9. DEVELOPING A QUALITY FRAMEWORK FOR EDUCATIONAL INSTITUTIONS – AN ADMINISTRATIVE STAFF PERSPECTIVE IN THE INDIAN CONTEXT

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Abstract

The systems approach views an educational institution as an open system comprising a transformation system, with elements within it affected directly or indirectly by the environment outside. With 'effectiveness' and 'quality', both being essential to analyzing the performance of an educational institution, various models, frameworks and approaches have been developed and proposed. With an emphasis on two of such models, viz., the process and satisfaction models, an attempt may be made to apply the systems approach at developing a Quality Framework for Educational Institutions. Starting with a theoretical background, the paper presents the results of an empirical study conducted on the administrative staff, so as to obtain the internal customer's perspective on quality. The SERVQUAL was applied to identify the gap and determine the level of Service Quality. Following this, the Quality Function Deployment Technique was applied to identify the set of minimum design characteristics/quality components that would meet the requirements of the administrative staff as an internal customer. The adoption of such a framework in educational institutions would lead to the creation of an environment where the administrative staff would be satisfied and in turn, be able to deliver quality service to the other customers and stakeholders.

Key words: *Quality Management, Administrative staff as an Internal Customer, Customer requirements, Design characteristics, SERVQUAL, Quality Function Deployment.*

Introduction:

The educational system consists of subsystems and processes; it is a transformation system; while inputs includes factors relating to the students, teachers, administrative staff, physical facilities and infrastructure, the processes include activities of teaching, learning, administration, and the outputs include examination results, employment, earnings and satisfaction. The different parts must work in collaboration, contribute towards each other, and produce a synergistic effect culminating in high quality services to the varied customers and stakeholders of the educational system.

Educational institutions in India, like all over the world, have begun to realize the growing concern amongst stakeholders with regards to issues of quality. The Indian higher educational system is one of the largest in the world. Since the time of India's independence, student registration in higher education has grown to

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about thirty times the original figure. Technical and management education in India contributes a major share to the overall education system.

Engineering colleges in the country have been growing at 20 per cent a year, while business schools have grown at 60 per cent. With the mushrooming of engineering and management institutions all over the country, there is increasing competition amongst higher education institutions to attract government funding and student intake. There has been an increase in the size and diversity of the student population, an increased expectation of quality by stakeholders, demands for greater accountability of academic functions, focus on matters of funds and finance and an increased emphasis on efficient and effective management. Environmental forces and dynamics are creating new challenges, forcing educational institutions to re-examine their structures, services and delivery systems. Against this background, there is tremendous pressure on higher education to adapt to changes and improve outcomes, become more efficient, effective and productive. As engineering and management education grows, the quality has to improve. The emphasis is on quality as a strategic issue for growth and success. Quality has emerged as a theme that is fast spreading within the higher education institutions so as to enable them to become competitive and successful in the long run.

The last two decades have witnessed an increase in the quality systems activity focused towards education. Quality in education is indeed a debatable issue with varying interpretations and perspectives on the very conceptualization, implementation and assessment. One approach towards analyzing Quality in Education is based on the Process model (Cheng and Tam, 1997) which defines education quality as an internal process of a transformation; it enables the administrative staff to perform the administrative tasks, the teachers to perform the teaching task and students to gain knowledge. Another approach to analyzing Quality in Education is the Satisfaction model (Cheng and Tam, 1997), which defines education quality as the satisfaction of expectations of the various customers and stakeholders. With an emphasis on both the Process and Satisfaction models, an attempt has been made through this study to propose a Quality Framework with a focus on the processes part. Efficient customer service is a function of an interaction of components among the transformation system that affects the process of making products/ services available to customers.

While attempts to study quality management in higher education have been made throughout the world, the emphasis has been essentially an employer perspective or a student perspective. This has resulted in a compartmentalized approach, which has not always been sensitive to the expectations of the other customer groups. The authors have tried to study the various customer groups (Sahney et al., 2004; Sahney et al., 2006), so as to examine simultaneously each perspective, analyze the interdependencies among the major customer groups, draw conclusions and arrive at a synthesized and integrated model of quality management in education. Through this study, an attempt has thus been made to study the internal customer perspective about the role of a quality system in higher education, by focusing on the administrative staff.

Starting with a theoretical background, the paper presents the results of an empirical study conducted on the administrative staff as an internal customer of the educational system. Based on the literature review followed by a pilot study, the various customer requirements and design characteristics were identified. The SERVQUAL was applied to identify the gap and determine the level of Service Quality. Following this, the Quality Function Deployment (QFD) Technique was used to identify the set of minimum design characteristics/quality components that meet the requirements of the administrative staff. The adoption of such a framework would lead to a system that would help fulfill the requirements of the administrative

staff as an internal customer of the educational system.

Theoretical background:

a) *Quality in Education:*

Quality management in education can help improve universities (Green, 1994; Spanbauer, 1995; Owlia and Aspinwall; 1996; Moreland and Clark, 1998; Kanji et al., 1999; Sahney, 2003, 2004). There has been tremendous pressure for adoption of quality management principles in educational organisations (Owlia and Aspinwall, 1998; Moreland and Clark, 1998; Srikanthan and Dalrymple, 2002, 2004, 2007). As with other services, quality management in education, has been a matter of debate on the very conceptualization of educational quality (Harvey and Green, 1993; Green, 1994; Harvey, 1995; Harvey and Knight, 1996; Cheng and Tam, 1997) with perspectives varying from teaching styles and techniques to process and delivery. It is a multiple concept with varying conceptualizations and this poses problems in formulating a single, comprehensive definition. It includes within its ambit the quality of inputs in the form of students, faculty, support staff and infrastructure; the quality of processes in the form of the learning and teaching activity; and the quality of outputs in the form of the enlightened students that move out of the system. Infact, it is all permeating covering the different aspects of academic life.

While a single, homogenous theory of quality in education is lacking, the focus has always been on the customer, his needs, expectations and overall satisfaction from the system. This customer's definition of quality identifies and establishes relevant bases and measurement criteria to use in evaluating quality.

b) *Customers of the Educational System:*

The underlying theme behind quality is providing for maximum customer satisfaction by involving people at all levels in all functions. A customer is anyone being served. Customers may be both internal and external, depending on whether they are located within or outside the organization. The educational system, involves a number of customers, both internal and external: there are the students, staff, faculty, industry, parents and the society; and thus, there are different customer perspectives as to what constitutes quality in higher education (Cheng and Tam, 1997; Owlia and Aspinwall, 1996, 1998). It is essential that customers be identified and processes be established in order to determine specific needs and maintain customer-oriented service (Lembcke, 1994; Spanbauer, 1995). This study restricts itself to the administrative staff as an internal customer of the educational system; it may be rightly assumed that the satisfaction of internal customer would always be a precondition to customer orientation and satisfaction of the external customer. With this fact finding acceptance amongst theorists and researchers, studies in quality of higher education have begun focusing on academic satisfaction (Comm and Mathaisel, 2003).

Empirical Study:

I. Objectives of the Study:

While, the identification of customer requirements and the design characteristics that make up an educational system is required, it is important that the perception of the customers is compared with the expectations and thus, determine Service Quality. The application of Quality Function Deployment (QFD) as a tool in the design of a customer centric system would further ensure Service Quality. The Study has been conducted with the objective of identifying an integrated framework that would lead to Quality in Education with a focus on the administrative staff perspective. This involved :

(i) Identification of customer requirements and design characteristics.

(ii) Identification of the importance/degree

assigned to the various customer requirements and design characteristic constructs.

(iii) Determination of Service Quality through SERVQUAL.

(iv) Identification of design characteristics of a system that would meet the requirements of the administrative staff as an internal customer through the application of the Quality Function Deployment Technique.

II *Methodology:*

The research undertaken is descriptive, diagnostic and exploratory in nature. The study was confined to the administrative staff of select engineering and management institutions imparting graduate and post-graduate professional degrees/diplomas in and around Delhi. While selecting the institutions, non-probabilistic convenience and judgmental sampling technique was used. However, within such institutions, the respondents were selected by stratified random sampling. After a literature review, certain variables/constructs/dimensions were identified, that were adapted and incorporated into a questionnaire that was distributed to the respondents. A total of 37 questionnaires were finally found to be complete and valid for analysis.

Variable conceptualization:

The customer's definition of quality infact, emphasizes the need for the identification of relevant criteria to use in evaluating quality. An essential component in assessing the quality is thus, through the identification of customer expectations and requirements. Based on the literature review, the variables and the items for both the customer requirements and design characteristics were conceptualized. The customer requirements refer to the expectations of the various groups of customers. Further, quality efforts in any organization are a resultant of the cumulative effect of all those who work within. The design characteristics are design elements that make up a system and act upon or are acted upon by the transformation system. These are quality components that an educational institution must possess in order to satisfy the needs and wants of the stakeholder and customer groups. Excellent service quality depends on the determination of both the customer requirements and design characteristics and prioritization of the latter.

These items were tested for reliability and validity, so as to arrive at statistically proven items that could be identified as customer requirements. Qualitative validity was tested through the theoretical study as well as through expert comments. The test for quantitative validity was done through an Exploratory Factor analysis through the Principal component method. The tests for validity helped classify and group such customer requirements under factors, which were identified as constructs. Internal consistency was examined through a reliability analysis.

i) Customer requirements:

The customer requirements were conceptualized from the research works on service quality (Zeithaml et al., 1985; Cronin and Taylor, 1992, 1994; Teas, 1993, 1994; Parasuraman et al., 1994; Owlia and Aspinwall, 1998). The tests for validity and reliability identified a total of 14 items, which got grouped under four factors/constructs. The Cronbach's $\propto$ values for the different factors of customer requirements ranged from .5637 to .8344 indicating that the scale was internally consistent and reliable (Cronbach, 1951; Nunnaly, 1978; Nunnally and Bernstein, 1994). The various customer requirements are as follows:

1. Tangibles - Proper Physical facilities/ Infrastructure, Salary, Allowances and benefits.
2. Attitude - Effective problem solving/

complaint handling, Information sharing and exchange, Cordial Interpersonal relations, Supportive superiors, Proper monitoring systems and evaluation procedures.

3. Delivery - Autonomy of work/freedom, In-service training and development, Individualized/Personalized attention.

4. Reliability - Consistency of practice, Clearly specified policies/guidelines, Fairly and firmly enforced rules and regulations.

ii) Design characteristics:

The design characteristics were conceptualized from the works of the quality gurus. The tests for validity and reliability identified a total of 21 items, which got grouped under three factors/constructs for design characteristics and these factors were termed as management system, technical system and social system, the terminology being borrowed from Lewis and Smith (1994). The Cronbach's $\propto$ values for the different factors of customer requirements ranged from .6071 to .8167 indicating that the scale was internally consistent and reliable (Cronbach, 1951; Nunnaly, 1978; Nunnally and Bernstein, 1994). The various design characteristics are as follows:

1. Management System: Clearly defined and specific goals, Effective and efficient leadership, Clear and specific policies and procedures, Strategic and operational planning, Clear organizational structure and design, Machinery for evaluation and control, Budget priorities-proactive and objective driven, Emphasis on continuous improvement, Management-by-fact/Information system/ database, Cross – functional collaboration.

2. Technical System: Administrative competence – expertise and adequacy, Administrative arrangement – adequate infrastructure and facilities, Adaptive resource allocation (as in contingencies).

3. Social System: Reward policy/incentive schemes, Emphasis on training and development for all, Customer focus/need based, Participation and involvement/ meetings, Trustworthiness amongst all, Well-defined channels of communication, Teamwork, Respect for people.

iii) Data analysis:

For analytical purposes, descriptive statistics were used through measures of central tendency and dispersion. The means and standard deviation on the various customer requirement constructs was calculated. The mean scores for the various customer requirement constructs ranged between 4.252 and 4.099, with 'delivery', scoring the highest and 'reliability', scoring the least. The mean scores for the various design characteristic constructs ranged between 4.164 and 3.996, with 'management system', scoring the highest and 'social system', scoring the least.

The first part of the questionnaire was designed to determine the Service Quality (SERVQUAL), so as to be able to determine the administrative staff satisfaction/ dissatisfaction levels from the system. The mean perception scores were compared to the mean expectation scores for the various customer requirements and the design characteristics so as to identify the Gap scores (Perception-Expectation, P-E=Gap). The second part comprised the Quality Function Deployment Matrix, wherein the respondent was required to specify what according to him/her was the relationship between the customer requirements and design characteristics. This enabled the identification of the minimum set of design characteristics able to cover the requirements of the student as a customer.

i) Gap Analysis:

Customer service excellence would enhance customer satisfaction. With this as a premise,

the assessment and measurement of quality in education as like other services is based on the customer's satisfaction with the service process and delivery (Gronroos, 1990; Bergman and Klefsjö, 2003). The measurement of quality in services has been debatable; a number of frameworks and models have been proposed and successfully implemented that measure quality in services (Lethinen and Lethinen, 1982; Gronroos, 1982, 1984; Parasuraman et al., 1988; Berry and Parasuraman, 1991; Koelemeijer, 1991; Teas, 1993; Zeithaml et al., 1990; Cronin and Taylor, 1992; Buttle, 1996; Brady and Cronin's, 2001). The conceptualizations and dimensional patterns most appropriate to use vary across services. However, the most widely used and tested service quality survey instrument has been SERVQUAL, based on the service quality 'gap model'(Parasuraman, et al., 1988, 1991, 1993, 1994), which defines service quality as a function of the gap between customers expectations of a service and their perceptions of the actual service delivery by the organization.

It is generally believed that the higher the service quality the more satisfied the customers. For the study, the SERVQUAL has been modified. While the terminology has been borrowed, the items that these dimensions contain have been changed to adapt to the needs of an educational service.

The relevance of the Perception minus Expectation gap as a predictor of Service quality was analyzed. Simple Linear Regression Analysis was carried out, with Perception as a predictor and the Perception minus Expectation gap as the dependent variable. This analysis was done both for the customer requirements and the design characteristics. For both customer requirements and design characteristics, the regression analysis indicated a highly significant correlation with a p-value less than 0.05, indicating that the hypothesis that there is no linear relation between the two variables was rejected. The value of R^2 was greater than .50 and this indicated a goodness-of-fit of the linear model (also called coefficient of determination). The value of F was large and with p-value for the F being less than .05, the linear relation proved to be highly significant (See Table 1 and 2). It could be concluded that the study of the Perception minus Expectation gap as a predictor of Service quality was relevant.

"(Refer Tables 1 and 2)".

Gap Analysis and Findings: The differences in the Gap scores (Perception minus Expectation, P-E = Gap) for both the customer requirements and the design characteristics was studied for the sample. The respondents were asked to respond on a scale of five, their degree of expectation, from 'poor' to 'excellent' and their degree of actual experience, again on a scale of five, from 'poor' to 'excellent'. The mean and the standard deviation scores were calculated for the Perception level (P) and the Expectation levels (E) and then the Gap (P-E) was calculated.

The statistical analysis for conducting the analysis for service quality was descriptive as well as inferential, and included and multivariate techniques through Correlation Analysis. Two software packages – SPSS 9.0 version and Microsoft Excel were used for the analysis of the data. The scale's reliability and underlying dimensionality were analyzed. The scale's reliability was assessed by calculating the Cronbach's $\propto$ the underlying dimensionality was tested through an exploratory factor analysis conducted on each of the correlation matrices of the Perception, Expectation and Gap scores.

Descriptive statistics of the data showed that negative scores were obtained with the expectation levels being higher than their perception scores. This indicated that there is plenty of room for improvement for both the customer requirements and design characteristics. For the customer requirements, the largest gap was for Item no.10- In-service training and development and the smallest gap was for Item no.13- Clearly specified policies and guidelines. This implied that the scope of

improvement was maximum for In-service training and development (See Table 3). Items in each construct/dimension were subjected to reliability assessment. The coefficient a values for the Perception sub-scales ranged from .767 to .863, and that of Expectation sub-scales ranged from .604 to .889, indicating that the scale was internally consistent (Cronbach, 1951) (See Table 3). The item-to-total correlation for individual performance items was greater than the 0.35 cut of value (Nunnally, 1978; Nunnally and Bernstein, 1994) (See Table 4).

"(Refer Tables 3-4)"

For the design characteristics, the largest gap was for Item no.12- Administrative arrangement – adequate infrastructure and facilities and the item with the smallest gap was for Item no. 17-Participation and involvement/ meetings and for Item no. 21- Respect for people. This implied that the scope for improvement lay in the provision of administrative arrangement – adequate infrastructure and facilities (See Table 5). The coefficient a values for the Perception sub-scales ranged from .810 to .930, and that of Expectation sub-scales ranged from .863 to .908 indicating that the scale was internally consistent (Cronbach, 1951) (See Table 5). The item-to-total correlation for individual performance items was also greater than the 0.35 cut of value (Nunnally, 1978; Nunnally and Bernstein, 1994) (See Table 6).

For assessing the dimensionality of the scale, exploratory factor analysis was conducted on each of the correlation matrices of the Perception, Expectation and Gap scores for both the customer requirements and the design characteristics. A two-factor rotation was adopted. Data on the three correlation matrices produced very similar results with one factor accounting for most of the variation in item scores. This led to the conclusion that the scale should be treated as uni-dimensional with the items being considered as a single composite set of individual measures.

The results obtained led to the conclusion that there was a great deal of dissatisfaction amongst the administrative staff from the educational system and there was a need for improvement.

"(Refer Tables 5-6)"

ii) QFD Technique:

The Quality Function Deployment has been used extensively to reflect the Voice of the Customer by prioritizing the design characteristics that most effectively meet customers' needs. Initiated by Shigeru Mizuno and Yogi Akao, of the Tokyo Institute of Technology in the 1960's, the Quality Function Deployment Technique has been used in product and service design by many organizations all over the world. Starting with identifying and ranking the relative importance of the customer requirements, the QFD finally helps identify the set of design characteristics that best satisfy the customer requirements (Hauser and Clausing, 1988; Pitman et al., 1995). As a methodology, it is used to first, identify customer needs and second, to apply quality considerations (Akao, 1990).

During the past decade, there have been a number of studies related to QFD applications in higher education. However, no direct and complete translation of the VOC for the various customer groups so as to identify such technical descriptors or design characteristics which may satisfy all has been presented in the literature. An attempt has been made in this direction (Sahney, 2002, 2003, 2004).

The structure of the QFD is similar to a framework of a house; the exterior walls on the left of the house represent the "Whats" (Customer Requirements) , which are arranged in rows; the ceiling of the house represent the "Hows" (Design Characteristics), which are arranged in columns; the rows and columns cut across each other, creating the cells or interior walls of the house which represent the relationship between the customer requirements

and the design characteristics; the roof of the house portrays the interrelationship between the various design characteristics; the foundation of the house is the prioritized design characteristics, which are ranked both absolutely and relatively. If the "Whats" carry a numeric relative importance score and if the relation between the "Whats" and the "Hows" are expressed in numeric values, then the relative importance for the column items can also be calculated, and priorities can be set, both absolutely and relatively.

QFD and the Findings: The second section of the questionnaire was aimed at collecting information which was used for the QFD. The objective was to identify the minimum set of design characteristics able to cover all customer requirements. As may be observed in the previous section, the constructs proved to be statistically significant and the validity of the model/constructs could not be negated. However, in this section, the scales for customer requirements and the design characteristics are however considered as uni-dimensional with the items being considered as a single composite set of individual measures.

For the purpose of the study, the traditional QFD Technique has been altered and so this can be called a Quasi – QFD approach to the technique. The customer requirement attributes numbered 14 while the design characteristic numbered 21. The respondents were first asked to assign numeric relative importance scores to the various customer requirements on a scale from 5 to 1. They were also asked to express in numeric values on a scale of 5,3 and 1, the relationship between the customer requirements and the column items. On the basis of this, the relative importance for the column items was calculated. The absolute values (denoted as AR) were computed for each column and the respective design characteristics were then ranked relatively (denoted as RR) (See Figure 1 and Table 7). The interrelationship between the different design characteristics was determined through a correlation analysis. The correlated pairs with alpha value of more than .60 were identified (See Table 8).

"(Refer Figure 1 and Tables 7-8)"

The items that were identified as a result of the ranking and the correlation analysis are as follows:

Clear and specific policies and procedures, customer focus/need based, administrative competence – expertise and adequacy, administrative arrangement, management-by-fact / information system / database, budget priorities- proactive and objective driven, well defined channels of communication, effective and efficient leadership, strategic and operational planning, machinery for evaluation and control, adaptive resource allocation, reward policy/incentives, emphasis on continuous improvement, emphasis on training and development, participation and involvement, trustworthiness amongst all, cross functional collaboration and teamwork.

Findings and Conclusion:

The Study was conducted with a two-fold objective: (1) conducting a Gap analysis for determination of Service Quality (here Quality of Education), and, (2) identifying the design characteristics of a system that would meet the customer requirements of the administrative staff as an internal customer.

A literature review followed by a pilot study helped formulate a questionnaire. These items were tested for reliability and validity, so as to arrive at statistically proven items that could be identified as quality elements/components. The questionnaires were administered to the respondents. The statistical analysis was descriptive as well as inferential, and included multivariate techniques through Correlation Analysis.

Based on the analysis of data, the study reached a logical conclusion. The findings have a direct bearing on the educational institutions that can benefit from such empirical findings. As far as the Gap analysis was concerned, the

descriptive statistics of the data showed that negative scores were obtained with the expectation levels being higher than their perception scores. This indicated that there was a great deal of dissatisfaction amongst the administrative staff from the educational system and there was a need for improvement. Thereafter, the QFD Technique was applied to identify the minimum set of design characteristics able to meet the various customer requirements. These design characteristics are the parameters which when implemented, would help meet the requirements of the administrative staff as an internal customer, and thus these parameters may be used to develop a quality framework for education. The study has helped identify critical strategic issues and parameters which when implemented would result in the creation of an environment where the administrative staff would be satisfied and therefore, be able to deliver quality service to the other customers and stakeholders, leading to academic excellence.

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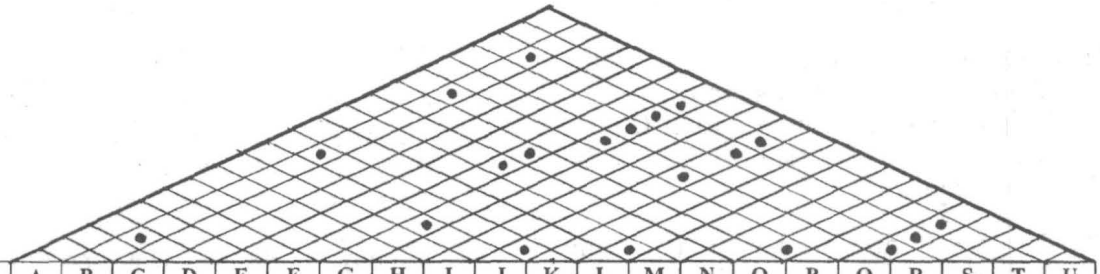

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	4	6	15	8			20	12	13		3	19	7			14			2		3
2	3		21		4	10	18	3	10		8		2	6		7					10
3	3		20		6	12	17	6	12		6		3	20		4		7			4
4	5	12	20	12	7		9	11	17	15	19	9	12			10	14	6	13	11	5
5	3	9	14	7	12	10	3	7	20	16	12	4	7	8	4	16	21	15	21	17	4
6		8						10	6	12	9					12	12	15	14	15	19
7	4	12	7	7	11	3		4		8	13					10	15	12	11	17	14
8	4	10	21	9	9	21	3	10	17	11	13			14	12	13		3	10		6
9	4	11	19	13	10		3		3	14	13					9	13	15	15	13	10
10	4	11	21	10		9	16	19	12	13	18			4	21	17			4		8
11	4	11	18	10		8	13	18	11	5	12	13	13	11	16	20	11	2	12		16
12	4	7	16	9	4	11	10		5	3		4	9	8	10	12	10		11		
13	18	15	22	13	10	16	16	10	10	12	11	10	13	15	15	19	10		20		
14	4	15	14	12	14	20	16	3	11	3	15		11	14	15	18	3		9		
AR	64	127	228	110	87	120	144	113	147	112	152	59	77	100	93	181	109	75	142	73	99
RR	20	7	1	11	16	8	5	9	4	10	3	21	22	13	15	2	12	18	6	19	14

Figure 1 QFD Matrix

Codes and Items

A	Clearly defined and specific goals	H	Emphasis on continuous improvement	O	Emphasis on training
B	Effective and efficient leadership	I	Management-by-fac / information system	P	Customer focus/need based
C	Clear and specific policies and procedures	J	Cross-functional collaboration	Q	Participation and involvement / meetings
D	Strategic and operational planning	K	Administrative competence-expertise and adequacy	R	Trustworthiness amongst all
E	Clear organizational structure and design	L	Administrative arrangement	S	Well defined channels of communication
F	Machinery for evaluation and control	M	Adaptive resource allocation	T	Teamwork
G	Budget priorities	N	Reward policy/ incentives	U	Respect for people

1	Appropriate physical facilities	6	Cordial interpersonal relations	11	Individualized / personalized attention
2	Salary	7	Supportive superiors	12	Consistency of practice
3	Allowances and benefits	8	Proper monitoring systems	13	Clearly specified policies
4	Effective problem solving	9	Autonomy of work / freedom	14	Fairly and firmly enforced rules
5	Information sharing and exahange	10	In service training and development		

Table 1 Relevance of the Perception minus Expectation gap as a Predictor of Service Quality : Customer Requirements

Customer		Pearson's Corr.	Sig.	R^2	F	Sig.
Admn. Staff	Perception	.845	.000	.714	87.316	.000
	Perception minus Expectation: Gap					

Table 2 Relevance of the Perception minus Expectation gap as a Predictor of Service Quality : Customer Characteristics

Customer		Pearson's Corr.	Sig.	R^2	F	Sig.
Admn. Staff	Perception	.844	.000	.712	86.654	.000
	Perception minus Expectation: Gap					

Table 4 Assessment of Predictive Validity: Correlation between the Perception Expectation and Gap scores for Customer Requirements

	Perception	Expectation	Gap Scores
Perception	1.00	.65*	.845*
Expectation		1.00	
Gap Scores			1.00

* Correlation is significant at 0.05 (2-tailed)
** Correlation is significant at 0.01 (2-tailed)

Table 3 Gap Analysis for Customer Requirements

	Perception (P)			Expectation (E)			Service Quality
Items in each dimensions	**X**	**SD**	**Item total cor.**	**X**	**SD**	**Item total cor.**	**P-E**
A. Tangibles	α = .863			α = .889			
1. Proper Physical facilities / Infrastructure	3.72	.76	.80	4.48	.50	.77	-0.75
2. Salary	3.48	.50	.83	4.32	.47	.87	-0.83
3. Allowances and benefits	3.00	.66	.81	4.18	.46	.85	-1.18
B. Attitude	α = .767			α = .812			
4. Effective problem solving/ complaint handling	3.16	.83	.53	4.21	.47	.72	-1.05
5. Information sharing and exchange	3.10	.80	.72	4.21	.41	.78	-1.10
6. Cordial Interpersonal relations	2.94	.74	.48	3.97	.44	.59	-1.02
7. Supportive superiors	3.37	.63	.72	4.21	.41	.61	-0.83
8. Proper monitoring systems and evaluation procedures	3.29	.87	.77	4.40	.55	.71	-1.10
C. Delivery	α = .834			α = .604			
9. Autonomy of work/freedom	2.70	.87	.82	4.24	.54	.80	-1.54
10. In-service training and development	2.29	1.02	.75	4.05	.32	.47	-1.75
11. Individualized / Personalized attention	2.27	.87	.75	4.00	.33	.53	-1.72
C. Reliability	α = .845			α = .604			
12. Consistency of practice	2.72	.83	.72	4.00	.33	.57	-1.27
13. Clearly specified policies/ guidelines	3.62	.75	.70	4.18	.51	.90	-0.56
14. Fairly and firmly enforced rules and regulations	302	.92	.91	.55	.90	.90	-1.13

Table 5 Gap Analysis for Design Charerteristics

	Perception (P)			Expectation (E)			Service Quality
Items in each dimensions	**X**	**SD**	**Item total cor.**	**X**	**SD**	**Item total cor.**	**P-E**
A. Management Systems	α = .898			α = .881			
1.Clearly defined and specific goals	3.37	.92	.74	4.32	.47	.691	-0.94
2. Effective and efficient leadership	3.35	.85	.60	4.59	.49	.560	-1.24
3. Clear and specific policies and procedures	3.40	.68	.79	4.37	.49	.840	-0.97
4. Strategic and operational planning	2.91	.64	.62	4.16	.44	.433	-1.24
5. Clear organizational structure and design	3.51	.80	.75	4.32	.47	.788	-0.81
6. Machinery for evaluation and control	3.21	.97	.82	4.24	.49	.857	-1.02
7. Budget priorities	3.21	.85	.67	4.29	.51	.628	-1.08
8. Emphasis on continuous improvement	3.08	.72	.64	4.21	.47	.558	-1.13
9.Management-by-fact	3.13	.82	.80	4.21	.41	.750	-1.08
10. Cross-functional collaboration	2.78	.88	.44	4.08	.27	.445	-1.29
B. Technical System	α = .930			α = .908			
11. Administrative competence	3.10	.84	.88	4.51	.50	.826	-1.40
12. Administrative arrangement	2.94	.88	.93	4.54	.50	.940	-1.59
13. Adaptive resource allocation	3.18	.70	.83	4.35	.48	.795	-1.16
C. Social System	α = .810			α = .863			
14. Reward policy / incentives	2.75	.76	.65	4.16	.44	.65	-1.40
15. Emphasis on training and development	2.94	1.22	.65	4.29	.51	.66	-1.35
16. Customer focus/need based	2.83	.76	.68	4.13	.41	.66	-1.29
17. Participation and involvement / meetings	3.51	.60	.61	4.13	.41	.66	-0.62
18. Trustworthiness amongst all	3.18	.65	.24	3.89	.45	.54	-0.70
19. Well defined channels of communication	3.45	.80	.75	4.29	.51	.76	-0.83
20. Teamwork	3.48	.98	.71	4.37	.54	.79	-0.89
21. Respect for people	3.45	.86	.56	4.08	.36	.57	-0.62

Table 6 Assessment of Predictive Validity: Correlation between the Perception Expectation and Gap scores for Design characteristics

	Perception	Expectation	Gap Scores
Perception	1.00	.569**	.844*
Expectation		1.00	
Gap Scores			1.00

** Correlation is significant at 0.01 (2-tailed)

Table 7 Relative ranking of Items

S.No.	
I	Clear and specific policies and procedures
II	Customer focus/ need based
III	Administrative competence - expertise and adequacy
IV	Management-by-fact/Information system/database
V	Budget priorities-proactive and objective driven
VI	Well defined channels of communication
VII	Effective and efficient leadership
VIII	Machinery for evaluation and control
IX	Emphasis on continuous improvement
X	Cross functional collaboration

Table 8 Important items after Correlation

S.No.	
1	Efficient and efficient leadership
2	Strategic and operational planning
3	Machinery for evaluation and control
4	Budget priorities
5	Cross functional collaboration
6	Administrative competence
7	Administrative arrangement
8	Adaptive resource allocation
9	Reward policy/incentives
10	Emphasis on training and development
11	Customer focus-need based
12	Participation and involvement
13	Trustworthiness amongst all
14	Well-defined channels of communication
15	Teamwork

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