

Determinants of Customer Satisfaction of Fixed-Line Telecom Services In Pakistan: An Empirical Study

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ABSTRACT

The usage of fixed-line telecom services is decreasing with time. It is necessary to find out what are the primary reasons behind this. Service providers are thought to ignore client needs. It takes time to determine customer satisfaction factors. This study examines the primary factors influencing customer satisfaction with fixed-line telecom services. A hypothetical model with customer satisfaction as the dependent variable, responsiveness, perceived value, perceived service quality, and staff attitude as independent variables is provided to meet study goals. Pakistani fixed-line telecom consumers were surveyed online using a five-point Likert scale to test the hypothetical study model. Snowball sampling yielded 198 valid replies for analysis. SPSS 23.0 and AMOS 23.0 are statistical data analysis tools used. Data validated all four hypotheses. Perceived Service Quality, followed by Responsiveness, is the most significant predictor of Customer Satisfaction. The dependent variable has a 68.5% variance. All independent variables Responsiveness, Value, Service Quality, and Staff Attitude explain customer satisfaction. Based on hypothetical relationships, customers are satisfied if service providers give high-quality service and respond quickly. This research offers academic, theoretical, and methodological contributions and practical consequences for fixed-line telecom service providers to focus on and shape their future strategies, improve service provision, and retain customers

Keywords: Fixed line telecom services; Customer Satisfaction Model; Pakistan.

I. INTRODUCTION

The adoption of Fixed-line telecom services is decreasing with the passage of time [1,2] argued that one of the important factors behind this is customer dissatisfaction with the provision of services. As of 2022, the Ministry of Information Technology and Telecommunication (MoITT) says that there are about 3 million people using fixed-line phone services. In the same way, Pakistan Telecommunication Authority [3] claims that the number of fixed-line telecom users is decreasing day by day as compared to wireless users, and the survival of fixed-line telecom operators is at stake.

The survival of telecom service providers under such turbulent conditions demands reform both in terms of service as well as quality. Over the past few years, mobile telecom services have been optimized to provide the same services that were traditionally provided through wired networks. Retaining customer base and maintaining customer loyalty have always been big challenges for fixed-line telecommunication service providers [4, 26]. On the contrary, the increasing competition among fixed-line telecom service providers is also resulting in significant tariff reduction.

Retaining the existing customer base and attracting new users is a challenge for fixed-line telecommunication service providers in Pakistan. Although large-scale investment has been made to address network issues and satisfy customers, the number of users of fixed-line telecom services is decreasing, with disappointing figures. Consequently, it is essential to ascertain the factors that genuinely satisfy customers, enabling fixed-line telecom service providers to retain existing clientele and acquire new ones. The objective of this study is to achieve the aims of the subject [27].

- To propose a research Model for determining the factors that contribute to the satisfaction of Pakistani consumers with fixed-line telecommunications services.
- To empirically validate and test the proposed research model.
- To provide valuable suggestions to fixed-line telecom services providers based on the findings of research.

II. RESEARCH MODEL AND HYPOTHESES

According to the research of Peng, Leong, and colleagues [5, 28], customers are

inclined to those service providers who are willing to provide high-quality services and products to their clients within their budget. To understand this philosophy, many researchers [6, 7, 8, 2] have tried to empirically identify major factors of customer satisfaction and their relationship with service quality under different contextual settings. These types of research studies have mostly been conducted in advanced economies like Japan, the US and the UK. However, no equivalent research has been conducted in Pakistan. After an extensive literature survey, no such exploration study has been found to analyze the factors of fixed-line telecom services' customer satisfaction.

The purpose of this research is to verify the associations between the following factors influencing customer satisfaction with fixed-line telecom services in Pakistan: responsiveness, perceived value, perceived service quality, and staff attitude. The proposed research framework in Figure 1 shows hypothesized relationships among factors of customer satisfaction in the context of fixed-line telecom services. The proposed hypotheses are:

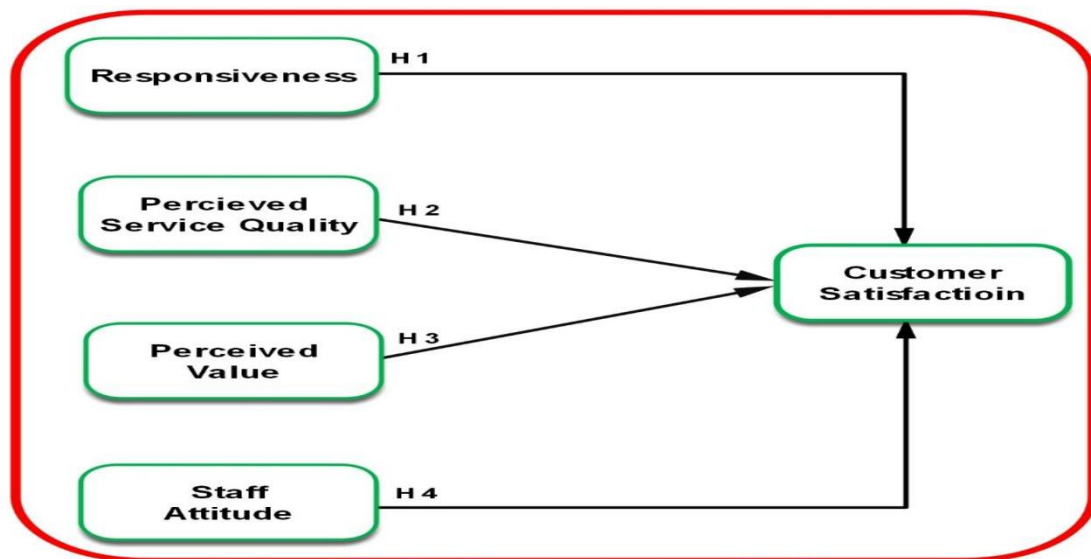


Figure 1 Proposed Research Model

H₁. Responsiveness has a positive impact on customer satisfaction.

H₂: Perceived service quality has a positive effect on customer satisfaction.

H₃: Perceived Value has a significant positive effect on customer satisfaction.

H₄: Staff attitude has positive effect on customer Satisfaction.

1. Past Models

Consumer satisfaction is how a consumer feels about the quality and usefulness of a product or service. It is a basic rule of customer service. For the survival of any business, if it is in the middle of a crisis or resulting from a decline in customer base, it is important to understand customer satisfaction theories. Also, [9] says that knowing how satisfied customers are is incredibly beneficial for organizations in figuring out how well they can meet their customers' demands and expectations. [10] argued that being able to identify significant factors of customer satisfaction becomes crucial for surviving in today's competitive market. Spreng and Mackey [11, 29] People who tested the Performance Model said that how well a service or product works has a positive effect on how happy customers are. They also said that there is a strong link between the quality of a service and the amount the consumer thinks they paid for it. Oliver [12] found that both quality and non-quality factors affect customer satisfaction in his model. One of the most important things that leads to client satisfaction is how good they think the service is.

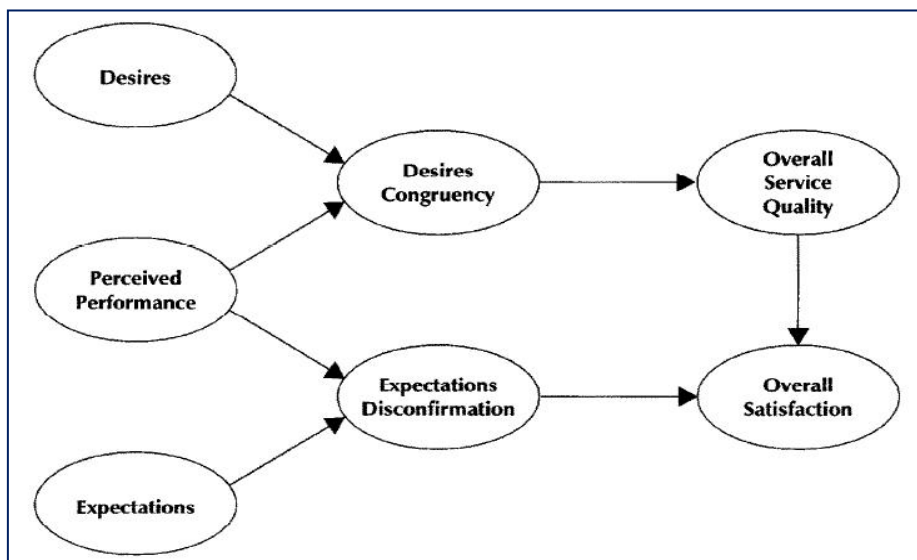


Figure 2. Customer Satisfaction Model (source [12])

Hokanson [13, 30], gave his famous model of customer satisfaction. In his model, he identified many independent factors impacting the overall customer satisfaction. subsequently says that some of the most important things that make customers happy are having knowledgeable, helpful, friendly, and polite employees, timely billing, good value, clear billing, accurate billing, competitive pricing, and quick

service.

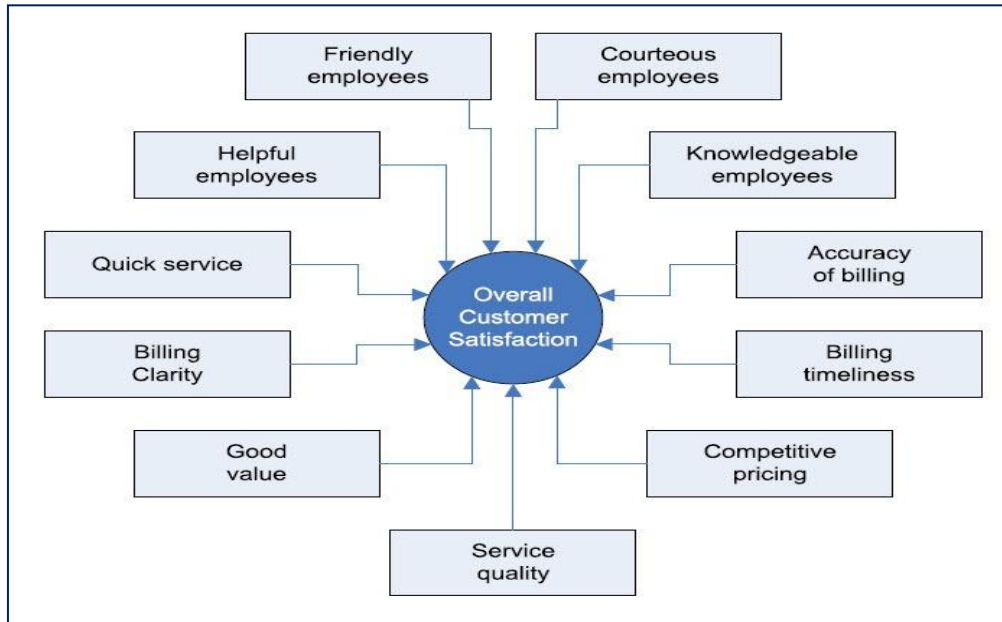


Figure 3. Hokanson's Model For Satisfied Customers [13]

Parasuraman came out with, yet another service quality model called SERVQUAL [14, 31]. The authors said that this approach measures and groups five aspects of service quality: assurance, reliability, empathy, tangibles, and responsiveness. The authors think that all of these aspects affect customer happiness, but they stressed that high-quality service is the most important component for gaining a competitive edge in the service sector. Also, how satisfied customers are with the service depends on how they see the quality of the service and how much they trust the service provider.

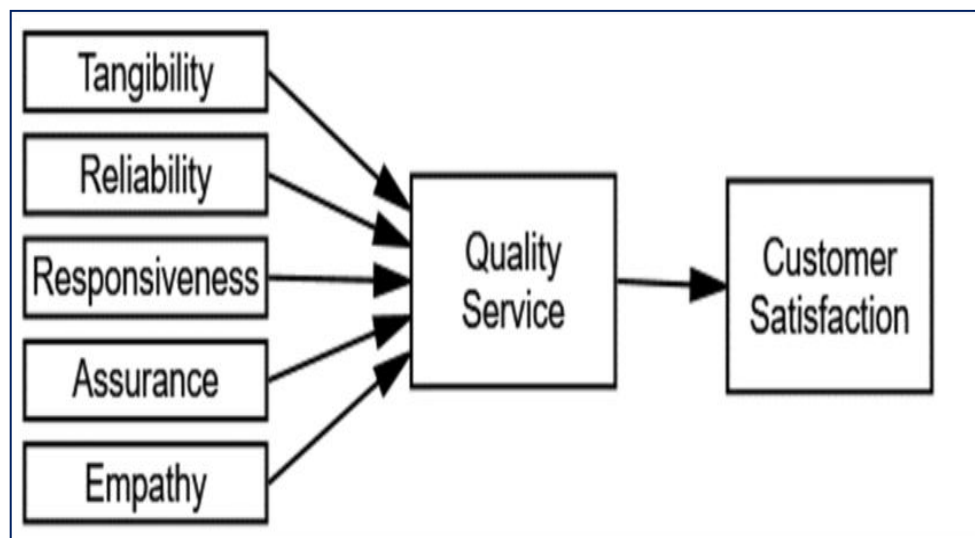


Figure 4. Servqual Model By Parasuraman (Source: [14])

2. Past Research Studies

Since the establishment of core satisfaction models, the telecommunications sector has seen considerable transformation. While the core tenets of service quality and value remain relevant, consumer expectations and satisfaction determinants have grown increasingly intricate in the digital era.

The expansion of Over-The-Top (OTT) services presents both a difficulty and an opportunity for fixed-line operators. Gupta and Jain [18] state that telecom subscribers increasingly perceive their fixed-line broadband as an ecosystem enabler for over-the-top (OTT) apps, rather than simply a utility. Network performance for OTT is a vital, modern factor in perceived service quality, since user pleasure increasingly relies on the network's ability to handle these third-party services.

Simply meeting expectations is insufficient in this very competitive landscape. Chen and Lin [19] claim that customer involvement, driven by individualized communication, co-creation initiatives, and an interactive social media presence, exerts a more significant mediating influence on loyalty and service quality than satisfaction alone. This indicates that engagement should be incorporated as a vital outcome variable in traditional satisfaction models.

Moreover, the idea of value has changed from just price-quality trade-offs. Kumar and Kumari [20] found that perceived digital value, which includes things like data privacy, self-service app functionality, and the ease of making digital

payments, is a major factor in customer satisfaction for post-paid broadband users in emerging markets. This is often more important than traditional price perceptions. The COVID-19 pandemic served as a catalyst, permanently altering usage patterns and expectations. According to a study by Shin and Lee [21, 32], service reliability and bandwidth stability became the most important factors for satisfaction during times of mass remote work and learning. This shows that people are now more interested in performance-based satisfaction than cost-based satisfaction.

To keep customers, providers are also using technology-based barriers to switch. [22] showed that high perceived switching costs, especially the hassle of ending a contract, the difficulty of switching providers, and the loss of loyalty benefits, can make people less likely to switch even if they are only moderately satisfied. This adds an important part to plans for keeping customers.

Brand perception is also very important in the digital age. According to a study by Naidu and Singh [23], a company's reputation, which is based on handling data ethically, being socially responsible, and being open about what they do, greatly increases customer trust. This, in turn, strengthens the link between satisfaction and loyalty.

Park and Kim [24, 33] found that technical service quality (network coverage, upload/download speed, latency) and customer service quality (responsiveness of support, first-call resolution) are the two main dimensions of service quality. They said that technical quality is a "hygiene factor" and customer service is a key differentiator.

Finally, the integration of services is a major trend. Wang [25] discovered that service convergence (such as bundling fixed-line, mobile, and TV services) markedly increases perceived value and customer retention by establishing a more comprehensive and cohesive ecosystem, thereby complicating customers' transition to competitors that provide standalone services.

III. METHODOLOGY

The methodology adopted for this research is a quantitative approach with a five-point Likert scale using a survey questionnaire method. The survey instrument was pre-tested with the help of Ph.D. faculty members available in Sindh Madressatul Islam University to check if the format, content, and style were easy to understand

by respondents. Considering the nature of the survey and the fixed-line telecom service user pattern, the most feasible sampling approach was Snowball Sampling. Therefore, the researcher opted for this approach and collected data from respondents living in Karachi city. A self-administered survey was conducted, and the questionnaire link was shared with identified fixed-line telecom service users in Karachi. The researcher used Statistical Package for Social Sciences (SPSS) software version 23.0 to look at the answers they got in different ways. IBM's Analysis of Moment Structures (AMOS) software version 23.0 has also been used to analyze both real and hypothetical relationships between dependent and independent variables.

IV. DATA ANALYSIS AND RESULTS

In order to interpret the quantitative data acquired from the respondents, researchers in this study initially performed data screening to identify missing values, outliers, and their treatment. In the second stage, a discussion about the results of the demographic data is provided. Followed by this, researchers demonstrate how Structural Equation Modeling (SEM), including the Measurement Model, is performed using different tests. In the end, details about the testing of the hypothesized research model using the Structural Model are provided. Missing values and outliers are crucial during preliminary data screening. The researcher identified missing values utilizing Missing Value Analysis (MVA) with Estimate Maximization (EM) to screen data. Mahalanobis distance (D^2) multivariate outlier detection was used to discover outliers.

1. Demographical Data Analysis

Table 1 demonstrates demographic information of respondents. It indicates that out of 198 valid responses, 184 were male and 14 were female. A great interest in surveys was shown by the respondents falling in the age of 21-30 and 31-40 years. With a response rate of 54 and 94, respectively. Results indicate that out of all 198 responses, most of the respondents, i.e; 120, have bachelor's degrees, followed by those who have high school degrees. Results show that both public and private sector employees participated in numbers 65 and 68, respectively. Those who have their income more than Rs. 100,000 were 67.

Table 1: Demographical Results

Demographic Information of Respondent		
Variable	Category	No of response (n=198) Frequency
Gender	Male	184
	Female	14
	<20	1
Age	21–30	54
	31–40	94
	41–50	38
	51–60	11
	>60	0
Education	Less than high school	5
	High school	46
	Diploma	9
	Bachelor	120
	Postgraduate	18
Occupation	Student	8
	Government employee	65
	Private sector	68
	Businessperson	53
	Other	4
Income (rupees)	<20,000 Rs	5
	21,000–40,000 Rs	10
	41,000–60,000 Rs	25
	61,000–80,000 Rs	35
	81,000–100,000 Rs	56
	>100,000 Rs	67

2. Exploratory Factor Analysis

reliability and discover the factor structure of measured items in the proposed hypothetical model researcher performed Exploratory factor analysis (EFA). This analysis was done with the help of SPSS version 23.0. In EFA, researcher checked the Loadings of measured items on latent factors, which is shown below table 2.

Table 2. Rotated Pattern Matrix (Factor Loading)

	Component
	CS RES PSQ PV SA
CSI1	.605
CSI2	.529
CSI3	.516

CSI4	.512	
RES1	.766	
RES2	.779	
RES3	.769	
RES4	.754	
RES5	.776	
PSQ1		.754
PSQ2		.728
PSQ3		.712
PSQ4		.731
PSQ5		.784
PSQ6		.764
PV1		.736
PV2		.692
PV3		.776
PV4		.698
SA1		.739
SA2		.803
SA3		.733
SA4		.784

Rotation converged in 8 iterations, Rotation Method: Varimax with Kaiser

The factor loading table shows that measured items have a high loading on their constructions. According to [15, 16], factor loading values should be above the recommended limit of 0.4. Analysis of EFA of each item as shown in table 4.2 indicate that factor loading is above recommended values and is ranging from 0.512 to 0.803.

3. Structural Equation Modeling

To assess the collected data for the suggested model, the researchers used AMOS's Structural Equation Modelling (SEM) approach. The use of structural equation modelling (SEM) approaches is highly beneficial for investigating the interdependence of both independent and dependent variables all at once [15]. Additionally, to examine complex hypothetical models, this tool offers a rigorous statistical procedure. After checking the data for missing values, normality problems, and outliers, the Confirmatory Factor Analysis method in SEM was used to check the validity and reliability of each measurement item. This technique helped to evaluate the proposed model comprising of 5 variables including: Responsiveness, Perceived Value, Perceived Service Quality, Staff Attitude, and their effect on the

overall Customer Satisfaction. In total, the model was tested using 23 items.

4. Measurement Model

Typically, the measurement model is employed to assess the model's goodness-of-fit. The good-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the root mean square error of approximation (RMSEA), the norm fit index (NFI), the Tucker-Lewis Index (TLI), and the comparative fit index (CFI) are all part of this group. The results of measurement model all values validity indices of model fit are in accepted cut-off-values ($\chi^2/df = 1.718$, CFI = .941, NFI = .891, TLI = .934, GFI = 0.931, RMSEA = 0.49, and AGFI = .838, [15, 16] suggest that to test the discriminant and convergent validity of all the constructs, the measurement model is very helpful. While testing factors based simultaneously in CFA, it was found that all items had values greater than .5, which is acceptable and significant. Moreover, while testing one-dimensionality, internal consistency, and reliability in each construct, the Cronbach's alpha results were satisfactory. The values of scale-wide Cronbach alpha were found between 0.785 to 0.926, and all are above the threshold limit of 0.70. (see Table 3).

Table 3. Note: Threshold Limits (Cronbach's $\alpha \geq .7$, Factor Loading $\geq .5$)

Variables, factor loading, reliability, and validity values			
Construct	Item code	Factor Loading	Cronbach's α
Customer Satisfaction (CS)	CS1	.824	.910
	CS2	.857	
	CS3	.868	
	CS4	.839	
Responsiveness (RES)	RES1	.738	.926
	RES2	.695	
	RES3	.837	
	RES5	.847	
Perceived Service Quality (PSQ)	PSQ1	.854	.785
	PSQ2	.863	
	PSQ3	.766	
	PSQ4	.743	
Perceived Value (PV)	PSQ5	.745	.833
	PSQ6	.711	
	PV1	.871	
	PV2	.831	
	FV3	.952	
	FPV4	.588	

Staff Attitude (SA)	SA1	.632	.808
	SA2	.702	
	SA3	.761	
	SA4	.772	

The internal reliability and convergent validity were tested with the help of composite reliability, extraction, and average variance respectively. Since Cronbach's alpha values can underestimate reliability [15], the composite reliability (CR) technique was employed by the researcher to further assess reliability.

In the measurement model, the values of CR of all the variable found ≥ 0.7 . Moreover, values of AVE were also observed ≥ 0.5 , which are above the threshold limit [15]. Therefore, the results of the overall measurement model found satisfactory values of reliability and convergent validity. In line with this thinking of [17], discriminant validity can be inspected by contrasting the squared relationships between constructs and variance extracted As shown in Table 4 values and satisfy the recommended conditions [17]

Table 4: Discriminant & Convergent Validity, and Correlation Matrix

Discriminant & Convergent Validity, and Correlation Matrix							
	CR	AVE	SA	RES	PSQ	PV	CS
SA	0.710	0.521	0.719				
RES	0.811	0.631	0.015	0.782			
PSQ	0.728	0.532	0.302	0.223	0.749		
PV	0.763	0.610	0.298	0.118	0.318	0.788	
CS	0.901	0.707	0.180	0.303	0.066	0.096	0.847

Notes: $n=198$. AVE (average variance extracted); CR (composite reliability); Values indicating square roots of AVEs are listed diagonally in the matrix. $AVE \geq .5$, $CR \geq .7$)

5. Hypothesized Structural Model

The results of structural coefficients, t-values, and hypothetical relationships are shown in Table 4.6. These values indicate that all four proposed hypotheses, i.e., H1, H2, H3, and H4, were supported by the data. Similarly, among supported hypotheses, H1 and H2 were found highly significant (i.e., p-values < 0.001), while hypotheses H3 and H4 were found significant (i.e., p-values < 0.01). Moreover, the path between PSQ and CS (β value .445, t value 8.750) was found to have the highest positive significant coefficient value. Whereas the path between PV and CS (β value .269, t value 4.429) was found to have the least positive significant coefficient value. Figure

4.1 demonstrates coefficients of determination (R^2) showing how well a statistical model predicts an outcome, t-values, and the standardized path coefficients (β values).

Table 5 Hypothetical Results

Report of Hypotheses Testing

Constructs	Code	Hypothesis	Hypothetical Relationships	Structural Coefficients	CR (t-Value)	Results
Responsiveness	RES	H1	RES→CS	.442***	7.370	Supported
Perceived Service Quality	PSQ	H2	PSQ→CS	.445***	8.750	Supported
Perceived Value	PV	H3	PV→CS	.269**	4.429	Supported
Staff Attitude	SA	H4	SA→CS	.309**	5.973	Supported

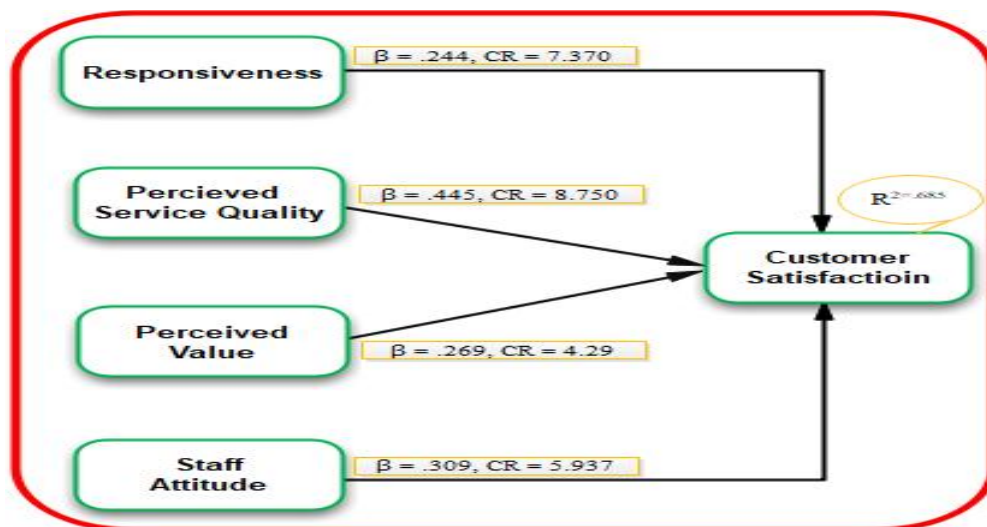


Figure 5. Final Hypothetical Model

Figure 5 above illustrates the final hypothetical model, which shows the SEM relationships between the selected constructs. The detailed relation of each construct is discussed as follows.

Responsiveness and Customer Satisfaction: Responsiveness has a direct positive effect on Customer Satisfaction ($B = 0.244$, $CR = 7.370$). The beta coefficient (B) value of 0.244 shows that there is a positive direct effect and that higher responsiveness results in greater customer satisfaction. The critical ratio (CR) value

of 7.370, which is much greater than the standard cut-off point of 1.96, shows that this relationship is statistically significant.

Perceived Service Quality and Customer Satisfaction: Perceived Service Quality has a strong and positive effect on Customer Satisfaction ($B = 0.445$, $CR = 8.750$). This has the highest direct effect on the model, indicating that the perception of service quality by customers is a key source of satisfaction. The high CR also verifies the statistical significance of this association.

Perceived Value and Customer Satisfaction: Perceived Value also has a positive impact on Customer Satisfaction ($B = 0.269$, $CR = 4.29$). This shows that as customers perceive higher value in the product or service, their satisfaction will rise. The CR value verifies the statistical significance of this path.

Staff Attitude and Customer Satisfaction: Staff Attitude has a positive impact on Customer Satisfaction ($B = 0.309$, $CR = 5.937$). This indicates that staff attitude is positively related to customer satisfaction, and the association is statistically significant, which is evident from the CR value.

Overall Model Fit (R^2): R^2 value ($R^2 = 0.685$) shows that the model, comprised of Responsiveness, Perceived Service Quality, Perceived Value, and Staff Attitude, accounts for 68.5% of the variance in Customer Satisfaction. This reflects the high explanatory power of the model to customer satisfaction. In summary, the model suggests that Perceived Service Quality is the most influential factor, followed by Staff Attitude, Perceived Value, and Responsiveness, all significantly contributing to Customer Satisfaction.

V. CONCLUSION

This research study empirically examined the factors of customer satisfaction among fixed-line telecom users. To achieve the research objectives, several key factors were identified through a comprehensive literature review. Similarly, a hypothetical research model was proposed, illustrating the relationships between independent and dependent variables. A questionnaire was prepared to collect data from respondents using a 5-point Likert scale. Data were then collected from fixed-line telecom service users using a 23-item survey instrument. After collecting the required number of responses, the acquired data was then analysed with the help of IBM statistical tools. Both EFA and CFA were performed to test the data. Later, SEM was conducted to

verify the hypothetical relationships proposed in the model.

Overall, findings indicate that all the proposed hypotheses are significant. However, few relationships are highly significant, whereas others are only significant and positive. Further, the proposed model appears to be applicable in Pakistan and in service settings. Results indicate that users of fixed-line telecom services place a high value on service quality compared to other factors. Therefore, service providers require special attention to ensure their customers receive the best quality of service. Additionally, customers often consider staff attitude, responsiveness, and perceived value as prerequisites for service provisioning.

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