sample of 245 students of higher education institutions was selected for this research study. Sampling units were selected on the basis of convenience sampling technique. This is one of non-probability sampling technique where respondents are selected on the basis of their ease of access. Questionnaire was distributed to different level of students of management sciences of public universities of Khyber Pakhtunkhwa.

**Sample of the Study:**
According to Gaur & Gaur (2009) a sample size of 200-300 should be taken into consideration for a proper analysis because a suitable sample size is significant for finding the accurate factor structure. Following are the table which shows the sample size of the universities of Khyber Pakhtunkhwa.

**Table 1 showing the sample size of public sector universities of Khyber Pakhtunkhwa**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Public Sector Universities</th>
<th>Students</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Abdul Wali Khan University, Mardan</td>
<td>7147</td>
<td>33</td>
</tr>
<tr>
<td>2</td>
<td>Hazara University, Mansehra.</td>
<td>11385</td>
<td>53</td>
</tr>
<tr>
<td>3</td>
<td>Islamia College University, Peshawar.</td>
<td>3368</td>
<td>16</td>
</tr>
<tr>
<td>4</td>
<td>KUST Kohat</td>
<td>3591</td>
<td>17</td>
</tr>
<tr>
<td>5</td>
<td>Shaheed Benazir Bhutto University, Sheringal</td>
<td>1313</td>
<td>06</td>
</tr>
<tr>
<td>6</td>
<td>Shaheed Benazir Bhutto Women University, Peshawar</td>
<td>4037</td>
<td>19</td>
</tr>
<tr>
<td>7</td>
<td>University of Malakand, Chakdara.</td>
<td>4304</td>
<td>20</td>
</tr>
<tr>
<td>8</td>
<td>University of Peshawar, Peshawar.</td>
<td>9874</td>
<td>46</td>
</tr>
<tr>
<td>9</td>
<td>University of Science and Technology, Bannu.</td>
<td>2304</td>
<td>11</td>
</tr>
<tr>
<td>10</td>
<td>Gomal University, D.I.K</td>
<td>5330</td>
<td>24</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>52653</strong></td>
<td><strong>245</strong></td>
</tr>
</tbody>
</table>

Source: (HEC, Khyber Pakhtunkhwa university wise enrolment of year 2014-15)

**Data Collection**

Primary and secondary both type of data were employed for the purpose of this study. The first hand data related to this study were collected from the students of ten public higher education institutions located in Khyber Pakhtunkhwa. The secondary data was obtained from research journals, books, library, internet and others sources.

**Primary Data:**

This research study a specific questionnaire have been adapted from the study of (Parasuraman et al. 1988) SERVQUAL model, Noel-Levitz customer satisfaction inventory, and competitiveness dimensions derived from the previous literature to conduct survey of the students of the sampled Khyber Pakhtunkhwa universities. The nature of the study is also explained to respondents and their confidentially of any information provide assure. Respondents have been provided with complete instructions as to how the questionnaire will be completed and returned. The close-ended questionnaire has been developed on a five point Liker scale.

**Secondary Data:**

Second hand data was also used for further information. Secondary data has been collected from books, Journals, annual reports, university prospectus newspaper, articles and internet etc. All sources of secondary data are duly acknowledged at the reference section of the research.
Table 2 Variables Identified for Questionnaire

<table>
<thead>
<tr>
<th>Authors</th>
<th>Variables identified</th>
<th>Section in Questionnaire</th>
</tr>
</thead>
</table>

Tool used for analysis:
SPSS and AMOS software version 20 statistical tool was used for the examination of data.

Data Analysis:
Table 3 Demographic Profile of the Respondents

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male students</td>
<td>196</td>
</tr>
<tr>
<td>Female students</td>
<td>49</td>
</tr>
<tr>
<td>Education</td>
<td></td>
</tr>
<tr>
<td>Bachelor</td>
<td>89</td>
</tr>
<tr>
<td>Master</td>
<td>121</td>
</tr>
<tr>
<td>MS/M.Phil.</td>
<td>22</td>
</tr>
<tr>
<td>PhD</td>
<td>13</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>16-20</td>
<td>62</td>
</tr>
<tr>
<td>21-25</td>
<td>132</td>
</tr>
<tr>
<td>26-30</td>
<td>36</td>
</tr>
<tr>
<td>31-35</td>
<td>14</td>
</tr>
<tr>
<td>36+</td>
<td>1</td>
</tr>
<tr>
<td>Duration</td>
<td></td>
</tr>
<tr>
<td>&lt;1</td>
<td>82</td>
</tr>
<tr>
<td>1-2 Years</td>
<td>117</td>
</tr>
<tr>
<td>2-3 Years</td>
<td>38</td>
</tr>
<tr>
<td>3-4 Years</td>
<td>8</td>
</tr>
</tbody>
</table>

The table 3 reveals the demographic summary of the respondents of the public universities of Khyber Pakhtunkhwa. There are 245 respondents taken from public sector universities out of which 196 were male and 49 were female with the percentage of 80% and 20% respectively. The majority number 121 (49.4%) students was studying in master classes, 89 (36.3%) in bachelor classes, 22 (9.0%) and 13 (5.3%) studying in M.Phil. and PhD. Classes respectively. The above table further depicts the age of the students included in this study, where the mostly students were in the range of 21-25 years. The duration of the students in the public sector universities was included 1-2 years of range where the number of respondents who stayed for 1-2 years with 47.8%.
Reliability

To ensure the reliability of data Cronbach Alpha statistics was a suitable tool suggested by (Kline, 2011; Byrne, 2010; Hair et al., 2010). The above table 4 depicts the stepwise reliability analysis for the students’ measurement instrument. The analysis of the table discloses that Cronbach’s alpha, a measure of reliability, clearly exceeded the threshold value of 0.6, as suggested by (Yong et al. 2010). The entire Cronbach’s alpha are greater than 0.7, this indicates good subscale reliability and internal consistency of the items. Results given in the following table indicates that reliability of all the constructs related to service quality, customer satisfaction and competitiveness is well above 0.7. Scale items was also analysed to check either eliminating an item would increase the construct reliability. It was found that reducing an item would improve the construct reliability.

Table 4 Reliability Statistics of Service Quality and Customer Satisfaction

<table>
<thead>
<tr>
<th>Instrument</th>
<th>(initial) No. of items</th>
<th>(initial) Cronbach Alpha coefficient</th>
<th>(Final) No. of items</th>
<th>(Final) Cronbach Alpha coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangible</td>
<td>4</td>
<td>0.743</td>
<td>4</td>
<td>0.743</td>
</tr>
<tr>
<td>Reliability</td>
<td>5</td>
<td>0.807</td>
<td>4</td>
<td>0.858</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>4</td>
<td>0.871</td>
<td>4</td>
<td>0.871</td>
</tr>
<tr>
<td>Assurance</td>
<td>4</td>
<td>0.938</td>
<td>4</td>
<td>0.938</td>
</tr>
<tr>
<td>Empathy</td>
<td>5</td>
<td>0.629</td>
<td>4</td>
<td>0.823</td>
</tr>
<tr>
<td>C/Satisfaction</td>
<td>12</td>
<td>0.801</td>
<td>8</td>
<td>0.924</td>
</tr>
</tbody>
</table>

Assumption Statistics

The current study followed the suggestions of Hair et al., (2010) where Kaiser Meyer Olkin (KMO) measure sample adequacy and Bartlett’s-Test-of-Sphericity (BTS) were examined. According to the above-mentioned researchers, (KMO) needs to be greater than 0.7 and (BTS) needs to be significant at P < 0.001 levels, for researchers to proceed with exploratory factor analysis (EFA). The following table depicts the results of KMO, BTS and significant at p level of the present study. These results indicates that KMO and BTS was significant at p < 0.001 level, representing the data are adequate for factor analysis.

Table 5 Assumption Statistics of Service Quality Dimensions and Customer Satisfaction

<table>
<thead>
<tr>
<th>Variable</th>
<th>DCM*</th>
<th>KMO**</th>
<th>BTS***</th>
<th>SIG****</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangible</td>
<td>0.512</td>
<td>0.698</td>
<td>162.267</td>
<td>.000</td>
</tr>
<tr>
<td>Reliability</td>
<td>0.123</td>
<td>0.766</td>
<td>507.724</td>
<td>.000</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>0.207</td>
<td>0.716</td>
<td>381.924</td>
<td>.000</td>
</tr>
<tr>
<td>Assurance</td>
<td>0.072</td>
<td>0.765</td>
<td>637.542</td>
<td>.000</td>
</tr>
<tr>
<td>Empathy</td>
<td>0.206</td>
<td>0.708</td>
<td>382.606</td>
<td>.000</td>
</tr>
</tbody>
</table>
Confirmatory Factor Analysis (CFA):

The (CFA) process determines whether the hypothesised structure delivers a good fit to the data. According to Hair et al. (2006) CFA specifies how variables measured logically and systematically represents the variables involved in a theoretical model. The (CFA) would verify that items are properly aligned with the correct facets within the general construct being measured. There are number of fit indices for structural equation modelling (SEM) in the literature. However, there are certain recommendations available for reporting fit indices. Hancock & Mueller (2010) suggested RMSEA, SRMR and at least one of CFI, TLI and NFI. Bandalos& Finney (2010) recommended CFI, TLI, RMSEA, SRMR and Chi-square provides guidance on the fit statistics for CFA. The Root-Mean-Square-Error-of-Approximation (RMSEA) has a range of zero to one and a smaller RMSEA value showing a better fit. The RMSEA relates to the model’s residual. According to Hu &Bentler (1999) recommended value is closed to 0.08 for SRMR and RMSEA value of 0.06 or lower indicates good model fit, although a value of 0.08 or lower is considered adequate (Browne&Cudeck, 1993). According to Byrne (2006) Comparative Fit Index CFI measures overall enhancement of a suggested model against an independence model when the observed variables are not correlated. The values of CFI are found between zero to one and higher values representing the better model fit but and an adequate model fit value for CFI is 0.90 or higher (Hu &Bentler, 1999). The Normed-Fit-Index NFI and Non-normed-Fit-Index NNFI are also the model fit indicators and their values higher than 0.90 are deemed to be considerable (Kline, 2011; Byrne, 2010). The Goodness-of-Fit-Index GFI shows the percentage of available variance / co-variance in the dataset explained by the model and minimum value for GFI should be 0.90 (Kline, 2011).

Structural Equation Modelling (SEM):

According to Schumacker& Lomax (2010, 12), a number of models are used in SEM to show the relationships between observed variables with the objective of testing a hypothesised theoretical model. These theoretical models can be tested using (SEM) that hypothesises variables to define constructs and depict the relationship between such constructs. In SEM a theoretical model is developed from the sample data and the researcher is able to identify whether the hypothesised model is supported by the sample observed data or not.

<table>
<thead>
<tr>
<th>Customer Satisfaction</th>
<th>0.002</th>
<th>0.877</th>
<th>1500.407</th>
<th>.000</th>
</tr>
</thead>
</table>

* Determinant of Correlation Matrix
** Kaiser Meyer Olkin measures of sampling adequacy
*** Bartletts Test of Sphericity
**** Significance, p<0.001
Model Fit Summary:
<table>
<thead>
<tr>
<th>CMIN/DF</th>
<th>GFI</th>
<th>TLI</th>
<th>CFI</th>
<th>RMSEA</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.251</td>
<td>0.923</td>
<td>0.924</td>
<td>0.931</td>
<td>0.045</td>
<td>0.023</td>
</tr>
</tbody>
</table>

Hypotheses Testing

“A hypothesis is a testable statement of relationship derived from theory” (Le& Corbett, 2009). The hypothesis must be testable, determines the nature of relationship between constructs and derived from a theoretical context. According to Sarstedt & Mooi, (2014) certain steps need to be followed like formulate hypothesis, select relevant test, select level of significance, estimate test statistics, make decision on test and interpret the results. The hypothesis setting composed of null and alternative statements. Sarstedt & Mooi, (2014) suggested that null (HO) hypothesis indicates no difference in a statement while in alternative hypothesis the researcher expects some difference. According to Gaur & Gaur(2009) a null (HO) hypothesis is not accepted if the (p-value) obtain is less than and accepted if it is greater than the significance level at which hypothesis are tested.
P-value or Significance Level
Significance level is a criterion that is used for accepting or not accepting a null hypothesis is called p-value or significance level (Gaur & Gaur, 2009). They further suggested a p-value of 0.05 is a standard for social sciences research. Therefore this research study also takes a p-value of 0.05 as a standard for accepting or rejecting of hypotheses.

Techniques used to test the Hypotheses:
Structural equation modelling SEM is used as a device to check the predetermined hypotheses. There were total five hypotheses developed from the previous literature in order to elaborate the relationship between service quality dimension and customer satisfaction.

Table 6 Tool used for Hypotheses Testing

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Tool use for testing Hypotheses</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: Tangibility has a significant relationship with customer satisfaction.</td>
<td>Structural Equation Modelling</td>
</tr>
<tr>
<td>H2: Reliability has a significant relationship with customer satisfaction.</td>
<td>Structural Equation Modelling</td>
</tr>
<tr>
<td>H3: Responsiveness has a significant relationship with customer satisfaction.</td>
<td>Structural Equation Modelling</td>
</tr>
<tr>
<td>H4: Assurance has a significant relationship with customer satisfaction.</td>
<td>Structural Equation Modelling</td>
</tr>
<tr>
<td>H5: Empathy has a significant relationship with customer satisfaction.</td>
<td>Structural Equation Modelling</td>
</tr>
</tbody>
</table>

This research study utilized goodness-of-fit measures to test the hypothesised model.

Table 7 Significant relationship between SQ Dimensions and Customer Satisfaction (CS)

<table>
<thead>
<tr>
<th>Dependent</th>
<th>Independent</th>
<th>Estimate</th>
<th>(S.E.)</th>
<th>(C.R.)</th>
<th>(P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfaction</td>
<td>--- Tangible</td>
<td>-.142</td>
<td>.102</td>
<td>-1.402</td>
<td>.161</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>--- Reliability</td>
<td>.055</td>
<td>.024</td>
<td>2.319</td>
<td>.020</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>--- Responsiveness</td>
<td>.300</td>
<td>.031</td>
<td>9.565</td>
<td>***</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>--- Assurance</td>
<td>.517</td>
<td>.057</td>
<td>9.050</td>
<td>***</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>--- Empathy</td>
<td>.374</td>
<td>.037</td>
<td>9.989</td>
<td>***</td>
</tr>
</tbody>
</table>

The above table indicates the relationship between service quality domains thus; responsiveness (C.R = 9.565, 0.300), empathy (C.R = 9.989, 0.374), reliability (C.R= 2.319, 0.055), and assurance (C.R= 9.050, 0.517) positively and statistically significant with customer satisfaction. Moreover, tangible had a negative and statistically insignificant (p < 0.05) influence on students satisfaction (C.R = -1.402, -0.142). Therefore, the hypothesised relationship between service quality dimensions and students satisfaction is partially supported through responsiveness, empathy, reliability and assurance aspects of higher education.
Moreover, the construct tangible ($t = -1.402, -0.142$) had a negative insignificant relationship with universities competitiveness. The findings supported hypotheses H2, H3, H4, and H5 respectively. Therefore, it is concluded that in public higher education environments, perceived students service quality is supported through responsiveness, empathy, reliability and assurance. This also indicates that (SQ) has a significant connection with customer satisfaction. Students perceived (SQ) major determinants had a positive and statistically significant influence on their satisfaction. Therefore, hypotheses H2, H3, H4 and H5 are also partially supported. Only the dimension tangible in the path coefficient indicates negatively insignificant influence on customer satisfaction. It is concluded that hypothesised relationship between tangible and customer satisfaction is not supported with respect to Khyber Pakhtunkhwa’s public HEI.

**Discussion:**

This study examines the association between the (SQ) dimensions and students satisfaction. As such it employed a quantitative approach (Saunders et al., 2009). Previous researchers exploring (SQ) in higher education industry in Zambia (Mwiya et al., 2017), in Jordan (Twaissi & Al-Kilani, 2015), and Colombia (Cardona & Bravo, 2012) have used a similar approach. The results of this study suggests that perceived empathy, responsiveness, reliability and assurance each dimension significantly affect overall customer satisfaction in public sector universities in Khyber Pakhtunkhwa (Pakistan). Based on the comprehensive path analysis model, the main predictor of students’ satisfaction is perceived empathy.

The conclusions from this study have supported the model and the hypothesised relationship. It means higher the perceived level of (SQ) in responsiveness, assurance, reliability and empathy to student’s needs, the higher the level of students’ satisfaction. These results resonate with previous study of (Khan, Ahmed, & Nawaz, 2011), that a significant association was observed among dimensions (reliability, assurance, responsiveness and empathy) with students’ satisfaction while dimension tangible had an insignificant relationship with satisfaction in higher education sector. There is significantly negative gap is observed in the expectation and perception of the (SQ) of higher education students (Chopra, Chawla, & Sharma, 2014). According to Diab et al., (2016) assurance, empathy, tangibility and reliability were the most important dimensions of service quality that had positive influence on customer satisfaction. Truong et al., (2016) used regression analysis to determine the influential service quality dimensions that affect students satisfaction in private colleges in Vietnam. The research study found that
all the SERVQUAL dimensions impacted on students perceptions of service quality in turn effecting on satisfaction. Similarly in a study in Malaysian higher education institutions, it was determined that four service quality dimensions had a significant connection with (CS) and highly correlated with one another (Chui et al., 2016).

Responsiveness is an imperative dimension of (SQ) and had a significant association with overall service quality and customer satisfaction (Rasli et al., 2012; Rehman 2012; Ladhari et al. 2011). Assurance had a significant association with customer satisfaction (Siddiqi 2010; Lo et al., 2010). Empathy had a significant relationship with satisfaction (Rehman, 2012; Arasli, 2005). According to Kontic (2014) assurance was the most important dimensions of service quality in Serbian higher education industry. In addition, a study conducted in a university library services, responsiveness was considered one of the most important construct of service quality (McCle, 2012). Calvo-Porral et al, (2013) found tangible to be the most important dimension in Spanish research study, at a university of Technology (Green, 2014) and Nigerian Polytechnics institutes (Iro-Idoro et al., 2014). In addition, the dimension empathy rated low importance with the study findings of (Iro-Idoro et al., 2014), but in contrast rated highly in other studies (Green, 2014; Kontic 2014; Calvo-Porral et al, 2013).

Conclusion
Measuring the service quality based on customer perception is a complex job, however to some extent this study can get a slight understanding about the quality provided by the higher education institutions in Khyber Pakhtunkhwa, (Pakistan). The service quality concept has also been acknowledged by the universities and now concentrating and making efforts to achieve students’ satisfaction by providing of teaching and non-teaching services. From the point of view of the respondents the result of the research study shows that customer perception toward empathy, assurance, responsiveness and reliability dimension of service quality has the highest influence on customer (students) satisfaction. The result also depicts that customer expectation toward empathy dimension of service quality has the maximum effect on customer (students) satisfaction.

Limitations and Future research Suggestions:
There are few inherent limitations within the study that needed to be addressed: This study has conducted only in public sector universities in Khyber Pakhtunkhwa (Pakistan). As the sample of this study was obtain from students enrolled in management sciences within the public sector universities only. It would be beneficial for future research to extend this investigation and replicate the study to other departments and higher
education’s institutions. Due to small sample size the result of the study cannot be generalized. Though, a more comprehensive research study can be conducted by taking a large sample size and including all the public and private universities in Pakistan to develop a comprehensive service quality and students satisfaction model. In future, the research could be evaluated including other stakeholders reactions based on the conceptual model of this study.
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