

Revisiting SERVQUAL as a Formative Construct Using PLS-SEM Two-Stage Approach in Service Quality Research

Beenish Tariq¹, Hammad Najam², Nik Kamariah Nik Mat^{3*}, Thurasamy Ramayah^{4,5} and Waseem Hassan¹

¹*NUST Business School, National University of Sciences and Technology, Islamabad, 44000, Pakistan*

²*Independent Researcher, Islamabad, 44000, Pakistan*

³*School of Business Management, Universiti Utara Malaysia, Kedah, 06010, Malaysia*

⁴*School of Management, Universiti Sains Malaysia, Penang, 11800 Malaysia*

⁵*Faculty of Economics & Business, Universiti Malaysia Sarawak, Kuching, 94300 Malaysia*

ABSTRACT

The SERVQUAL instrument has been widely tested in marketing literature to measure service quality in various service settings including telecommunication. Most of these studies to date have treated SERVQUAL as a reflective scale. The existing literature challenges the model specification of many scales including SERVQUAL. However, the existing literature does not sufficiently address SERVQUAL as a formative construct to avoid the model misspecification using the two-stage approach via PLS-SEM. Moreover, the present study revisits the SERVQUAL scale as a formative construct in the telecommunication sector of Pakistan. This study used the mall intercept approach for data collection from the cellular consumers who visited the company-operated service centers in major cities of Pakistan. The study collected 392 responses with the help of personally administered questionnaires, recording a response rate of 65.3%. The results support the formative conceptualization of the SERVQUAL scale. In addition, the results support all the hypotheses providing empirical evidence of nomological validity for the SERVQUAL scale.

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E-mail addresses:

binish_sh@live.com (Beenish Tariq)

hammad.najam@gmail.com (Hammad Najam)

drnikuum@gmail.com (Nik Kamariah Nik Mat)

ramayah@usm.my (Thurasamy Ramayah)

waseem.hassan@nbs.nust.edu.pk (Waseem Hassan)

*Corresponding author

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INTRODUCTION

Service quality (SQ) has been studied extensively for the last two decades and researchers have studied its various aspects in different settings. SQ plays an important role in a firm's survival and success, providing a competitive advantage over competitors. Extant literature reveals that SQ plays an important role for the generation of customer satisfaction (CS), customer loyalty (CL) and, ultimately, improves profitability (Cronin et al., 2000; Gong & Yi, 2018; Kang & James, 2004; Lee, 2013; Makanyeza et al., 2017; Morgan & Govender, 2017; Ortega et al., 2017; Reichheld & Sasser Jr, 1989). Most of these research studies have been conducted to provide an instrument of SQ which is more reliable and recapitulate in different settings including service settings. Among all these efforts, the most prominent is the "SERVQUAL" instrument developed by Parasuraman et al. (1985, 1988) which was afterward refined by Parasuraman et al. (1998, 1991). This instrument comprises five dimensions which altogether make twenty-two items. It was initially tested in five different service sectors including telecommunication, credit card, banking, maintenance services, and title brokerage. Past studies considered SERVQUAL as a reflective construct. Hence, literature is dominated by the reflective operationalization of the SERVQUAL scale (Bruner & Hensel, 1993).

Recently, several papers have criticized the reflective operationalization of the SERVQUAL scale and support formative operationalization (Diamantopoulos

& Winklhofer, 2001; Rossiter, 2002). Though academic research has frequently lacked conceptualizing the constructs as formative to date, however, theoretical criticism has been raised for the appropriate conceptualization of constructs to avoid model misspecifications (Diamantopoulos & Winklhofer, 2001; Jarvis et al., 2003; Mackenzie et al., 2005).

This kind of lacking in literature causes model misspecification and deletion of important measures, hence affecting the practical and theoretical explanation of constructs in diverse settings. First-generation analysis techniques lack to address the model specification as formative or reflective; however, advanced latent variable score technique with the help of structural equation modeling (SEM) provides an opportunity to explore PSQ, CS, and CL by using the two-stage approach in PLS-SEM (Becker et al., 2012). Subsequently, this study sets out two research questions to be answered via empirical investigation, which are i) Does SERVQUAL have model misspecification where it has been operationalized as a reflective scale rather than a formative scale? ii) Does SERVQUAL as a formative scale have nomological validity?

To answer these research questions this study aims to study the methodological conceptualization of SERVQUAL as a second-order formative construct. In addition, it offers to test the nomological validity of SERVQUAL as a second-order formative construct by proposing the PSQ – CS – CL model for the service

sector i.e. telecommunication sector of a developing country (Pakistan). Before conducting a two-stage approach via PLS-SEM, a short discussion is warranted on the operationalization of SERVQUAL as a formative second-order construct which is given in the proceeding section.

SERVQUAL – Second-Order Formative Construct

Previous studies on PSQ have stressed that SERVQUAL is not only a prominent scale but also a widely used and accepted model, successfully operationalized in several satisfaction and loyalty studies (Khan, 2010; Lai et al., 2007; Rajeswari et al., 2017; Ren & Lam, 2016; Santouridis & Trivellas, 2010; Wong & Sohal, 2003). Parasuraman et al. (1985) suggested that PSQ was evaluated with the help of comparing the expectations and perception for the five service aspects/dimensions which included reliability, tangibles, responsiveness, assurance, and empathy.

Past literature reveals that most of the studies conceptualized PSQ as the reflective construct. However, more recently, some criticism has been raised for measuring the constructs as reflective; alternatively, they are proposed to be better measured by a formative approach (Diamantopoulos & Winklhofer, 2001; Jarvis et al., 2003; Rossiter, 2002). Likewise, Jarvis et al. (2003) illustrated the difference between “formative” and “reflective” models in a way that, in the formative models, items/dimensions were causing the construct while the opposite happened for reflective models.

Furthermore, the assessment criteria for the reflective measurement model are different from the criteria for the assessment of the formative measurement model (Jarvis et al., 2003). Based on these arguments, it is necessary to conduct future studies to explore the formative operationalization of PSQ instead of considering it a reflective construct. The formative conceptualization of PSQ is developed on the notion that it is a collective assessment that is built with the help of five dimensions. Moreover, a group of researchers have also supported this narrative and criticized the reflective measurement of PSQ in the following manner. For example, Rossiter (2002) emphasized the formative operationalization of PSQ in these words:

“An example of an attribute that can be a formed attribute is SERVICE QUALITY [. . .] If the experts decide that the target raters are likely to make this summative type of judgment, then SERVICE QUALITY is a formed attribute [. . .] SERVICE QUALITY is actually a second-order formed attribute in that its components (Reliability, Assurance) are reflective attributes. (Rossiter, 2002).”

Furthermore, recent literature on electronic service quality (ESQ) supports the formative measurement of SQ which operationalized it as a higher-order formative construct (Collier & Bienstock, 2006, 2009; Ladhari, 2009; Parasuraman et al., 2005). In addition, Parasuraman et al. (2005) had given a new scale of ESQ conceptualized as a formative construct and

suggested that it was more appropriate to treat SQ as a formative construct. Another study by Collier and Bienstock (2006) suggested that SQ did not evaluate reliability or assurance. Quite the contrary, it was reliability and assurance that helped to develop the perception and evaluation of SQ. In light of these valid arguments, there is a concern about the past results of PSQ where it has been operationalized as a reflective construct. However, empirical studies on the formative operationalization in the service setting is missing. To make an assessment of SERVQUAL as formative constructs empirically, apart from the subjective characteristics of the sub-dimensions given above (e.g. causality from sub-dimensions to the construct and absence of interchangeability), nomological validity needs to be established. A group of scholars suggested that to test the nomological validity of a variable as a formative construct, one can observe the results of hypothesized relationships (Diamantopoulos & Winklhofer, 2001; Henseler et al., 2009; Urbach & Ahlemann, 2010). If the hypothesized relationships act in a similar manner as hypothesized in past literature, the nomological validity has been established. These arguments suggest that SERVQUAL needs to be associated with some other variables from literature to access its nomological validity which will eventually empirically test the SERVQUAL as a formative construct. Based on these comprehensive arguments, this study proposed to study SERVQUAL as a second-order formative construct.

Furthermore, previous studies in services marketing have used the nomological net of CL to access the constructs (Anderson & Sullivan, 1993; Brady et al., 2005; Spreng & Mackoy, 1996), therefore using the theoretical rationale of Oliver (1999) this research proposed to analyze the direct and indirect impact of SQ on CL via CS (Anjum et al., 2013; Barcelos et al., 2015; Chang & Yeh, 2017; Hussain, 2016; Saleem et al., 2016). The direct and indirect relationships will provide an opportunity to empirically assess: does SQ (second-order formative construct) acts in the same way as it does act in past studies including the mediation effect of CS between SQ and CL apart from the direct impact of SQ on CS and CL. Hence, this study will provide an assessment of SERVQUAL as a formative construct as suggested by Jarvis et al. (2003) to avoid model misspecification for the SERVQUAL scale.

Hypotheses Development and Research Framework

The research framework is established with the help of extant literature on SERVQUAL, which is given in Figure 1. This framework includes PSQ as a second-order construct which caused to develop only three hypotheses as follow.

The literature on CL has indicated that PSQ is an important determinant of CL (Alnsour et al., 2014; Gong & Yi, 2018; Johnson & Sirikit, 2002; Premkumar & Rajan, 2017; Santouridis & Trivellas, 2010). According to Izogo and Ogba (2015) and Makanyeza et al. (2017), when the

customers perceived the SQ to be good they remained loyal with the firm. It implies that better SQ in the form of visually appealing tangibles and reliable, responsive, and empathetic employees develop assurance among consumers which leads toward CL. Hence it is hypothesized that

H1: PSQ has a positive effect on CL.

Extent literature reveals that PSQ plays an important role in keeping the customers satisfied (Hassan et al., 2012; Santouridis & Trivellas, 2010). Particularly in the service sector, PSQ helps to enhance CS (Pumim et al., 2017). Therefore we proposed that

H2: PSQ has a positive effect on CS.

Past literature is mature with enough evidence to conclude that CS is strongly related to CL (Dick & Basu, 1994; Ramamoorthy et al., 2018). Numerous studies have revealed the positive effects of CS on CL (Bloemer et al., 1999; Edward

et al., 2010; Morgan & Govender, 2017; Ortega et al., 2017; Oliver, 1999; Pumim et al., 2017). Satisfied customers tend to have higher CL (Bolton & Lemon, 1999). Hence it is hypothesized that

H3: CS has a positive effect on CL.

The past literature specifies that CS plays the role of a mediator between the relationship of PSQ and CL. This argument is supported by a group of researchers who found that CS plays a significant mediating role between the relationship of PSQ and CL (Han & Hwang, 2014; Makanyeza et al., 2017; Lai et al., 2009; Lee, 2013). Hence it is hypothesized that

H4: CS mediates the relationship between PSQ and CL.

Methodological Consideration

The current development in statistical techniques for analysis including PLS-SEM allows developing the parsimonious

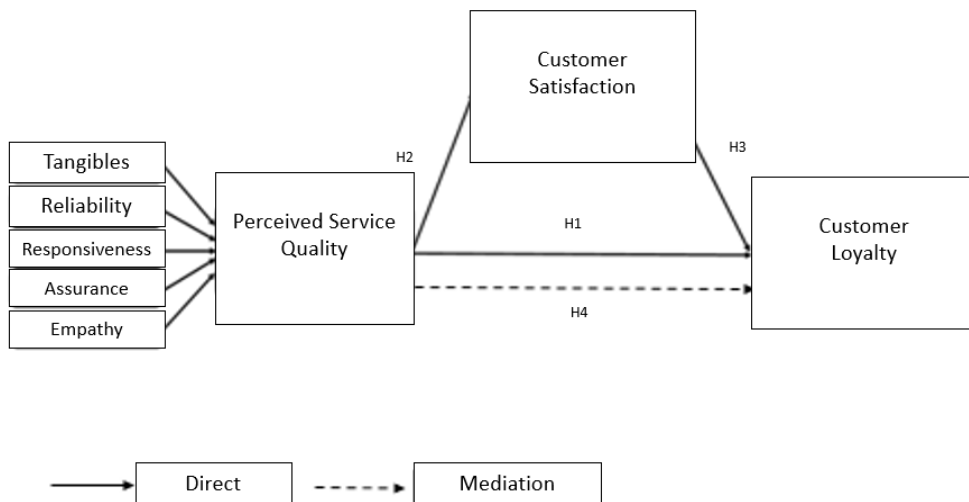


Figure 1. Research framework

predictive research models (Becker et al., 2012; Hair et al., 2011, 2016). In addition, PLS-SEM, as compared to variance-based SEM, provides flexibility for sample size, data normality, and the number of indicators, hence supporting theory development in various settings and contexts (Barroso et al., 2010). PLS-SEM has numerous ways to supplement CB-SEM, the most prominent of which is incorporating the formative items or constructs in one model with reflective constructs. Jarvis et al. (2003) suggested that it helps to address the model specification in many fields including marketing. Furthermore, Jarvis et al. (2003) with the help of a meta-analysis also reported that model misspecification was as high as thirty-two percent in the literature of marketing. Jarvis et al. (2003) further emphasized that various items/constructs which were supposed to be conceptualized formative were measured as reflective constructs.

This situation warrants further investigation and puts a question mark on the practical usefulness of past studies. Previously, in the absence of second-generation statistical analysis tools, researchers were unable to assess the underlying dimensionality of multiple dimensions, making it difficult to assess the higher-order constructs (HOC). Later on, the introduction of CB SEM helped the researchers analyze the constructs with multiple dimensions. However, CB SEM emphasizes dealing with constructs that are

reflective. Practically, there are some HOC which are formed of distinctive dimensions and have low correlation with each other. On the other hand, PLS-SEM provides an advantage by combining the reflective and formative higher-order constructs in one model (Becker et al., 2012).

Since SERVQUAL dimensions are distinct in nature considering five different elements of PSQ e.g. tangibles, reliability, responsiveness, assurance, and empathy, it is a second-order formative construct. While its dimension consists of the reflectively measured first-order constructs e.g. tangible consists of indicators: item tangible 2: My cellular service provider's physical facilities are visually appealing and items tangible 4: The appearance of the physical facilities of my cellular service provider is better than the competitors are highly correlated indicators hence projecting reflective nature of the construct. Similar is true for the rest of the dimensions of SERVQUAL. According to Hair et al. (2016), it is necessary to have a clear idea about model specification prior to analyzing the model to avoid Type one and Type two errors (Diamantopoulos & Winklhofer, 2001; Edwards & Bagozzi, 2000). Based on the recent literature, this study operationalized SERVQUAL as a reflective first-order and formative second-order construct. While CS and CL are considered as reflective first-order constructs.

RESEARCH METHODS

Keeping into consideration the research problem and objectives, the quantitative approach with a positive stance was adopted to explore the relationship between PSQ and CS with CL. This study gathered data with the help of the mall intercept approach. The mall intercept approach is a technique that is used in quantitative research to collect the data from the areas where people walk in. Hence the data was collected from the respondents who visited the company-operated service centers of Pakistan, considering the fact that consumers who visited the service centers of telecommunication operators can better judge the SQ of operators on five dimensions of SERVQUAL.

This study used a personally administered questionnaire-based survey for data collection. Moreover, seven points Likert scale was adopted for all items under study, where 1 being “strongly disagree” along with 7 being “strongly agree”. Since the model consists of both formative and reflective constructs hence CMV (common method variance) is not an issue (Hair et al., 2016).

Prior to finalizing the questionnaire, a pre-test was conducted with the help of 5 participants via debriefing method to reduce the potential issues in the wording of items and improvement of questionnaire design (Bazera, 1996). A total of six hundred questionnaires were distributed in capital cities of four provinces of Pakistan (Lahore,

Karachi, Peshawar, and Quetta) and 392 usable questionnaires were returned. Initially, the data was entered into SPSS for further analysis using Smart PLS 3.2.7. To analyze the HOC in the model, a two-stage approach in PLS-SEM was employed (Becker et al., 2012).

FINDINGS

Table 1 represents the demographic information of the participants which was sampled from the service centers of telecommunication operators of Pakistan. According to the results, the sample consisted of 55% males and 45% females. More than 80% of the participants belonged to the age range of 18-39 years. Furthermore, 40% of respondents had an intermediate education level followed by bachelor's, masters, and matriculation with 38%, 15%, and 7% respectively. In addition, more than 50% of respondents were job holders, 24% were self-employed, 16% were students and only 4% were housewives. Most of the respondents belonged to the income range of 15001-32000 PKR, followed by 22% who had an income range of PKR 15000 and below income. Subsequently, 12%, 10%, 9%, 5% and 3% had an income range of PKR 32001-49000, 49001-66000, 83001-100,000 and 100,001 and above respectively. This study recorded a response rate of 65.3% suggesting an appropriate administration of data collection within 2 months and non-response bias was not an issue (Nulty, 2008; Richardson, 2005).

Table 1
Descriptive findings of the demographic profile

Variable		Frequency	Percentage
Gender	Male	215	55%
	Female	177	45%
Age	18-28 years	204	52%
	29-39 years	131	33%
	40-49 years	42	11%
	50 years and above	15	4%
Education	Middle and Below	2	1%
	Matric	26	7%
	Intermediate	156	40%
	Bachelors	148	38%
	Masters	57	15%
	PhD	3	1%
Position	Student	63	16%
	Job Holder	218	56%
	Household wife	15	4%
	Self-employed	96	24%
Average Income	Below Rs. 15000	87	22%
	Rs. 15001- 32000	152	39%
	Rs. 32001- 49000	47	12%
	Rs. 49001-66000	40	10%
	Rs. 66001- 83000	20	5%
	Rs. 83001-100,000	36	9%
	Rs. 100,001 and above	10	3%

Assessment of Reflective Measurement Model

Table 2 illustrates the measurement model assessment of reflective constructs with the help of reliability, convergent validity, and discriminant validity. As demonstrated, the composite reliability (CR) values of

0.927 (Empathy), 0.904 (Tangibles), 0.931 (Responsiveness), 0.904 (Assurance), 0.937 (Reliability), 0.915 (CS), and 0.94 (CL) indicate that these constructs had internal consistency. Likewise, the convergent validity had been achieved after removing one item (CS4) from CS with low loading.

Table 2
Descriptive findings of variables

Constructs	Items	Loadings	AVE	CR
Tangibles	Tan1	0.825	0.702	0.904
	Tan2	0.820		
	Tan3	0.859		
	Tan4	0.846		
Reliability	Rel1	0.821	0.749	0.937
	Rel2	0.858		
	Rel3	0.875		
	Rel4	0.896		
	Rel5	0.876		
Responsiveness	Resp1	0.877	0.770	0.931
	Resp2	0.907		
	Resp3	0.837		
	Resp4	0.888		
Assurance	As1	0.863	0.703	0.904
	As2	0.820		
	As3	0.819		
	As4	0.849		
Empathy	Emp1	0.839	0.717	0.927
	Emp2	0.847		
	Emp3	0.880		
	Emp4	0.820		
	Emp5	0.848		
Customer Satisfaction	CS1	0.871	0.688	0.915
	CS2	0.914		
	CS3	0.897		
	CS4	Deleted		
	CS5	0.862		
Customer Loyalty	CL1	0.842	0.757	0.94
	CL2	0.897		
	CL3	0.907		
	CL4	0.883		
	CL5	0.817		

Lastly, the average variance extracted (AVE) for each construct was above 0.5 suggesting that each item loaded on its respective constructs and explained more than 50 percent of variance (Hair et al., 2013).

is measured utilizing the Fornell and Larcker (1981) criterion. Table 3 shows that discriminant validity has been established for all the constructs under study.

According to current literature, the discriminant validity of the constructs

Table 3
Average Variance Extracted (AVE)

Construct	1	2	3	4	5	6	7
1. Assurance	0.838						
2. Loyalty	0.722	0.870					
3. Satisfaction	0.677	0.795	0.830				
4. Empathy	0.835	0.733	0.691	0.847			
5. Reliability	0.758	0.752	0.747	0.75	0.865		
6. Responsiveness	0.781	0.751	0.733	0.772	0.825	0.878	
7. Tangibles	0.719	0.628	0.610	0.749	0.718	0.688	0.838

Note: The bold values represent the square root of Average Variance Extracted (AVE)

Assessment of Formative Measurement Model

Table 4 depicts the assessment of formative construct (PSQ) with its dimensions namely tangibles, reliability, responsiveness, assurance, and empathy. Table 4 demonstrates that VIF values for the dimensions of the formative construct (SERVQUAL) are below the threshold of five (Diamantopoulos

& Siguaw, 2006). It suggests that these dimensions are distinctive, and they measure different facets of PSQ. Subsequently, the outer weight significance is assessed with the help of the bootstrapping procedure by generating 5000 sub-samples (Hair et al., 2011). The results of the bootstrapping procedure (Table 4) demonstrate that all the dimensions are found to be significant and important for PSQ.

Table 4
Assessment of formative measurement model

Paths	Weights	S.E	t-value	p-value	VIF
Tangibles → PSQ	0.119	0.070	1.653	0.049	2.671
Reliability → PSQ	0.411	0.090	4.566	p< .001	3.799

Table 4 (Continued)

Paths	Weights	S.E	t-value	p-value	VIF
Responsiveness → PSQ	0.309	0.080	3.880	p< .001	3.983
Assurance →PSQ	0.121	0.072	1.674	0.047	4.086
Empathy → PSQ	0.250	0.083	3.015	0.001	4.217

Note: VIF= Variance Inflation Factor, PSQ= Perceived Service Quality

Assessment of Structural Model

Prior to assessing the structural model, multi-collinearity among the constructs was checked. Table 5 shows that VIF values for each construct under study are below 5 suggesting no collinearity (Hair et al., 2016). Table 5 also demonstrates the coefficients of paths hypothesized in the model using the bootstrapping procedure. All the hypothesized relationships are significant (H1: PSQ →CL, $\beta=0.482$, $t = 9.164$), (H2: PSQ →CS $\beta = 0.785$, $t = 28.308$), (H3: CS →CL, $\beta = 0.417$, $t = 7.401$). Consequently, all hypothesized relationships are supported.

Moreover, Table 5 also elaborates on the coefficient of determination (R^2), the effect size (f^2), and predictive relevance (Q^2) for the constructs under study. The R^2 value for CS is 0.616. This reveals that PSQ explains 61.6% of variances in CS. Similarly, the R^2

value for CL is 0.720, suggesting that PSQ and CS explain 72% of CL. The Q^2 value of 0.539 for CS supports that PSQ possesses the predictive capacity for CS (Hair et al., 2013). Similarly, the Q^2 value of 0.631 for CL suggests that both PSQ and CS possess predictive capacity over CL. The results also reveal that PSQ ($f^2 = 0.318$) and CS ($f^2 = 0.238$) have a medium effect on CL. This indicates that both PSQ and CS are important in explaining and predicting CL. Moreover, PSQ ($f^2 = 1.605$) has a large effect on CS.

Table 6 describes the mediating effect of CS between the relationship of PSQ and CL. The results suggest that CS is a significant mediator between the relationship of PSQ and CL. Therefore, supporting H4 (PSQ→CS→CL, $\beta= 0.141$, $t=4.436$).

Table 5

Direct relationship hypothesis testing

Construct	B	SE	t-value	LLCI	ULCI	VIF	R^2	f^2	Q^2
H1: PSQ → CL	0.482	0.053	9.164	0.384	0.553	2.605	0.720	0.318 (medium)	0.631
H2: PSQ → CS	0.785	0.028	28.308	0.730	0.823	1.00	0.616	1.605 (Large)	0.539
H3: CS → CL	0.417	0.056	7.401	0.338	0.514	2.605		0.238 (medium)	

Table 6

Hypothesis testing of the mediating effect

Hypothesis	Path	B	SE	t-value	LLCI	ULCI
H4	PSQ→CS→CL	0.141	0.032	4.436	0.085	0.210

DISCUSSION

This study has successfully addressed both of the research questions. The first research question refers to the model misspecification of SERVQUAL as a reflective construct. The results of the formative measurement model (Table 4) reveal that SERVQUAL is better operationalized as the formative construct compared to a reflective construct. All the sub-dimensions maintain sufficient outer weights to explain the SERVQUAL construct. A group of researchers suggested that the use of outer loadings instead of outer weights for formative constructs could be misleading (Chin, 1998; Nunnally, 1994). Past literature is evident about this fact where the sub-dimensions are omitted due to reflective measurement model assessment criteria. For example, a study conducted by Dlačić et al. (2014) operationalized SERVQUAL as a reflective reflective second-order construct and combined responsiveness and reliability into one dimension and split tangibles into two sub-dimensions to meet the measurement model assessment criteria. Subsequently, Hassan et al. (2012) studied SQ and omitted responsiveness and reliability from the measurement model. Similarly, another study conducted by Wang et al. (2004) modified the SERVQUAL model by adding a variable. According to Jarvis et

al. (2003), the changes in sub-dimensions or indicators of the formative construct are not acceptable hence the above amendments while treating the SERVQUAL as a second-order reflective reflective scale can cause model misspecification. Therefore, by operationalizing SERVQUAL as a reflective formative second-order construct, this study dealt with one of the major model misspecification issues in SQ literature.

The second objective of this study was to access the nomological validity of the SERVQUAL scale as a second-order formative scale, whereby the results of the proposed hypotheses were found to be significant to support the nomological validity of the SERVQUAL scale. The results of each hypothesis are discussed in the given section.

H1: We proposed a positive relationship between PSQ and CL, and the findings indeed support the relationship. These findings are also consistent with the previous literature on PSQ and CL (Makanyeza et al., 2017). This implies that the higher the PSQ the higher the CL will be. It elaborates that those telecommunication service providers which focus on tangibles, offer reliable services, and have responsive employees perform their tasks properly while showing empathy to their consumers, have higher chances of maintaining loyal consumers.

Another reason for the importance of SQ in the telecommunication sector of Pakistan is highlighted by Jahanzeb et al. (2011) that this sector of Pakistan is facing fierce competition and that price reduction is an imitable strategy which is losing significances for developing loyalty among the consumers in Pakistan. In this era of globalization, consumers are well aware of their rights, as such, it is better SQ that leads towards CL. Moreover, the Pakistan Telecommunication Authority (PTA) conducts quality of services survey every year in major cities of Pakistan to ensure the provision of quality services to the telecommunication services' consumers (PTA, 2016). This implies that maintaining SQ is a very important element for the telecommunication sector of Pakistan. Hence, it can be inferred that consumers' perception of being the recipient of better SQ leads toward higher chances of being loyal to the telecommunication service providers (Nasir et al., 2014).

H2: The second hypothesis looked at the relationship between PSQ and satisfaction, and the findings support the proposed positive relationship. It suggests that consumers' perception toward being the recipient of better SQ enhances their satisfaction level. It further suggests that as long as the telecommunication service providers in Pakistan provide up to date tangible facilities to attend the consumer's needs and have responsive and reliable employees who assure them to perform their tasks with empathy, they will have consumers who have higher CS. Additionally, Rashid

et al. (2016) demonstrated that when telecommunication consumers' perception regarding SQ was well achieved, there was a higher chance that the consumers would have high customer satisfaction for their telecommunication service provider. So, it is very important for telecommunication service providers in the cellular service sector of Pakistan to please their customers through the best quality of services. In addition, these findings are also coherent with the past literature on the relationship between PSQ and CS (Gong & Yi, 2018; Pumim et al., 2017; Ramamoorthy et al., 2018).

H3: The third hypothesis investigated the relationship between satisfaction and loyalty. This relationship was also positive and significant. It implies that satisfied customers are more likely to be loyal to the telecommunication service provider and its services. It further elaborates that consumers who are happy and feel content with their choice of telecommunication service provider are more likely to be loyal to their service provider. This finding shows that if the consumers are satisfied, they will buy more services from their telecommunication service provider and will provide positive referrals to family and friends. Furthermore, this empirical result is mirrored with the previous researches in the telecommunication sector of Pakistan which describe the CS as a significant positive determinant of loyalty in the telecommunication sector (Sindhu & Arif, 2017; Ahmad et al., 2015; Nasir et al., 2014; Raza & Rehman, 2012).

H4: The fourth hypothesis studied the mediating role of CS between the relationship of PSQ and CL. The results indicated that CS is a significant mediator between PSQ and CL. The findings suggest that CL can be generated by improving CS by offering high quality and reliable service. High-quality services can be provided by the support staff of the company that have the required knowledge to answer customer questions. They should understand specific customers' needs, be able to handle problems that arise, and entertain customers' complaints or inquiries in a friendly manner. These quality-oriented strategies help improve customers' happiness and satisfaction hence leading to promote loyalty in Pakistani telecommunication customers. This empirical result is also consistent with the past studies conducted by Chang and Yeh (2017), Deng et al. (2010), Han and Hwang (2014), as well as Lee (2013).

CONCLUSION AND RECOMMENDATIONS

The results of this study provide support to address the two research questions given at the beginning of this study. According to the assessment of formative measurement model statistics, the SERVQUAL scale is better operationalized as a formative construct because all of its dimensions remain part of the construct (Refer to Table 4). However, the past literature depicts that when SERVQUAL is considered as a reflective construct, some of its dimensions are omitted to meet the reflective measurement model assessment criteria.

This happens due to the misspecification of SERVQUAL as a reflective construct rather than formative. In addition, the results of this study support the nomological validity of the SERVQUAL model as formative whereby all the hypotheses are supported by empirical data.

Based on the findings, several suggestions are made as follows:

1. Future researchers can use this instrument as a second-order formative measurement. The interpretation of the weights indicates that reliability followed by responsiveness and empathy are important drivers of SQ assessment by the customers. Firms should focus on enhancing the delivery of these three key quality dimensions to increase SQ perception of customers.
2. SQ has a positive relationship with CS thus the findings indicate that for firms to keep their customers satisfied they should endeavor to improve their SQ delivery.
3. SQ also has a positive relationship with loyalty which shows that if the SQ is maintained or improved then customers will be loyal to the firm.
4. CS is also positively related to loyalty thus confirming that satisfied customers will remain loyal. Firms should focus on performing services to the best possibility so that the customers feel satisfied and remain loyal to them.

5. The mediating effect of CS between the relationship of PSQ and CL highlights the importance of CS to achieve CL. The firms, while developing marketing strategies to improve CL, should consider the happiness and satisfaction of customers along with maintaining the quality of services in order to keep them loyal.

This study has a certain limitation, as it includes SERVQUAL as second-order formative construct using a two-stage approach. Further studies can be conducted to compare two models considering SERVQUAL as a reflective and formative construct to compare the empirical findings of two models (Model A and Model B) using two-stage approach versus repeated indicator or mixed (hybrid) approach as suggested by Becker et al. (2012).

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