



Customer Loyalty, Company Image & Customer Satisfaction Scale for Telecommunications in India: Validity & Reliability Test

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ABSTRACT

The aim of this study is to test the validity and reliability of the research instrument used to measure organizational performance (customer loyalty, customer image and customer satisfaction) among telecommunication firms in India.

Keywords: *customer loyalty, customer image, customer satisfaction, telecommunications*

1. INTRODUCTION

To measure the Organizational performance of the telecommunication service providers in India three dimensions have been used in the present study namely customer loyalty, company image and customer satisfaction. The instruments used in the present study were adopted from previously published works. The items were, however, modified so as to suit the current research context and purpose. To capture the responses of the sample elements, of customers, a five point Likert scale (ranging from 1→ strongly disagree; 2→ disagree; 3→ neutral; 4→ agree; 5→ strongly agree) was used . A brief explanation of the research instruments used to operationalize the constructs examined in the present study is given in the following sections.

2. LITERATURE REVIEW

In order to measure customer loyalty (CL), the five-item scale developed by Narayandas (1996) was adapted to the Indian mobile telecommunication sector. All the items used to measure the construct ‘customer loyalty’ were carefully taken so as to suffice the achievement of the objective to capture the customers desire to continue his relationship with the telecommunication service provider as well as his involvement in engaging in positive word-of-mouth in favor of the telecommunication service provider. The scale purification results showed that all the items did load sufficiently onto the construct and as such no changes were required.

Company image was measured by five items developed by Bayol et al. (2001), which used the scale in analyzing the company image index in the telecommunication sector. The items were, however, modified so as to appropriately reflect the needs of current research. The scale purification process revealed that no changes are required. Customer satisfaction was measured using a five-item scale of Bayol et al. (2001) and Ragunathan and Irwin (2001). The items of the scale were, however, adjusted both linguistically as well as contextually in order to appropriately capture the needs of the current research. One of the five items was dropped during the scale purification process (Confirmatory Factor Analysis) as the same did not load sufficiently on the construct. As a result, the final analysis is based only on four measures.



3. DATA ANALYSIS

The study was conducted to examine the validity and reliability of the of the research instrument used in the study. The composition of the sample taken for the study includes customers of the telecommunication service providers the data was collected from the state of *Delhi* and two regions of Kashmir namely *Srinagar and Jammu*. An account of the same is presented in Table 1. The results regarding scale purification obtained in the pilot study are discussed below.

The results of pilot study indicated an adequate model fit and clarified the unidimensionalbehaviour of the scales used in present study..

Composition of the sample for the study

<i>District</i>	<i>Customers</i>		
	<i>Male</i>	<i>Female</i>	<i>Total</i>
<i>Delhi</i>	31	19	50
<i>Srinagar</i>	27	13	40
<i>Jammu</i>	25	9	34
<i>Total</i>	83	41	124

Source: Data compilation by the scholar for the present study.

4. SCALE PURIFICATION

The scale purification process adopted in the present study involves both the assessment of validity (convergent, discriminant, and nomological) as well as the reliability of the research instrument. Convergent validity refers to the proportion of variance which the indicators of a particular construct share in common. Discriminant validity refers to the extent to which two different constructs are truly distinct from one another and nomological validity refers to the extent to which correlations between different constructs make theoretical sense. Further, reliability refers to whether the indicators of a particular construct are consistently measuring the same dimension which they are required to measure. Two measures are used in the current research to ascertain the convergent validity of the scale (factor loadings, average variance extracted), one measure is used to ascertain the discriminant validity (maximum shared squared variance) and one measure for testing the reliability is used (Cronbach’s alpha).

As reflected for the confirmatory factor analysis (CFA), the measurement model created in the present study fit the data quite well. The data collected for the study was put to test using CFA. The chi-square value, obtained from confirmatory factor analysis was significant and all the other goodness-of-fit indices were also within the acceptable range and hence reflected a reasonable model fit. Further, the measurement of variables obtained from confirmatory factor analysis also depicted an adequately fitting model ($\chi^2 = 231.45, p > 0.05$; GFI = 0.91; AGFI = 0.85; CFI = 0.90; RMR = 0.05; RMSEA = 0.04). The goodness-of-fit indicators reflect that the

proposed models are a reasonable explanation of the observed covariance matrix for the constructs examined in the present study.

Since the scale measuring the organizational performance of the telecommunication service providers contained only one-dimensional constructs hence only first-order CFA was performed on the research instrument. First, the validity of the research instrument was examined to assess the extent to which the indicators of a particular construct are actually measuring the construct which they are designed to measure. The results of confirmatory factor analysis revealed that all the items apart from one item of the customer satisfaction scale loaded higher than the recommended 0.40 cut-off limit (Nunnally and Bernstein, 1994). The one item of customer satisfaction scale that did not load higher the recommended cut-off limit was dropped from the final measurement scale. The factor loadings, along with the corresponding *t* values, for the all the items for constructs examined in the present research except one are well above the cut-off limit 0.40 (Nunnally and Bernstein, 1994) and significant.

Although factor loadings presented sufficient evidence as a measure of the convergent validity, average variance extracted (Fornell and Larcker, 1981) was also employed to ascertain the extent to which the variance of each construct is explained by the items that are imposed on that construct. Average variance extracted (AVE) represents the amount of variance captured by the indicators of the latent construct on which they are imposed. The results revealed that the average variance extracted for all the constructs is above 0.50 which indicates adequate convergent validity.

Table 2. Final measurement items after purification

<i>Construct</i>	<i>Factor loading</i>	<i>CR^t</i>	<i>AVE</i>
<i>Confirmatory Factor Analysis</i>			
<i>Customer Loyalty</i>	0.91	12.54	0.58
I will go on using this network.	0.72	11.45	
If brought a new SIM, I would prefer this operator.	0.80	13.42	
I recommend this operator to people.	0.62	14.89	
I encourage friends who plan to buy a SIM to choose this operator.	0.74	11.67	
Even if the other operators billing was cheaper, I would go on using this network.			
<i>Company Image</i>			
This company is stable & firmly established	0.78	08.21	0.54
This company is innovative and forward looking	0.58	08.48	
This company has a social contribution for society	0.71	09.23	
This company is a leading firm in the Indian Telecom Sector.	0.85	09.65	

This company can be trusted in what it says and does	0.71	11.32	
<i>Customer Satisfaction</i>			
Overall I am satisfied with the specific experience I have so far with the mobile service I am using	0.67	13.21	0.55
How well do you think “your mobile phone provider” compares with your ideal mobile phone provider	0.79	14.74	
Fulfilment of expectations	0.68	11.89	
I am satisfied with my decision to purchase from this company.	0.82	07.33	
Goodness-of-fit statistics $\chi^2 = 231.45, p > 0.05$; GFI = 0.91; AGFI = 0.85; CFI = 0.90; RMR = 0.05; RMSEA = 0.04			

Note: AVE = Average Variance Extracted; CR = Critical ratio; ¹all value are significant at $\alpha = 0.05$

Next, the reliability of the research instrument on the final data was tested. The results showed that the reliability for all the constructs is sufficiently greater than the minimum threshold value of 0.70 (Table 3).

Table 3 Cronbach’s Alpha values

Construct	Alpha (α)
1. Customer loyalty	0.78
2. Company image	0.76
3. Customer satisfaction	0.89

In line with Cronbach (1951), the reliability of all the constructs was tested separately so as to obtain a more dependable picture of internal consistency of the measuring instrument. The results of reliability test, given in Table 2, reveal that the Cronbach’s alpha values for all the constructs are above the threshold level of 0.7 reflecting that the items imposed on a particular construct are consistently measuring that particular construct. Moreover, also the inter-construct correlations adequately reflect the theoretical framework representing such relationships. This provides sufficient evidence in favor of the nomological validity of the research instrument.

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