

How is postal service quality measured using the SERVQUAL model? Does it matter?

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Abstract

Background: Indian post office has been bridging people together for more than 160 years. One of the Central Government Departments in India is the India Post or the Department of Posts. Even though it receives backing from the government, the Post Office now needs to compete in the "Darwinian Market Place" to succeed and profit from the market. Both inside and external to the Organization are obstacles. It must operate within the constrained range of heavily subsidized tariffs while demonstrating improved financial performance to remain an organization.

Objectives: The study's main aim is to identify the principal factors of service quality in Indian departmental postal offices and measure the postal services using the SERVQUAL model.

Methods: The SERVQUAL (Three-Column Format) of Parasuraman, Zeithaml, and Berry (popularly known as PZB) was found relevant to measure the service quality in Indian Post Offices. It consists of 22 questions in terms of statements related to five (5) dimensions, namely, Tangibles, Responsiveness, Reliability, Empathy, and Assurance, as detailed in the questionnaire. To ascertain responses questionnaire method was chosen. Accordingly, the questionnaire with minor modifications was administered to a few experts to check the content validity as part of the pilot study and improved questionnaire thereafter. As the study was intended to cover extensively, given the presence of India Post throughout India, the questionnaire was sent by post to a sample area spread across India. Responses received were edited to reconcile inconsistencies per the standard data processing guidelines, and analysis was done for the final responses numbering 1665 using SPSS 16.0.

Results: The component extracted can be named as **Service Environment** which is about the physical quality and the second component as **Overall Service Experience**. This included the quality of relationship across the counter service interactions (interaction quality) and the ultimate service delivery experience once the transaction is completed. **The service provider needs to assess the individual processes to know the gaps and to evolve areas of improvement of 'tactical' and 'strategic' importance.** Since all 22 items are statistically significant, all these items need to be taken into consideration at the time of service provision. Ways of Measuring Post Office Service Quality and application of SERVQUAL model of Parasuraman, Zeithaml and Berry (PZB) to measure the Service Quality. Implications of Gap Model of PZB when applied to Indian Post Office and discussing how Gap 5, and also, of Gap

1; the difference of expectations between the service provider and the customers could be interpreted vis-à-vis Post Office. The generic nature of SERVQUAL and the dimensionality of service quality of post office.

Analyzing Zone of Tolerance of Indian Post Office at question-level and dimension-level.

Conclusions: Measuring Service Quality in Indian Post Offices is not an easy task considering the numerous products and services the department is handling and also the geographical spread and demographical diversity. The task is far more difficult given the inflexibility of legacy systems and the systemic reactions due to the fact that the system is managed by government machinery. However, there is an urgent need to relook at its service design and to bring in changes that bring quality.

Keywords: Service quality, SERVQUAL model, Service environment, Post office,

1. Introduction

The tradition of writing letters has declined dramatically since the arrival of technology. It also had an impact on Money Order remittances. Today's customer has a plethora of options. Though India Post has a last-mile advantage, organised couriers who have invested extensively in technology scoop up the cream of business in urban areas. One noteworthy issue is that as economic activity grows, so does the generation of paper in the form of mandatory statements, invoices, and so on, which will be handled by the Post Office and other parallel players. It is clear that the Post Office is at a crossroads due to competing traffic challenges and is working hard to regain lost territory. Improving Service Quality is a viable approach to facing the various risks that may be adopted to transform the Organization. Given this context, it has become vital to investigate the service quality provided by Indian Post Offices to their consumers. For this, the SERVQUAL Three-column Format, developed by Parasuraman, Zeithaml, and Berry (often known as PZB), was used to Indian Post Offices as a measure for measuring service quality in the service sector. It is important to try to determine where the organisation is in terms of service quality. In addition to the Service Quality Gap 5, it is essential to comprehend the "Listening Gap." India Post's competitive position must be calculated, and service quality attributes must be statistically measured. Improving customer perception of service quality is a critical strategic principle that will bring in the numbers and volume of business. Other policy difficulties include pricing rigidity, a limited product portfolio, and a limited communication budget. However, India Post is endowed with experienced personnel, and they represent India Post's future hope in guaranteeing planned transition through time. Furthermore, the ubiquitous presence of the postal network is a vital competency that must be skilfully used. Postal procedures are unquestionably an area in which major reforms are required. It is about the quality's functional dimension. Physical evidence may be a key problem that must be statistically tested and proven.

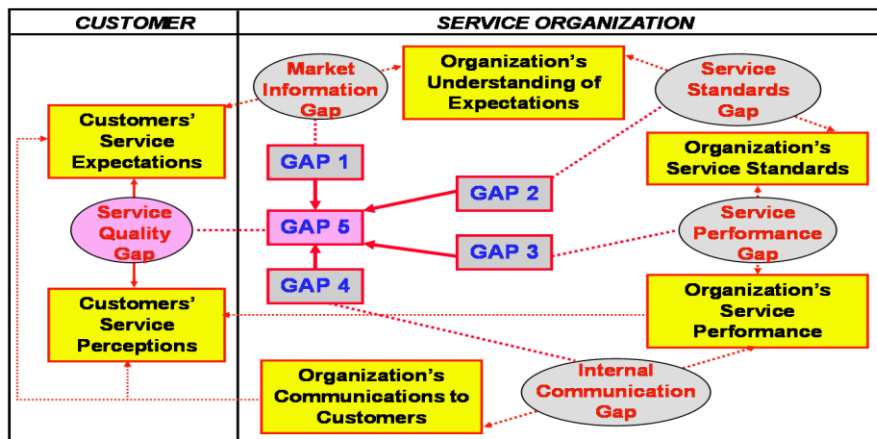
In 1985, Parasuraman et al., developed the SERVQUAL instrument (refined in 1988, 1991 and again in 1994), for measuring the quality of service.

Table 1 Initial Service Quality Dimensions

1. Tangibles
2. Responsiveness
3. Reliability
4. Understanding the customer
5. Courtesy
6. Competence
7. Security
8. Access
9. Credibility
10. Communication

Source: Parasuraman et al., (1985)

However, after two stages of scale purification, PZB reduced the above ten determinants to five dimensions of service quality: tangibles, reliability, responsiveness, assurance, and empathy (PZB, 1988). Parasuraman et al., (1994, 1998) upgraded his original SERVQUAL model with three -column format by adding minimum service level (would expectations), desired service level (should expectations) and perceived performance. According to them, Perceived Service Quality is viewed as the “degree and direction of discrepancy between consumers’ perceptions and expectations”. The authors (PZB) concluded that SERVQUAL has good reliability and validity to understand the service expectations and perceptions of the customers for improving the service.

A “GAPS” MODEL OF SERVICE QUALITY**Figure 1 Illustration of Gap Model**

Source: Works of A.Parasuraman

Parasuraman et al., (1985) found in their research that quality lies in meeting or exceeding client expectations. The authors state that judgments of high and low service quality depend on how clients perceive the actual service performance in the context of what they expected. Service quality from the perception of the consumer depends on the size and direction of gap

five which is a function of nature and direction of gaps one, two, three and four. Clients have expectations and perceptions on each of the dimensions as identified by PZB (1988). The size and direction of each gap will impact on service quality, e.g. gap three will be favourable when service which is actually delivered exceeds specifications. However, it will be unfavourable when service specifications are not met (Parasuraman et al., 1985)

2. Objectives

The study's main aim is to identify the principal factors of service quality in Indian departmental postal offices and measure the postal services using the SERVQUAL model.

3. Methods

The SERVQUAL (Three-Column Format) of Parasuraman, Zeithaml and Berry (popularly known as PZB) was found relevant to measure the service quality in Indian Post Offices. It consists of 22 questions in terms of statements related to five (5) dimensions, namely, Tangibles, Responsiveness, Reliability, Empathy and Assurance as detailed in the questionnaire. For the purpose of ascertaining responses questionnaire method was chosen. Accordingly, the questionnaire with minor modifications was administered to few experts for checking the content validity as part of pilot study and improved the questionnaire thereafter. As the study was intended to cover extensively, given the presence of India Post throughout India, the questionnaire was sent by post to sample area spread across India. Responses received were edited to reconcile inconsistencies as per the standard guidelines of data processing and analysis was done for the final responses numbering 1665 by using SPSS 16.0. Multistage Random Sampling method which is a probability sampling method was chosen to collect the primary data across India. Initially, bigger Head Post Offices in the country located in the State Head Quarters like General Post Offices (GPOs) were chosen. As the study involves collection of sample from three sources, accordingly the mailing of questionnaire by post was done. The first collection has been from those customers who are using various services from identified Project Arrow Post Offices (Experimental group: where the Department improved look and feel and the core operations as part of Project over a period of time) of Phase I and Phase II and some extent Phase III offices spread across India. The second sample has been collected from Non-Project Arrow Post Office Customers (Non-Experimental Group: where there was no process or structural intervention of any kind to improve the service level as a Project) who are getting services from them. These Post Offices are departmental and have staff strength over two and extend up to few hundreds. The third sample related to employees of India Post working across India starting from clerical cadre who are the front-line staff to Member Postal Services Board that decide the policy framework.

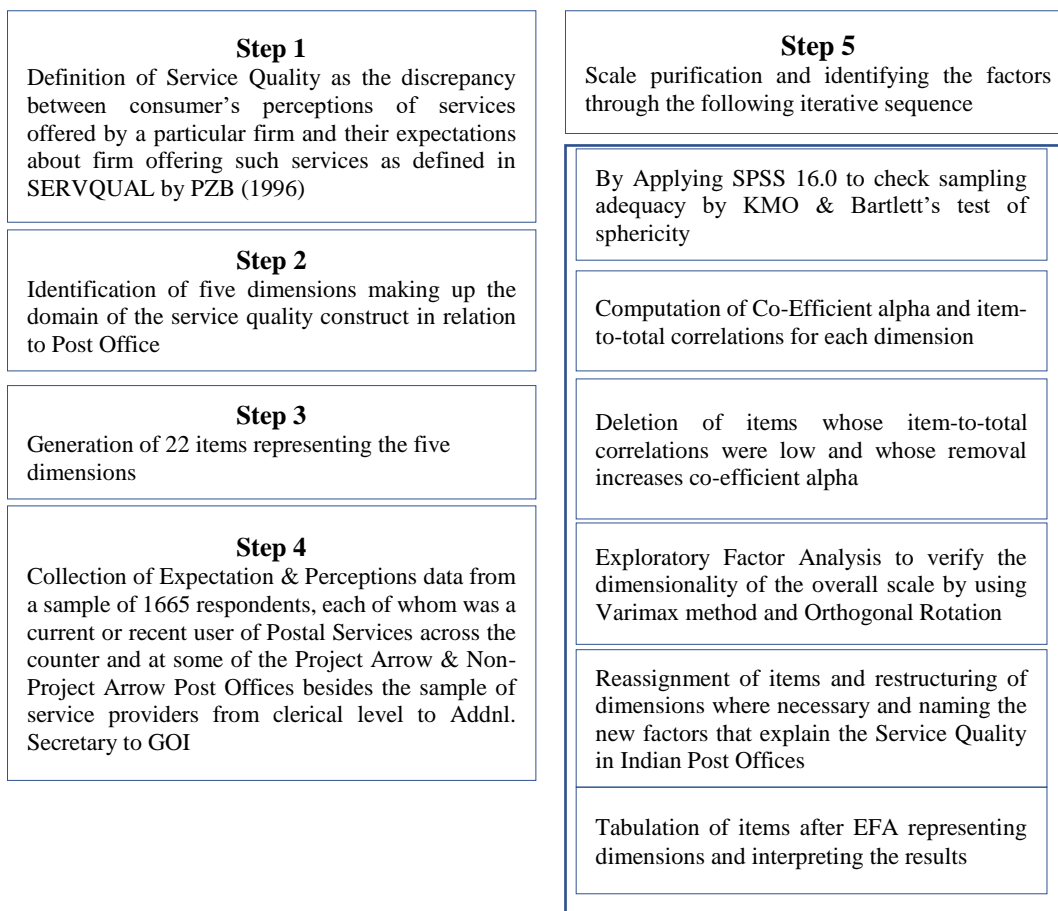
Specific boundaries within which the study was carried out

The study yielded valuable results in terms of the significant determinants of postal service quality. The specific boundaries within which the study covered are:

- 1. Ways of Measuring Post Office Service Quality and application of SERVQUAL model of Parasuraman, Zeithaml and Berry (PZB) to measure the Service Quality.**

2. Implications of Gap Model of PZB when applied to Indian Post Office and discussing how Gap 5, and also, of Gap 1; the difference of expectations between the service provider and the customers could be interpreted vis-à-vis Post Office.
3. The generic nature of SERVQUAL and the dimensionality of service quality of post office.
4. Analyzing Zone of Tolerance of Indian Post Office at question-level and dimension-level.
5. The quantifiable improvement in service quality after structural and process interventions made as part of Project Arrow in post offices as compared to Non-Project Arrow post offices.
6. Considering the statistical results of Exploratory Factor Analysis and the Zone of Tolerance the convergence or otherwise of the results in measuring the service quality.

Steps in measuring the Service Quality



FINDINGS ON SERVICE QUALITY IN INDIAN DEPARTMENTAL BIGGER POST OFFICES WITH RECOMMENDATIONS

4. Results

An Exploratory Factor Analysis (EFA) of the factor structure of the scale was undertaken with SPSS version 16.0 to examine the factor structure of variables. The EFA procedure employed is ‘principle components method’ for extraction with ‘varimax rotation’ and factors with Eigen values greater than one were alone retained (Hair, Anderson, Tatham and Black, 1998). Factor

analysis explains the summarisation process of many number of variables into factors depending on their relationships (Hair *et al.*, 1988). Given the size of sample 165, Hair *et al.*, (1995) suggested that conservative factor loadings of greater than 0.50 were to be considered significant at .05 level of significance. In order to study the suitability of construct for taking up factor analysis, Bartlett's Test of sphericity should be significant. The test result as shown in SPSS Tables suggests multi-dimensionality. The KMO statistic is found to be more than 0.9 meeting the minimum requirement of 0.6 (Kim and Mueller, 1978, Kaiser and Rice, 1974). Multi collinearity or singularity was not there. Scree plot is the Graphical representation of components extraction based on the Eigen values exceeding one.

The items having factor loadings less than 0.5 were to be eliminated (Hair *et al.*, 2005). The results are shown below for each sample, namely, Project Arrow, Non-Project Arrow, Service Provider and Total Sample.

Factor Analysis of Non-Project Arrow Sample

Table 2 Statistical Summary of Non-Project Arrow Sample

Non-Project Arrow Sample	KMO	Total Variance Explained	No. of Components Extracted	Component-I	Component-II
Measure of Service Adequacy (MSA)	0.970	66.468	2	Q1 to Q4=4	Q5 to Q22=18
Measure of Service Superiority (MSS)	0.970	71.324	2	Q1 to Q4=4	Q5 to Q22=18
Perception		78.136	2	Q1 to Q4=4	Q5 to Q22=18

Source: Primary Data-summary of SPSS output

NPA-MSA Results

The test result is shown in SPSS Table 3

The KMO is found to be more than 0.9 meeting the requirement. Multi collinearity or singularity was not there.

Table 3 NPA –MSA : KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.970
Bartlett's Test of Sphericity	Approx. Chi-Square
	Df
	Sig.
	9.687E3
	231
	.000

The factor loadings are given in the rotated component matrix.

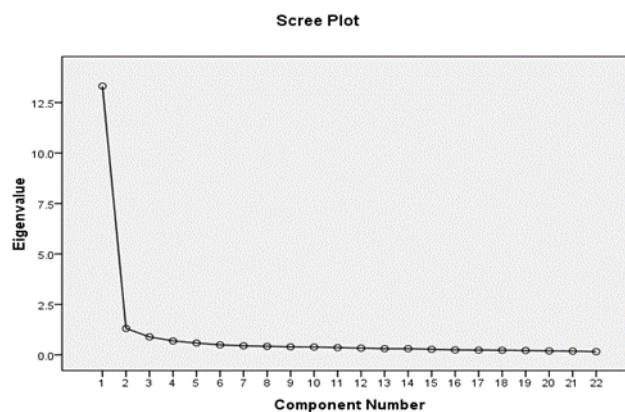
Table 4 NPA-MSA Factor Analysis

Rotated Component Matrix ^a		
Question No	Component	
	1	2
Q 16	.780	
Q 14	.775	
Q 11	.773	
Q 10	.766	
Q 12	.763	
Q 20	.748	
Q 22	.745	
Q 15	.743	
Q 17	.742	
Q 21	.723	
Q 18	.704	
Q 13	.696	
Q 9	.690	
Q 8	.678	
Q 7	.671	
Q 6	.653	
Q 19	.635	
Q 5	.618	
Q 2		.841
Q 1		.823
Q 4		.792
Q 3		.762

As seen from rotated component matrix of NPA MSA SPSS output (Table 4), all 22 parameters are retained. Given the sample size of 515, Hair et al., (1995) suggested that conservative factor loadings of greater than 0.50 were to be considered significant at .05 level of significance. It is seen from the SPSS output that all 22 items were retained implying the contribution of these items to service quality. Also it is seen that many items did not load into their *a-priori* categories. Question numbers, 1, 2, 3, and 4 of Tangibles dimension could remain as separate component and whereas the other dimensions merged in to one factor. In other words, the dimensions, namely, Reliability, Assurance, Empathy and Responsiveness were fused to form

a single component. Therefore, the factor solution of service quality of MSA of Non-Project Arrow sample can be explained with two component solution, one dealing with the physical quality like, modern looking equipment, visually appealing physical facilities, neat and professional appearance of postal employees and visually appealing signage, like, name boards, leaflets, statements in post office. These factors can be named as “**Service Environment**” (from questions 1 to 4 of questionnaire), and “**Overall Service Experience**” (Remaining parameters of questionnaire). Thus, postal service quality as a measure of service adequacy can be explained with two components.

As seen from the scree plot of MSA of NPA, two Eigen values exceeding 1 are extracted, hence the factor solution can be explained with two components.



NPA-MSA Scree plot-SPSS Output

NPA –MSS Results

The test result as shown in SPSS Table 5. The KMO is found to be more than 0.9 suggesting that analysis and sample was adequate. Multi collinearity or singularity was not there.

Table 5 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.970
Bartlett's Test of Sphericity	Approx. Chi-Square	1.140E4
	Df	231
	Sig.	.000

The factor loadings are given in the rotated component matrix.

Table 6 NPA-MSS Factor Analysis

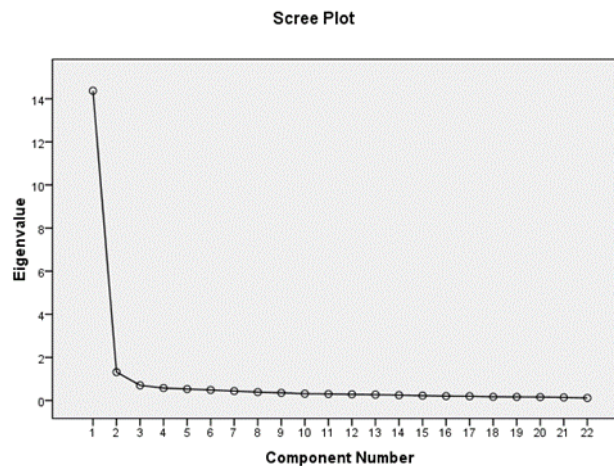
Rotated Component Matrix^a		
	Component	
	1	2
Q 21	.835	
Q 20	.807	

Q 22	.804	
Q 18	.782	
Q 12	.774	
Q 11	.772	
Q 16	.757	
Q 13	.755	
Q 10	.736	
Q 14	.728	
Q 15	.717	
Q 19	.715	
Q 17	.704	
Q 7	.690	
Q 8	.683	
Q 6	.656	.572
Q 9	.627	
Q 5	.589	.551
Q 1		.845
Q 2		.835
Q 3		.832
Q 4		.803

As seen from rotated component matrix of NPA MSS SPSS output (Table 6), all 22 parameters are retained. Given the sample size of 515, Hair et al., (1995) suggested that conservative factor loadings of greater than 0.50 were to be considered significant at .05 level of significance. It is seen from the SPSS output that all 22 items were retained implying the contribution of these items to service quality. Also it is seen that many items did not load into their *a-priori* categories. Question numbers, 1, 2, 3, and 4 of Tangibles dimension could remain as separate component in tandem with question numbers 5 and 6 of Reliability dimension which have cross loaded on to factor 1. On other hand, the other dimensions were merged in to one factor. In other words, the dimensions, namely, a portion of items of Reliability, Assurance, Empathy and Responsiveness were fused to form a single component. The two parameters of Reliability namely, Postal Employees will be serving within a specified time as promised and Postal Employees will show a sincere interest in solving customer's problems fused with four items of Tangibles with less loadings(Q No 5= 0.551; Q No 6 =0.572). These two items can form part of the interaction had with the frontline staff at the time of getting the transaction done. It generally happens that the customer will be interested to know when the article will be reaching the destination and also the customer is interested in the transactional behaviour at the service counter. Hence, these two questions, namely, five and six of Reliability dimension at the level of Measure of Service Superiority define the interactional quality. However as these two parameters cross loaded on to factor 1 with loadings 0.589 of question 5 and 0.656, these can be considered and treated as part of component 1 rather than component 2. In effect, question numbers 1 to 4 of Tangibles dimension alone remain as factor 1. This component of original Tangibles dimension can be named as “**Service Environment**”. With regard to component two, as seen from the SPSS output, the remaining items from 5 to 22 are retained and got united to emerge as distinct factor. The dimensions, except Tangibles, others fused in to a single factor. It implies that the customer is interested in the physical environment and also the overall

service outcome. In other words, apart from knowing “how the service is being delivered” (functional quality) the customer is interested in the overall service delivery, the outcome quality. Therefore, this factor can be named as ‘**Overall Service Experience**’. Thus, the service quality of NPA sample of its MSS, like MSA of NPA sample can be deduced and explained in two factors as stated.

As seen from the scree plot of MSS of NPA, two Eigen values exceeding 1 are extracted, hence the factor solution can be explained with two components.



NPA-MSS Scree plot-SPSS Output

NPA-Perception factor analysis

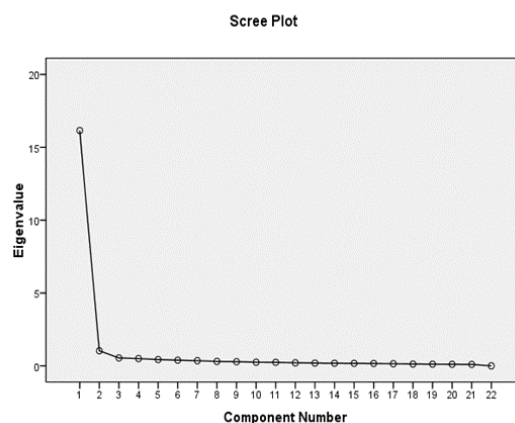
The factor loadings are given in the rotated component matrix.

Table 7 NPA Perception Factor Analysis

Rotated Component Matrix ^a		
Question No	Component	
	1	2
Q 20	.826	
Q 21	.826	
Q 16	.799	
Q 15	.795	
Q 18	.787	
Q 11	.784	
Q 12	.784	
Q 17	.762	
Q 14	.761	
Q 22	.761	
Q 10	.757	
Q 19	.728	
Q 13	.716	
Q 7	.710	.530
Q 9	.690	

Q 6	.687	.587
Q 5	.680	.534
Q 8	.676	.556
Q 3		.838
Q 1		.830
Q 2		.828
Q 4		.815

As seen from rotated component matrix of NPA Perception SPSS output (Table 7), all 22 parameters are retained. Given the overall sample size of 515, Hair et al., (1995) suggested that conservative factor loadings of greater than 0.50 were to be considered significant at .05 level of significance. It is seen from the SPSS output that all 22 items were retained implying the contribution of these items to service quality. Also it is seen that many items did not load into their *a-priori* categories. Question numbers, 1, 2, 3, and 4 of Tangibles dimension could remain as separate component in tandem with question numbers 5, 6, 7 and 8 of Reliability dimension which have cross loaded on to factor 1. On other hand, the other dimensions were merged in to one factor. In other words, the dimensions, namely, a portion of items of Reliability, Assurance, Empathy and Responsiveness were fused to form a single component. However, as these four parameters cross loaded on to factor 1 with more loadings on component 1, these can be considered and treated as part of component 1 rather than component 2. In effect, question numbers 1 to 4 of Tangibles dimension alone remain as factor 1. This component of original Tangibles dimension can be named as “**Service Environment**”. With regard to component two, as seen from the SPSS output, the remaining items from 5 to 22 are retained and got fused to emerge as distinct factor. The dimensions, except Tangibles, others fused in to a single factor. It implies that the customer is interested in the physical environment and also the overall service outcome. In other words, apart from knowing “how the service is being delivered” (functional quality) the customer is interested in the overall service delivery, the outcome quality. Therefore, this factor can be named as “**Overall Service Experience**”. Apart from the expectations in terms of adequate and desired of NPA sample, even the perception items of NPA yielded the similar solution. **Thus, the service quality of NPA sample of its perception, like MSA and MSS of NPA sample, can be deduced and explained in two factors as stated.**



Perception Scree Plot-NPA SPSS Output

As seen from the scree plot of Perception items of NPA, two Eigen values exceeding 1 are extracted, hence the factor solution can be explained with two components.

Project Arrow Sample Factor Analysis (Table 8)

Table 8 Statistical Summary of Project Arrow Sample SPSS Output

Project Arrow Sample	KMO	Total Variance Explained	No. of Components Extracted	Component-I	Component-II
MSA	0.981	76.878	2	Q1 to Q4=4	Q5 to Q22=18
MSS	0.979	78.733	2	Q1-Q4,Q6=5	Q5,Q7-Q22=17
Perception		78.537	2	Q1-Q4,Q6=5	Q5,Q7-Q22=17

Source: Primary Data-summary of SPSS output

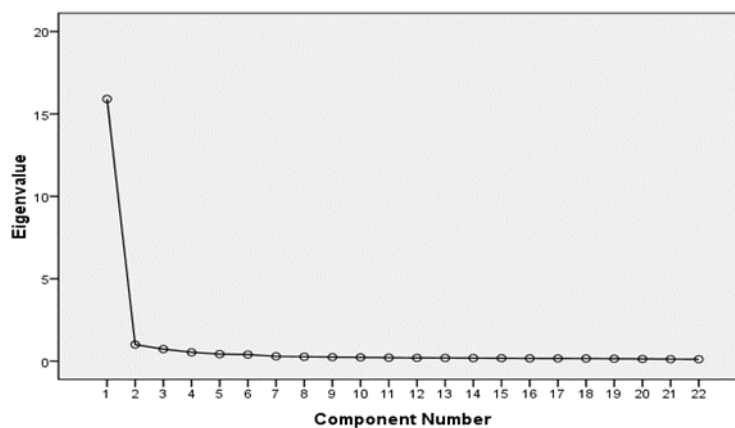
PA- MSA factor Analysis

The test result as shown in SPSS Table 9 shows the multi-dimensionality. The KMO is found to be more than 0.9 suggesting that analysis and sample was adequate. Multi collinearity or singularity was not there.

Table 9 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.981
Bartlett's Test of Sphericity	Approx. Chi-Square	1.692E4
	df	231
	Sig.	.000

Scree Plot



PA MSA Scree Plot-SPSS Output

As seen from the scree plot of MSA items of PA, two Eigen values exceeding 1 are extracted, hence the factor solution can be explained with two components. The factor loadings are given in the rotated component matrix.

As seen from rotated component matrix of PA- MSASPSS output, all 22 parameters are retained. Given the overall sample size of 629, Hair et al., (1995) suggested that conservative factor loadings of greater than 0.50 were to be considered significant at .05 level of significance. It is seen from the SPSS output that all 22 items were retained implying the contribution of these items to service quality. Also it is seen that many items did not load into their *a-priori* categories. Question numbers, 1, 2, 3, and 4 of Tangibles dimension could remain as separate component in tandem with question numbers 5, 6, of Reliability dimension which have cross loaded on to factor 1. On other hand, the other dimensions were merged in to one factor. In other words, the dimensions, namely, a portion of items of Reliability, Assurance, Empathy and Responsiveness were fused to form a single component. However, as these two parameters of Reliability dimension cross loaded on to factor 1 with more loadings on component 1, these can be considered and treated as part of component 1 rather than component 2. In effect, question numbers 1 to 4 of Tangibles dimension alone remain as factor 1. This component of original Tangibles dimension can be named as “**Service Environment**”. With regard to component two, as seen from the SPSS output, the remaining items from 5 to 22 are retained and got fused to emerge as distinct factor. The dimensions, except Tangibles, others fused in to a single factor. It implies that the customer is interested in the physical environment and also the overall service outcome. In other words, apart from knowing “how the service is being delivered” (functional quality) the customer is interested in the overall service delivery, the outcome quality. Therefore, this factor can be named as “**Overall Service Experience**”. Apart from the expectations in terms of adequate and desired of NPA sample, the perception items of NPA; the solution of MSA of Project Arrow sample yielded the similar solution. **Thus, the service quality of PA sample of its MSA, like MSA and MSS and perception of NPA sample, can be deduced and explained in two factors as stated.**

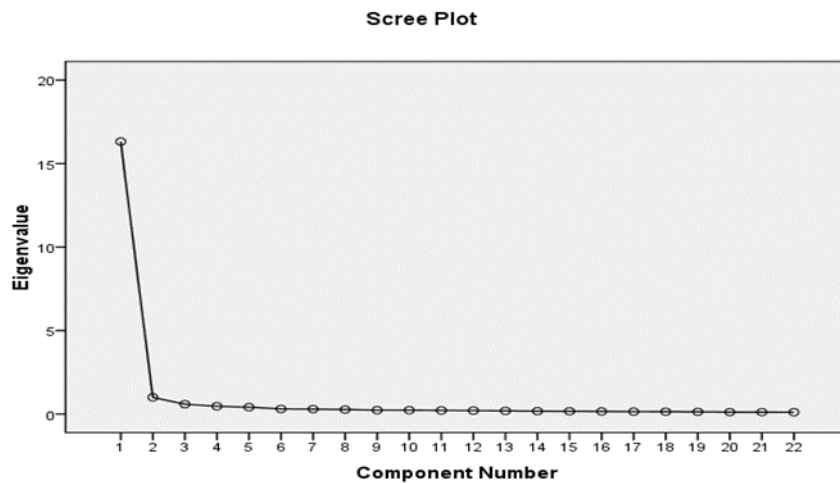
PA – MSS Factor Analysis

The test result as shown in SPSS Table 10, show the multi-dimensionality. The KMO is found to be more than 0.9 suggesting that analysis and sample was adequate. Multi collinearity or singularity was not there.

Table 10 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.979
Bartlett's Test of Sphericity	Approx. Chi-Square	1.772E4
	df	231
	Sig.	.000

PA MSS Scree Plot-SPSS Output



As seen from the scree plot of MSA items of PA, two Eigen values exceeding 1 are extracted, hence the factor solution can be explained with two components. The factor loadings are given in the rotated component matrix.

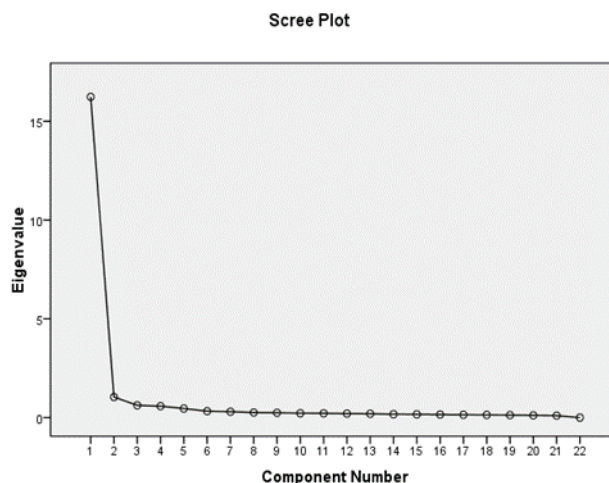
Table 11 PA – MSS Factor Analysis

Rotated Component Matrix ^a		
Question No	Component	
	1	2
Q 1		.827
Q 2		.855
Q 3		.831
Q 4		.803
Q 5	.643	.608
Q 6	.625	.635
Q 7	.625	.608
Q 8	.657	.583
Q 9	.639	.534
Q 10	.689	.552
Q 11	.710	.551
Q 12	.738	
Q 13	.705	.506
Q 14	.746	
Q 15	.761	
Q 16	.777	
Q 17	.784	
Q 18	.768	
Q 19	.796	
Q 20	.817	
Q 21	.821	
Q 22	.814	

As seen from rotated component matrix of PA MSS SPSS output (Table 11), all 22 parameters are retained. Given the overall sample size of 629, Hair et al., (1995) suggested that conservative factor loadings of greater than 0.50 were to be considered significant at .05 level

of significance. It is seen from the SPSS output that all 22 items were retained implying the contribution of these items to service quality. Also it is seen that many items did not load into their *a-priori* categories. Question numbers, 1, 2, 3, and 4 of Tangibles dimension could remain as separate component in tandem with question numbers 5, 6, 7, 8 and 9 of Reliability dimension and 10, 11 and 13 of Responsive Dimension which have cross loaded on to component 1. On other hand, the other dimensions were merged in to one factor. In other words, the dimensions, namely, a portion of items of Reliability and Responsiveness, Assurance, Empathy were fused to form a single component. However, as these eight parameters of Reliability, Responsiveness dimensions cross loaded on to factor 1 with more loadings on component 1, these can be considered and treated as part of component 1 rather than component 2. In effect, question numbers 1 to 4 of Tangibles dimension and question number 6 of Reliability Dimension remain as component 2. This component of original Tangibles dimension plus question number 6 of Reliability Dimension can be named as “**Service Environment**”. The question number 6 is about “Postal Employees will be serving within a specified time as promised”. Actually, this item could be understood in two ways: as a promise given the service counter by the frontline staff and also the overall experience of service delivery. With regard to component two, as seen from the SPSS output, the remaining items from 5 to 22 barring question number 6, are retained and got fused to emerge as distinct factor. The dimensions, except Tangibles, others fused in to a single factor. It implies that the customer is interested in the physical environment and also the overall service outcome. In other words, apart from knowing “how the service is being delivered” (functional quality) the customer is interested in the overall service delivery, the outcome quality. Therefore, this factor can be named as “**Overall Service Experience**”. **Thus, the service quality of PA sample of its MSS can be deduced and explained in two factors as stated.**

PA- Perception Factor Analysis



As seen from the scree plot of MSA items of PA, two Eigen values exceeding 1 are extracted, hence the factor solution can be explained with two components. The factor loadings are given in the rotated component matrix.

PA- Perception Scree Plot-SPSS Output

Table 12 PA Perception Factor Analysis

Rotated Component Matrix ^a		
Question No	Component	
	1	2
Q 20	.822	
Q 21	.822	
Q 15	.789	
Q 22	.785	
Q 16	.780	
Q 14	.769	
Q 19	.766	
Q 18	.765	
Q 17	.760	
Q 12	.755	
Q 11	.752	
Q 10	.723	.522
Q 8	.721	.517
Q 9	.702	
Q 7	.695	.542
Q 5	.681	.578
Q 13	.645	.519
Q 2		.853
Q 3		.842
Q 4		.830
Q 1		.826
Q 6	.619	.624

As seen from rotated component matrix of PA Perception SPSS output (Table 12), all 22 parameters are retained. Given the overall sample size of 629, Hair et al., (1995) suggested that conservative factor loadings of greater than 0.50 were to be considered significant at .05 level of significance. It is seen from the SPSS output that all 22 items were retained implying the contribution of these items to service quality. Also it is seen that many items did not load into their *a-priori* categories. Question numbers, 1, 2, 3, and 4 of Tangibles dimension could remain as separate component in tandem with question numbers 5, 6, 7, 8 of Reliability dimension and 10 and 13 of Responsive Dimension which have cross loaded on to component 1. On other hand, the other dimensions were merged in to one factor. In other words, the dimensions, namely, a portion of items of Reliability and Responsiveness, Assurance, Empathy were fused to form a single component. However, as these five parameters of Reliability, Responsiveness dimensions cross loaded on to factor 1 with more loadings on component 1, these can be considered and treated as part of component 1 rather than component 2. In effect, question numbers 1 to 4 of Tangibles dimension and question number 6 of Reliability Dimension remain as component 2. This component of original Tangibles dimension plus question number 6 of Reliability Dimension can be named as “**Service Environment**”. The question number 6 is about “Postal Employees will be serving within a specified time as promised”. Actually, this

item could be understood in two ways: as a promise given the service counter by the frontline staff and also the overall experience of service delivery.

With regard to component two, as seen from the SPSS output, the remaining items from 5 to 22 barring question number 6, are retained and got fused to emerge as distinct factor. The dimensions, except Tangibles, others fused in to a single factor. It implies that the customer is interested in the physical environment and also the overall service outcome. In other words, apart from knowing “how the service is being delivered” (functional quality) the customer is interested in the overall service delivery, the outcome quality. Therefore, this factor can be named as “**Overall Service Experience**”. Thus, the service quality of PA sample of its perception like MSS of PA Sample can be deduced and explained in two factors as stated.

Factor Analysis of Service Provider Sample (Table 13)

Table 13 Statistical Summary of Service Provider Sample-SPSS Output

Service Provider Sample	KMO	Total Variance Explained	No. of Components Extracted	Component-I	Component-II
MSA	0.983	82.037	1 (Un-rotated)	-	-
MSS	0.986	84.991	1 (Un-Rotated)	-	-
Perception		73.126	2	Q1-Q4,Q6=5	Q5,Q7-Q22=17

Source: Primary Data-summary of SPSS output

SP – MSA Factor Analysis (Un-rotated)

The test result as shown in SPSS Table 14, show the multi-dimensionality. The KMO is found to be more than 0.9 suggesting that analysis and sample was adequate. Multi collinearity or singularity was not there.

Table 14 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.983
Bartlett's Test of Sphericity	Approx. Chi-Square	2.246E4
	df	231
	Sig.	.000

SP – MSS Factor Analysis (Un-rotated)

The test result as shown in SPSS Table 15 show the multi-dimensionality. The KMO is found to be more than 0.9 suggesting that analysis and sample was adequate. Multi collinearity or singularity was not there.

Table 15 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.986
Bartlett's Test of Sphericity	Approx. Chi-Square	2.499E4
	df	231
	Sig.	.000

Table 16 SP Perception Factor Analysis

Rotated Component Matrix ^a		
Question No	Component	
	1	2
Q 15	.796	
Q 21	.780	
Q 20	.780	
Q 14	.753	
Q 16	.747	
Q 11	.743	
Q 17	.732	
Q 12	.727	
Q 9	.721	
Q 18	.703	.507
Q 19	.690	
Q 22	.686	
Q 13	.658	
Q 10	.650	.544
Q 8	.633	.572
Q 5	.624	.601
Q 7	.623	.579
Q 1		.848
Q 2		.843
Q 3		.796
Q 4		.783
Q 6		.647

As seen from rotated component matrix of SP Perception SPSS output (Table 16), all 22 parameters are retained. Given the overall sample size of 629, Hair et al., (1995) suggested that conservative factor loadings of greater than 0.50 were to be considered significant at .05 level of significance. It is seen from the SPSS output that all 22 items were retained implying the contribution of these items to service quality. Also it is seen that many items did not load into their *a-priori* categories. Question numbers, 1, 2, 3, and 4 of Tangibles dimension could remain as separate component in tandem with question numbers 5, 6, 7, 8 of Reliability dimension and 10 of Responsive Dimension and 18 of Empathy Dimension which have cross loaded on to

component 1. On the other hand, the other dimensions were merged in to one factor. In other words, the dimensions, namely, a portion of items of Reliability, Empathy and Responsiveness and Assurance, were fused to form a single component. However, as these five parameters of Reliability, Responsiveness and Empathy dimensions cross loaded on to factor 1 with more loadings on component 1, these can be considered and treated as part of component 1 rather than component 2. In effect, question numbers 1 to 4 of Tangibles dimension and question number 6 of Reliability Dimension remain as component 2. This component of original Tangibles dimension plus question number 6 of Reliability Dimension can be named as “**Service Environment**”. The question number 6 is about “Postal Employees will be serving within a specified time as promised”. Actually, this item could be understood in two ways: as a promise given the service counter by the frontline staff and also the overall experience of service delivery. With regard to component two, as seen from the SPSS output, the remaining items from 5 to 22 barring question number 6, are retained and got fused to emerge as distinct factor. The dimensions, except Tangibles, others fused in to a single factor. It implies that the customer is interested in the physical environment and also the overall service outcome. In other words, apart from knowing ‘how the service is being delivered’ (functional quality) the customer is interested in the overall service delivery, the outcome quality. Therefore, this factor can be named as “**Overall Service Experience**”. **Thus, the service quality of SP sample of its perception can be deduced and explained in two factors as stated.**

Factor analysis of Total sample (NPA, PA and SP) (Table 17)

Table 17 Statistical summary of Total Sample (PA, NPA, SP)-SPSS Output

Total Sample	KMO	Total Variance Explained	No. of Components Extracted	Component-I	Component-II
MSA	0.979	70.757	2	Q1 to Q4=4	Q5 to Q22=18
MSS	0.981	73.55	2	Q1-Q6 =5	Q7-Q22=16
Perception		76.443	2	Q1 to Q4=4	Q5 to Q22=18

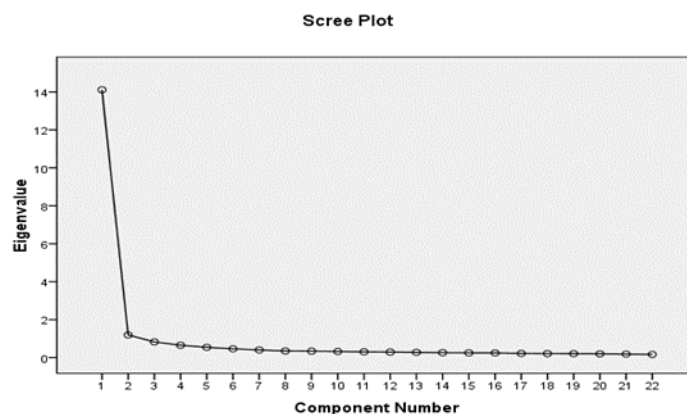
Source: Primary Data-summary of SPSS output

Total Sample-MSA Factor Analysis

The test result as shown in SPSS Table 4.189 show the multi-dimensionality. The KMO is found to be more than 0.9 suggesting that analysis and sample was adequate. Multi collinearity or singularity was not there.

Table 18 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.979
Bartlett's Test of Sphericity	Approx. Chi-Square
	Df
	Sig.
	3.476E4
	231
	.000



Total MSA Scree Plot-SPSS Output

As seen from the scree plot of MSA items of Total sample, two Eigen values exceeding 1 are extracted, hence the factor solution can be explained with two components. The factor loadings are given in the rotated component matrix.

Table 19 Total MSA Factor Analysis

Rotated Component Matrix ^a		
Question No	Component	
	1	2
Q 16	.799	
Q 21	.783	
Q 12	.779	
Q 14	.778	
Q 17	.776	
Q 11	.769	
Q 15	.766	
Q 20	.761	
Q 22	.754	
Q 18	.747	
Q 13	.740	
Q 10	.734	
Q 9	.693	
Q 7	.682	
Q 19	.672	
Q 6	.648	.533
Q 5	.645	.507
Q 8	.578	
Q 2		.829
Q 1		.816
Q 3		.793
Q 4		.785

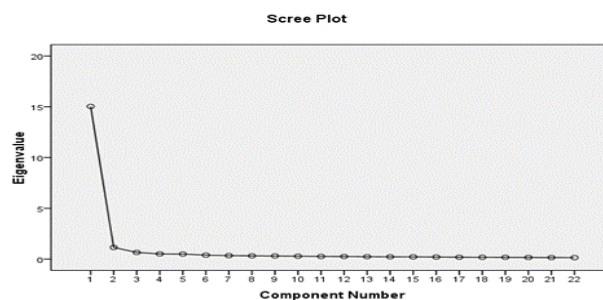
As seen from rotated component matrix of Total sample of MSA SPSS output (Table 19), all 22 parameters are retained. Given the overall sample size of 1665, Hair et al., (1995) suggested that conservative factor loadings of greater than 0.50 were to be considered significant at .05 level of significance. It is seen from the SPSS output that all 22 items were retained implying the contribution of these items to service quality. Also it is seen that many items did not load into their *a-priori* categories. Question numbers, 1, 2, 3, and 4 of Tangibles dimension could remain as separate component in tandem with question numbers 5, 6 of Reliability dimension which have cross loaded on to component 1. On the other hand, the other dimensions were merged in to one factor. In other words, the dimensions, namely, a portion of items of Reliability were fused to form a single component. However, as these two parameters of Reliability cross loaded on to factor 1 with more loadings on component 1, these can be considered and treated as part of component 1 rather than component 2. In effect, question numbers 1 to 4 of Tangibles dimension remain as component 2 as a priori items of Tangibles Dimension. This component of original Tangibles dimension can be named as “**Service Environment**”. With regard to component two, as seen from the SPSS output, the remaining items from 5 to 22, are retained and got fused to emerge as distinct factor. The dimensions, except Tangibles, others fused in to a single factor. It implies that the customer is interested in the physical environment and also the overall service outcome distinctively. In other words, apart from knowing the service environment in which the service was availed, the customer is interested in the overall service delivery, the outcome quality. Therefore, this factor can be named as “**Overall Service Experience**”. Thus, the service quality of Total sample of its MSA can be deduced and explained in two factors as stated.

Total sample –MSS Factor Analysis

The test result as shown in SPSS Table 20 show that it is highly significant (Sig. = 0.000), suggesting multi-dimensionality. The KMO is found to be more than 0.9 suggesting that analysis and sample was adequate. Multi collinearity or singularity was not there.

Table 20 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.981
Bartlett's Test of Sphericity	Approx. Chi-Square
	Df
	Sig.
	3.909E4
	231
	.000



Total MSS Scree Plot-SPSS Output As seen from the scree plot of MSS items of Total sample, two Eigen values exceeding 1 are extracted, hence the factor solution can be explained with two components.

The factor loadings are given in the rotated component matrix.

Table 21 Total MSS Factor Analysis

Rotated Component Matrix^a		
Question No	Component	
	1	2
Q 21	.810	
Q 22	.797	
Q 20	.789	
Q 16	.780	
Q 18	.774	
Q 17	.760	
Q 14	.752	
Q 12	.749	
Q 15	.739	
Q 11	.737	
Q 13	.729	
Q 19	.722	
Q 10	.698	.501
Q 8	.648	.562
Q 7	.622	.576
Q 9	.613	
Q 2		.839
Q 1		.835
Q 3		.813
Q 4		.792
Q 6		.630
Q 5		.609

As seen from rotated component matrix of Total sample of MSS SPSS output (Table 21), all 22 parameters are retained. Given the overall sample size of 1665, Hair et al., (1995) suggested that conservative factor loadings of greater than 0.50 were to be considered significant at .05 level of significance. It is seen from the SPSS output that all 22 items were retained implying the contribution of these items to service quality. Also it is seen that many items did not load into their *a-priori* categories. Question numbers, 1, 2, 3, and 4 of Tangibles dimension could remain as separate component in tandem with question numbers 5, 6, 7 and 8 of Reliability dimension and 10 of Responsive Dimension which have cross loaded on to component 1. On the other hand, the other dimensions were merged in to one factor. In other words, the dimensions, namely, a portion of items of Reliability and Responsiveness were fused to form a single component. However, as these two parameters of Reliability and one parameter of Responsive Dimension cross loaded on to factor 1 with more loadings on component 1, these

can be considered and treated as part of component 1 rather than component 2. In effect, question numbers 1 to 4 of Tangibles dimension and 5, 6 of Reliability dimension remain as component 2. This component of original Tangibles dimension can be named as “**Service Environment**”. With regard to component two, as seen from the SPSS output, the remaining items from 7 to 22, are retained and got fused to emerge as distinct factor. The dimensions, except Tangibles, others fused in to a single factor. It implies that the customer is interested in the physical environment and also the overall service outcome distinctively. In other words, apart from knowing the service environment in which the service was availed, the customer is interested in the overall service delivery, the outcome quality. Therefore, this factor can be named as “**Overall Service Experience**”. Thus, the service quality of Total sample of its MSS can be deduced and explained in two factors as stated.

Total Sample-Perception Factor Analysis

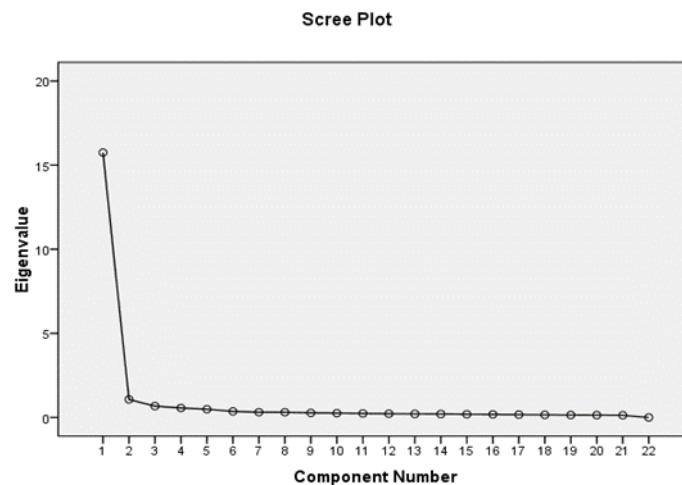
The factor loadings are given in the rotated component matrix.

Table 22 Total sample- Perception Factor Analysis

Rotated Component Matrix ^a		
Question No	Component	
	1	2
Q 20	0.796	
Q 21	0.796	
Q 15	0.795	
Q 16	0.782	
Q 14	0.765	
Q 11	0.76	
Q 12	0.756	
Q 18	0.755	
Q 17	0.754	
Q 22	0.741	
Q 10	0.72	
Q 19	0.718	
Q 9	0.698	
Q 13	0.680	
Q 8	0.677	
Q 7	0.674	
Q 5	0.665	
Q 6	0.637	
Q 2		
Q 1		
Q 3		
Q 4		

As seen from rotated component matrix of Total sample of perception SPSS output (Table 22), all 22 parameters are retained. Given the overall sample size of 1665, Hair et al., (1995) suggested that conservative factor loadings of greater than .50 were to be considered significant at .05 level of significance. It is seen from the SPSS output that all 22 items were retained

implying the contribution of these items to service quality. Also it is seen that many items did not load into their *a-priori* categories. Question numbers, 1, 2, 3, and 4 of Tangibles dimension could remain as separate component in tandem with question numbers 5, 6, 7 and 8 of Reliability dimension and 10 of Responsive Dimension which have cross loaded on to component 1. On the other hand, the other dimensions were merged in to one factor. In other words, the dimensions, namely, a portion of items of Reliability and Responsiveness were fused to form a single component. However, as these five parameters of Reliability, responsiveness cross loaded on to factor 1 with more loadings on component 1, these can be considered and treated as part of component 1 rather than component 2. In effect, question numbers 1 to 4 of Tangibles dimension remain as component 2. This component of original Tangibles dimension can be named as “**Service Environment**”. With regard to component two, as seen from the SPSS output, the remaining items from 5 to 22, are retained and got fused to emerge as distinct factor. The dimensions, except Tangibles, others fused in to a single factor. It implies that the customer is interested in the physical environment and also the overall service outcome, distinctively. In other words, apart from knowing the service environment in which the service was availed, the customer is interested in the overall service delivery, the outcome quality. Therefore, this factor can be named as “**Overall Service Experience**”. Thus, the service quality of Total sample of its perception can be deduced and explained in two factors as stated.



As seen from the scree plot of perception items of Total sample, two Eigen values exceeding 1 are extracted, hence the factor solution can be explained with two components.

It is clear from the factor analysis of samples that the postal service quality can be explained with two factors only proving that the PZB's SERVQUAL model is not a generic one. However the 22 parameters of original SERVQUAL model are retained. The component one can be named as “Service Environment” and the second component as “Overall Service Experience”. The service environment is about the look and feel component that includes ambience, the personnel appearance and their attitude towards the work, the machines and equipment. Thus, it deals with the tangibles and conveys the service preparedness of the service provider. By looking at these aspects of service quality, the customer will make up his expectations of the

‘to be’ service quality. The second component deals with intangible portion of a service, i.e., the delivery of service across the counter and in outdoor by at the time of delivering mails to the customers.

5. Discussion

It is clear from the factor analysis of four samples at MSA, MSS and Perception level that the postal service quality can be explained with two factors only proving that the PZB’s SERVQUAL model is not a generic one. However, the 22 parameters of SERVQUAL model are retained. The component extracted can be named as **Service Environment** which is about the physical quality and the second component as **Overall Service Experience**. This included the quality of relationship across the counter service interactions (interaction quality) and the ultimate service delivery experience once the transaction is completed. **The service provider needs to assess the individual processes to know the gaps and to evolve areas of improvement of ‘tactical’ and ‘strategic’ importance.** Since all 22 items are statistically significant, all these items need to be taken into consideration at the time of service provision.

Parasuraman et al., (1985) claim the five dimensions of SERVQUAL are generic across service contexts. Babakus and Boller (1992) argue that the number of dimensions should depend on the particular service being offered and five dimensions are not appropriate as a generic model that needs to be modified for applications. In 1991, PZB stated the possibility of inter dimensional overlap among the dimensions. **Therefore, as per the findings in this study, it could be stated that the SERVQUAL model is not a generic one and Service Quality in Indian Post Offices can be explained with two factors only as stated above. The three-column format SERVQUAL instrument is proved most useful for diagnostic purpose and maximizing predictive power as stated by the previous researchers (Parasuraman et al., 1994; Kettinger and Lee, 1997; Caruana et al., 2000).** Measuring Service Quality in Indian Post Offices is not an easy task considering the numerous products and services the department is handling and also the geographical spread and demographical diversity. The task is far more difficult given the inflexibility of legacy systems and the systemic reactions due to the fact that the system is managed by government machinery. However, there is an urgent need to relook at its service design and to bring in changes that bring quality.

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