



Civil Service College, Dhaka

Term Paper

**Assessing Perception Regarding Service Quality of Personnel
Management Decision: A Case Study on Bangladesh Civil Service
(Family Planning) Officers**

Submitted by

Md. Mizanur Rahman

GPP-03

DU Registration: 213, 2010-2011

**Submitted in partial fulfilment of the requirement for the degree of Masters in
Public Affairs (Governance & Public Policy), 2010-2011**

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-Author

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Acronyms and Abbreviations

ANOVA	: Analysis of Variance
BCS (FP)	: Bangladesh Civil Service (Family Planning)
HRM	: Human Resource Management
NNS	: New National Scale
S.D.	: Standard Deviation
TQM	: Total Quality Management

Abstract

This pilot survey study was undertaken as a result of the need to assess the service quality within the Bangladesh Civil Service (Family Planning) cadre members in particular. This report focuses on the complexities of measuring service quality in human resource management. The quality of service delivery within career development is becoming more important as it influences them directly.

The literature was searched to find a suitable measure with a sound theoretical structure. This measure was then adapted for the department.

The results revealed that that the officers' perceptions fell well below the average mean for all of the dimensions. This pilot study could serve as a pilot study of the service quality in government sector human resource management environment.

In t-test, the calculated values of t are 0.505, 0.360, 0.666, 1.656 and -0.714 for assurance, responsiveness, empathy, reliability and tangible dimensions respectively where all are less than tabulated t value (2.145) at $\alpha/2=0.025$ significant levels with degrees of freedom 14. Hence, there is no significant difference exists between the opinions of respondents of male and female regarding assurance, responsiveness, empathy, reliability and tangible dimensions.

According to single factor ANOVA analysis the values of F are 2.179, 0.038, 2.435, 1.036 for assurance, responsiveness, empathy and tangible dimensions where critical value of F are 3.053, 3.115, 3.251, 3.252 respectively which mean there are no significant difference exists for different experience level in respective dimension. On the other hand, reliability dimension has an F value of 9.096 which is greater than the critical F value of 3.115. So, it means there is a significant difference exists between the opinions of respondents of various experience groups regarding reliability dimension.

Chapter One: Introduction

Chapter One

Introduction

1.1 Introduction

Personnel management is the management of an organization's workforce, or human resources. It is responsible for the attraction, selection, training, assessment, and rewarding of employees, while also overseeing organizational leadership and culture, and ensuring compliance with employment and labor laws. In practice, personnel management or, human resource management (HRM) is responsible for employee experience during the entire employment lifecycle. It is first charged with attracting the right employees through employer branding. It then must select the right employees through the recruitment process. HRM then onboards new hires and oversees their training and development during their tenure with the organization. HRM assesses talent through use of performance appraisals and then rewards them accordingly. In fulfilment of the latter, HRM may sometimes administer payroll and employee benefits, although such activities are more and more being outsourced, with HRM playing a more strategic role. Finally, HRM is involved in employee terminations - including resignations, performance-related dismissals, and redundancies.

At the macro-level, HRM is in charge of overseeing organizational leadership and culture. Establishing proper HRM in the population sector in Bangladesh, we can meet the population problem- a major concern of our country. Dealing with poverty and food security, stabilization of democracy, fighting militancy, government of Bangladesh has a major task to control population. Bangladesh Civil Service (Family Planning) [BCS(FP)] cadre is responsible to help the government in this issue. That is why it is important to have BCS(FP) officers' perception regarding personnel management which influence them.

1.2 Concepts of Key Issues

1.2.1 Service Quality

Service quality measures can serve as a management tool. Brown and Koenig (1993) recommend that customer evaluations of the quality of their education should be an integral part of Total Quality Management (TQM) programmes in business education. Indeed, a better understanding of how customers form impressions of quality can provide valuable information to management for designing service delivery systems that enhance customer satisfaction (Seymour, 1992) and for adapting the officers, or employees' in service sector needs (Hampton, 1993).

Service quality also has a tangible element. Customers cannot see a service but they can see and experience various tangible elements associated with the service. They see service facilities, equipment, employees, uniforms, pamphlets, leaflets, and these are referred to by Zeithaml et al. (1992) as "clues" and, as advocated by Shostack (1977), it is possible to "manage the evidence" using the clues. A prime responsibility for the service marketer is the management of available tangibles so that the proper signals are conveyed about the service (Berry, 1980 cited in Oldfield, 2000).

Service satisfaction has been related to a number of factors. Service quality of personnel management decision to officers severed in a organization can be influenced by a number of factors like, i) requirement in the service; ii) consistently courteous to them; iii) granting line, deputation, study leave etc.; iv) promotion and career development in service; v) grievance management etc. This study will explore some of these factors. The ultimate perception of the quality of an organization is the subsequent performance of its top level management activities in their business or work environment.

1.2.2 Functional Areas in Personnel Management Decision

All All managers at every level must concern themselves with personnel management decision or, human resource management and its five functions as follows:



Figure 1 : Human Resource Management Functions

Employment / Staffing:

- Staffing - Process through which organization ensures it always has proper number of employees with appropriate skills in right jobs at right time to achieve organizational objectives
- Job analysis - Systematic process of determining skills, duties, and knowledge required for performing jobs in organization
- Human resource planning - Systematic process of matching the internal and external supply of people with job openings anticipated in the organization over a specified period of time.
- Recruitment - Process of attracting individuals on a timely basis, in sufficient numbers, and with appropriate qualifications, to apply for jobs with an organization
- Selection - Process of choosing from a group of applicants the individual best suited for a particular position and the organization

Training and Development

- Training - Designed to provide learners with knowledge and skills needed for their present jobs

- Development - Involves learning that goes beyond today's job; it has more long-term focus
- Career development - Formal approach used by organization to ensure that people with proper qualifications and experiences are available when needed
- Organization development - Planned process of improving organization by developing its structures, systems, and processes to improve effectiveness and achieving desired goals
- Performance management - Goal-oriented process directed toward ensuring organizational processes are in place to maximize productivity of employees, teams, and ultimately, the organization
- Performance appraisal - Formal system of review and evaluation of individual or team task performance.

Compensation

- Direct Financial Compensation - Pay that person receives in form of wages, salaries, bonuses, and commissions.
- Indirect Financial Compensation (Benefits) - All financial rewards not included in direct compensation such as paid vacations, sick leave, holidays, and medical insurance.
- Nonfinancial Compensation - Satisfaction that person receives from job itself or from psychological and/or physical environment in which person works.

Safety and Health

- Safety - Involves protecting employees from injuries caused by work-related accidents
- Health - Refers to employees' freedom from illness and their general physical and mental well being.

Employee and Labor Relations

- Resolving personnel grievances and disagreements fairly in both union and union-free environments

1.3 Objective of the Study

The objective of this study is as follows:

- Firstly, to examine the dimensions that officers (clients) could use to assess the performance of personnel management.
- Secondly, to assess the service quality of administrative authority.

1.4 Organization of the Paper

The study report includes six chapters, references and appendixes. Chapter 1 discusses the background of the study, concepts of key issues along with objectives of the study. Chapter 2 includes reviews on various dimensions of service quality, factors affecting perception of quality and overview of BCS (FP) cadre service. In Chapter 3, I have incorporated research methodology which includes sampling technique, data collection method and statistical design etc. Chapter 4 explain the data analysis and statistical inference namely T-test, ANOVA analysis, and Chi-square test. Chapter 5, however, identifies some problems related to conduct the study. Finally, Chapter 6 incorporates some recommendations and conclusion of the study.

Chapter Two: Literature Review

Chapter Two

Literature Review

Very broadly, quality can be defined in terms of providing goods or services to customers according to a specification that satisfies their needs (Palmer, 2005).

Sahney, Banwet and Karunes (2004) suggest keeping it simple. They state that quality is derived from the Latin word *qualis*, meaning, “what kind of”. It has a wide variety of meanings and connotations attached to it and is hence a slippery concept. There is therefore no consensus definition. And quality has been defined with different perspectives and orientations.

The quality of a service as opposed to the quality of goods is even more elusive, mainly because of the unique features that differentiate services from goods. Intangibility, inseparability of production and consumption, heterogeneity, perishability and variability are the four well-documented features of services acknowledged in the service marketing literature (Berry, 1980; Bitner, 1992; Lovelock, 1983; Zeithaml et al., 1985). Because of these unique features, and the difficulties of defining and delimiting quality as it applies to intangibles, the measurement of service quality in specific service industries still remains a challenge (Babakus and Boller, 1992).

Service quality has been identified as the single most researched area in services marketing to date, and it is maintained that, for service-based companies, quality is the lifeblood that brings increased patronage, competitive advantage and long-term profitability (Oldfield and Baron, 2000).

Judgements about services are often subjective rather than objective and providing a consistent service is difficult as factors such as the interpersonal skills of administrator and the performance of consumers (officers) can be crucial (Kotler, 1982) and will thus confound both inter and intra group comparisons.

2.1 The Definition and Dimensions of Service Quality.

The literature is strewn with research that contains various views how service quality should or should not be measured. One notable view that was espoused recently deserves mention as it accords with debates that were considered when this study was undertaken. Palmer and O'Neill (2004) address the issue of service quality evaluation within the higher education sector and stress the need to develop measures that are both psychometrically and practically sound. They point out that recent debates surrounding the development of such measures have been too strongly geared toward the psychometric performance, with little regard for their practical value. While their research supports the need to develop valid, reliable and replicable measures of service quality, they suggest quite adamantly that administrator and management must not lose sight of the original purpose for which these measures were designed, i.e. their practical value in informing continuous quality improvement efforts. Feedback of officer serving in BCS(FP) who seek improvements in the department's service quality is valuable for policy issue.

Since an all-embracing definition of service quality is not possible, I will employ Zeithaml and Bitner's (2003) definition which describes quality as the ability of an organisation to meet or exceed customer expectation. Kitchroen (2004) cited Sasser, Olsen, and Wyckoff (1978), also list seven service attributes, which they believe adequately, embrace the concept of service quality. These include Security, Consistency, Attitude, Completeness, Condition, Availability and Training of service providers.

To that end, Parasuraman et al. (1993) hold the view that their SERVQUAL items are the basic skeleton underlying service quality that can be supplemented with context specific items when necessary. SERVQUAL is a well-known and much-used instrument for measuring customer perceptions of service quality (see Buttle, 1996 for a comprehensive review of its properties). However, while versions of SERVQUAL continue to be critiqued and improved, SERVQUAL stands as the pre-eminent instrument for assessment and measurement of perceived quality (Pariseau

and McDaniel, 1997). The instrument's 22 questions include multi-item measures of service processes, interpersonal factors and physical evidence - the three distinct components of service quality.

The original SERVQUAL questionnaire was designed to measure both expectations (forecast) and perceptions (what actually happens) of a firm's service quality. Cronin and Taylor (1992) disputed the appropriateness of measuring the gap between expectations and perceptions. They developed and tested an alternative instrument which measures performance only (SERVPERF) based on the construct that "service quality should be measured as an attitude" (Cronin and Taylor, 1992: 64).

SERVPERF is the measure of service quality most often found in the literature. Service quality within personnel management decision is a subject, which is debated from a number of viewpoints in the literature. Almost all the research undertaken agrees that service quality has many faces and is multi-dimensional. In this regard the following position is taken up by Le Blanc & Nguyen (1997), they state that the design of quality measures for specific service providers should lead to a better understanding of the construct and to the adaptation of quality improvement programmes which correspond to service company needs. From the design perspective, dependable measures of service quality for specific service industries are a viable research strategy to pursue (Brown and Koenig, 1993; Carman, 1990; Cronin and Taylor, 1992; Finn and Lamb, 1991; Zeithaml, 1988). SERVQUAL has five dimensions: Reliability, Assurance, Responsiveness, Tangibles and Empathy.

2.2 Factors which Affect Perception of Quality

There is evidence in the literature that gender influences the perception of service quality. Le Blanc and Nguyen (1997) have shown that male students are more likely to focus on social value during service consumption, while females are more critical of the price/quality relationship as it relates to value. If there is a sex difference in SERVPERF scores then the gender composition will bias studies in service quality

and gender corrections will have to be made whenever SERVPERF scores are compared.

Levels of a officers' maturity are also expected to influence the perception of service quality. Oldfield and Baron (2000) conducted their research in a UK University and management faculty. The survey they conducted was very close in its aims to the present study.

Le Blanc and Nguyen (1999) use gender and year of study as a basis for comparing student's value judgements of business education. Their survey was similarly conducted amongst business students.

This study therefore investigates differences in officers' assessments of service quality in personnel management decision which affect their career development based on gender and experience in the service.

2.3 Overview in BCS (Family Planning) Cadre Service

The BCS (Family Planning) Cadre was created in 1985 where total entry posts were 230. At that time i.e. in 1985 total 464 personnel were working in department as Thana Family Planning Officers (Class-II). Since new cadre was created Government decided to till up 230 posts from amongst the 464 and on the basis of seniority 230 were taken and rest 234 were retained as Thana Family Planning Officers (Class-II).

Table-1 depicts the requirement of minimum qualification and experience needed to be promoted in higher rank and absorption of non-cadre officials in the cadre post.

Table 1: Requirement for Promotion and Recruitment in BCS (Family Planning)¹

Sl. No.	Name of the specified post of the Service.	Age limit for Direct recruitment	Method of recruitment.	Qualification
1	2	3	4	5
1	Director General	..	By promotion from amongst the Directors. Or By transfer of officers not below the rank of Joint Secretary to the Government.	15 years' experience in the concerned Service including 2 years' service as Director.
2	Director	..	By promotion from amongst the Deputy Directors.	12 years' experience in the concerned Service including 5 years' Service as Deputy Director.
3	Deputy Director	..	By promotion from amongst the Assistant Directors.	5 years' experience in the concerned Service including 2 years' Service as Assistant Director.
4	Assistant Director.	..	By promotion from amongst the Family Planning Officers or MO(MCG)/MST)/(Clinic) having no lien to any other Service.	4 years' experience as Family Planning
5	Family Planning Officer.	As specified in the Bangladesh Civil Service (Age, Qualification and Examination for Direct Recruitment) Rules, 1982.	Initially by absorbing 140 (one hundred forty) Family Planning Officers who are already in the Selection Grade of NNS Tk. 750—1470 (MMS Tk. 1650—3020) and by promoting 90 (Nienty) Family Planning Officers who are in the scale of NNS Tk. 625—1375 (MNS Tk. 1315—2750), and thereafter. (i) $\frac{2}{3}$ rd by direct recruitment; and (ii) $\frac{1}{3}$ rd by promotion from amongst Family Planning Officers who are in the scale of NNS Tk. 625—1315 (NNS Tk. 1350—2750) having 3 years' experience.	As specified in the Bangladesh Civil Service (Age, Qualification and Examination for Direct Recruitment) Rules, 1982.

¹ Source: *Establishment Manual (Vol-1)*, 2009, Page 192-193, Ministry of Establishment, Government of Bangladesh, Dhaka, Bangladesh

According to rules BCS (Family Planning) cadre, one will be promoted as Deputy Director (5th Grade) after 5 years' experience in the concerned Service including 2 years' service as Assistant Director (6th Grade). On the other hand, it is observed that may cadre have their line promotion from 6th Grade to 5th Grade of new national Scale (NNS) without Serving in the 6th Grade for a Mandatory Period as per Bangladesh Civil Service (Age, Qualification and Examination for Direct Recruitment) Rules, 1982 its following schedules . Table-2 shows the summary.

Table 2: List of Cadre Members Getting Promotion to 5th Grade without Serving in 6th Grade for a Mandatory Period²

Sl. No.	Cadre Name	Schedule No. in the Recruitment Rules 1981	Page no. in Establishment Manual (Vol-I).
1	Bangladesh Civil Service (Administration)	SCHEDULE II PART-I	49-51
2	Bangladesh Civil Service (Forest)	SCHEDULE II PART-IV	64-65
3	Bangladesh Civil Service (Fisheries)	SCHEDULE II PART-V	66-68
4	Bangladesh Civil Service (Livestock)	SCHEDULE II PART-VI	69-72
5	Bangladesh Civil Service (Public Works)	SCHEDULE II PART-XII	141-143
6	Bangladesh Civil Service (Roads and Highways)	SCHEDULE II PART-XIV*	146-149
7	Bangladesh Civil Service (Tele-communication)	SCHEDULE II PART-XV	150-151
8	Bangladesh Civil Service (Health); Group-a (Administrative posts)	SCHEDULE II Part xx*	163-175
9	Bangladesh Civil Service (Information) A. GENERAL	SCHEDULE II PART-XXI	194-197
10	Bangladesh Civil Service (Ansars)	SCHEDULE II PART-XXV	211-212

² Source: *Establishment Manual (Vol-1)*, 2009, Page 40-219, Ministry of Establishment, Government of Bangladesh, Dhaka, Bangladesh

Chapter Three: Research Methodology

Chapter Three

Research Methodology

The present study is an exploratory cum descriptive research. In order to achieve the research objectives, following research methodology is used in the study described in these sections:

- i) Sample and sample profile
- ii) Instruments for data collection
- iii) Tabulation and codification of data
- iv) Statistical design

3.1 Sample and Sample Profile

The sample included in the study is drawn from whole BCS (Family Planning) cadre member in Bangladesh. The sample size of the research consisted of 40 BCS (FP) officers. These 40 samples among total 160 numbers working at present are chosen from different BCS batches. To study the officers' perception regarding personnel management decision, demographic variables (BCS batch, experience and gender) are included in the study depicted in table 3. Thirty-two samples (ultimate unit i.e. the respondents) are taken using systematic sampling taking every 5th officer according to their common gradation and eight samples are taken using purposive sampling to ensure representation of every BCS (FP) batches and representatives of BCS (FP) Association.

3.2 Instrument for Data Collection

To achieve the objective taken up in the study, primary data is used. For primary data collection, structured questionnaire is developed consisting of 12 items. The questionnaire is provided in the Appendix-1.

SAMPLE PROFILE

Table 3: Distribution of Officers Sample on the Basis of Demographic Variables

Demographic Variables	Item	Nos. of Respondents	Percent
BCS Batch [Total number of officer in that batch]	18 th BCS(FP) [61]	15	37.5
	20 th BCS(FP) [34]	7	17.5
	21 st BCS(FP) [11]	3	7.5
	22 nd BCS(FP) [17]	6	15.0
	25 th BCS(FP) [1]	1	2.5
	27 th BCS(FP) [13]	3	7.5
	28 th BCS(FP) [3]	1	2.5
	29 th BCS(FP) [4]	11	27.5
	30 th BCS(FP) [16]	3	7.5
	Total [160]	40	100
Experience (Years)	Below 5	8	20.0
	5-10	7	17.5
	Above 10	25	62.5
	Total	40	100
Gender	Male	25	62.5
	Female	15	37.5
	Total	40	100

3.3 Tabulation and Codification of Data

To achieve the objective of officers' perception regarding personnel management decision, a 5-point Likert scaled questions (strongly agree, agree, indifferent, disagree, strongly disagree) is used. A score of 1 for the response 'strongly disagree', 2 for 'disagree', 3 for 'indifferent', 4 for 'agree', 5 for 'strongly agree' is assigned. Initially factor analysis is applied to the raw data of officers' perception. Then for each factor a combined score is obtained.

Two additional statements were included which required respondents to answer yes or no. In contrast to the Likert scaled questions above, here, the researcher was able to probe responses where respondents were given less choice. The responses are tabulated in Appendix-2.

3.4 Statistical Design

Statistical inferences are done emphasis on Mean, and Standard Deviation to different variables. Pie-chart is used to present analyzed data. Moreover, T-test and ANOVA analysis are carried out to test difference in opinion among different groups (gender and level of experience in the service). Chi-square test has also been done to evaluate the qualitative data.

3.5 Research Questions

1. What are the levels of service satisfaction regarding personnel management decision in the controlling ministry of BCS (FP) as measured by the SERVPERF, at the global level, SERVPERF dimensional level and at the SERVPERF item level?
2. Are there any significant gender differences on the assessment of quality of service and on which dimensions- reliability, assurance, responsiveness, empathy, tangibles- do these differences occur?

Chapter Four: Data Analysis and Statistical Inferences

Chapter Four

Data Analysis and Statistical Inferences

4.1 General Description of the Results of Officers' Perception

By adapting the SERVPERF research instrument to measure officers' perception of functional quality of administrative ministry and directorate, I have interviewed officers of BCS (FP) and gained their experience.

The questionnaire contained 10 variables related to different aspects of the administrative ministry and directorate's service offering, such as projected image, physical facilities, recruitment process, interference of politician and high officials in posting & Transfer, approval of study leave, lien, deputation etc., getting promotion, selection grade and grievance handling.

In an application of SERVPERP model Cronin and Taylor (1992) empirically identify service quality as an antecedent of customer satisfaction, which in turn has a significant productivity. The SERVPERP model incorporates five dimensions namely, Assurance, Responsiveness, Empathy, Reliability, and Tangible.

The Dimensions of service quality as per SERVQUAL model is depicted in the table 4 along with the statements asked in the questionnaire. The table 4 explain that assurance of an officer (client) will come if he/she feels safety in transaction and confident about his/her service provider. Responsiveness dimension explains how prompt service is delivered to the client and service provider is willing to help. Again, empathy is measured with individual attention and personal caring. The reliability dimension provides services it promises and lastly, the tangible dimension explains the visually appealing physical facilities.

Table 4: Dimension and Measurements of Service Quality³

Dimensions of service quality	Key element	Opinion against the statement asked in the questionnaire
Assurance	<ul style="list-style-type: none"> • Safety in transaction • Confidence • Consistently courteous • Knowledgeable 	<p>Q1. All management level officers are consistently well-mannered to me.</p> <p>Q2 . The recruitment process in BCS(FP) post is fair.</p> <p>Q5. Politician and senior management do not interfere in posting and transfer of an officer.</p> <p>Q6. Rewards are offered to excellent performance of an individual.</p>
Responsive	<ul style="list-style-type: none"> • Prompt service • Willing to help • Never too busy to respond 	<p>Q4. Management grant Lien/Study leave within the time one might reasonably expect.</p> <p>Q7. Promotion is given according to rules within the time one might reasonably expect.</p>
Empathy	<ul style="list-style-type: none"> • Individual attention • Personal caring • Understanding • Best interest at heart 	<p>Q8. Top management deals with me in a caring fashion.</p>
Reliability	<ul style="list-style-type: none"> • Keep Promises • Provide service it promises • Shows sincere interest in solving problems 	<p>Q3. selection for the training is appropriate and unbiased.</p> <p>Q9. Job related complaint is addressed accordingly.</p>
Tangible	<ul style="list-style-type: none"> • Visually appealing physical facilities • Modern-looking equipment 	<p>Q10. Physical facilities like computerized database system is working properly for Human Resource Management.</p>

³ For more details, please see Parasuraman et al., 1991, “*Refinement and Reassessment of the SERVQUAL scale*”, Journal of Retailing.

4.1.1 Assurance Dimension of service Quality

Assurance variables denote competence, courtesy, credibility and security. It deals how an officer (client) is treated from his/her senior management. This dimension consisted of the following four statements the results are displayed in table 5.

The overall mean for the assurance dimension is 2.52 in a 5-point Likert scale. In response to Q1, “All management level officers are consistently well-mannered to me”, officers rated mean is 2.65. The results of the response rating shows management is average with the officers regard to courteousness.

Q2, “The recruitment process in BCS (FP) post is fair” shows a sample mean of 4.3 compared to the overall mean of 2.52 indicates a good perception regarding their requirement by public service commission in the BCS(FP) cadre post.

Q5, by contrast states “Politician and senior management **do not interfere** in posting and transfer of an officer” has a mean response of 1.43. Despite being happy with the activities of politician and senior management, officers feel that it is below par.

Table 5: Elements Considered Constituting Assurance

Question(s)	N	Mean	Std. Dev.
Q1: All management level officers are consistently well-mannered to me	40	2.65	0.89
Q2: The recruitment process in BCS (FP) post is fair	40	4.3	0.80
Q5: Politician and senior management do not interfere in posting and transfer of an officer.	40	1.43	0.64
Q6: Rewards are offered to excellent performance of an individual.	40	1.70	0.79

Overall mean = 2.52

About Q6, “Rewards are offered to excellent performance of an individual” officers rated as 1.70 which is below average. So, their attitude towards feeling within the department is poor.

This finding suggests that officers are unsure about whether to relax when dealing with the ministry’s and directorate’s personnel.

4.1.2 Responsive Dimension of service Quality

Responsiveness dimension explains how prompt service is delivered to the client and service provider is willing to help. This dimension consisted of the following two items - the results are displayed in the table 6.

The overall mean of the officers’ response to this determinant shows 1.74. Q4, “Management grant Lien/Study leave within the time one might reasonably expect” has a mean result of 2.35. This is above the overall mean of 1.74 and nearly average to the scale of 1 to 5. This response is noncommittal and seems indecisive on the part of officers.

Again, the result for Q7, “Promotion is given according to rules within the time one might reasonably expect” shows a mean response of 1.13 (standard deviation = 0.33) which is far below compared to the overall average and nearly down to the scale of 1 to 5 where ‘1’ stands for ‘strongly disagree’. Hence, the overall view by the officers is very negative with regard to the responsiveness of controlling ministry’s functional activities.

Table 6: Contains Elements Considered to Constitute Responsive Service Delivery

Question(s)	N	Mean	Std. Dev.
Q4: Management grant Lien/Study leave within the time one might reasonably expect	40	2.35	1.00
Q7: Promotion is given according to rules within the time one might reasonably expect	40	1.13	0.33

Overall mean = 1.74

Overall the results for the responsiveness dimension show that officers do not agree that the department's service is particularly responsive when engaged.

4.1.3 Empathy Dimension of service Quality

Empathy is measured with individual attention and personal caring to the client. Only one item was included under this dimension and shows an officers' mean response of 2.20 against the statement Q8, "Top management deals with me in a caring fashion" depicted in table 7. This result shows that officers in the department do not hold a very positive view to deal with them in a caring manner.

Table 7: Contains Elements Considered to Constitute Empathy

Question(s)	N	Mean	Std. Dev.
Q8: Top management deals with me in a caring fashion.	40	2.20	1.10

4.1.4 Reliability Dimension of service Quality

The reliability could represent dependability and accurate performance of the controlling Ministry and Department. This dimension consisted of the following two items. Table 8 shows the officers' opinions for this dimension.

The mean for the respondent's against Q3, "The selection for the training is appropriate and unbiased" is 2.03 compared to the overall mean of 2.00. Clearly, the means are indicative of below par performance in the scale of 1 to 5 and officers have little faith in selection process for training.

Table 8: Contains Elements Considered to Constitute Reliable Service Delivery

Question(s)	N	Mean	Std. Dev.
Q3: The selection for the training is appropriate and unbiased	40	2.03	0.97
Q9: Job related complaint is addressed accordingly	40	1.98	0.97

Overall mean = 2.00

Q9, “Job related complaint is addressed accordingly” has a mean of 1.98 for reliability. The department’s performance in terms of this element is particularly low and suggests that officers are dissatisfied with the efficiency in handling job related complaint.

Overall, the perception of officers is that the department is not providing a reliable service to its clients.

4.1.5 Tangible Dimension of service Quality

The tangible dimension explains the visually appealing physical facilities. Only one item was included under tangibles dimension and the result is displayed in the table 9.

Table 9: Elements Considered Constituting Tangibles

Question(s)	N	Mean	Std. Dev.
Q10: Physical facilities like computerized database system is working properly for Human Resource Management	40	2.48	0.82

In response to Q10, “Physical facilities like computerized database system is working properly for Human Resource Management”, respondents have an average score of 2.48 in a scale of 1 to 5. Officers’ response indicates physical facilities of the department are averagely visible.

However, the result for this dimension should be of concern to the management of the department.

4.1.6 Categorical Data results

Table 10 depicts the perceptions of improved performance in one's field after getting promotion/selection grade in time. All 40 (100%) respondents agree with better performance if he/she would be promoted and granted selection grade one might reasonable expect.

Table 10: Perceptions in Improving Performance by Getting Promotion

Question(s)	Description	Frequency	Percentage
Q11: Do you think getting promotion/selection grade in time helps to improve your performance in the organization? (N=40)	Yes	40	100
	No	0	0

Again, Q12 probed what officers' views were regarding prestige in the society as an officer of BCS (FP). The result described in table 11 shows that majority i.e, 62.5% of the sample were in favour of having status in the community.

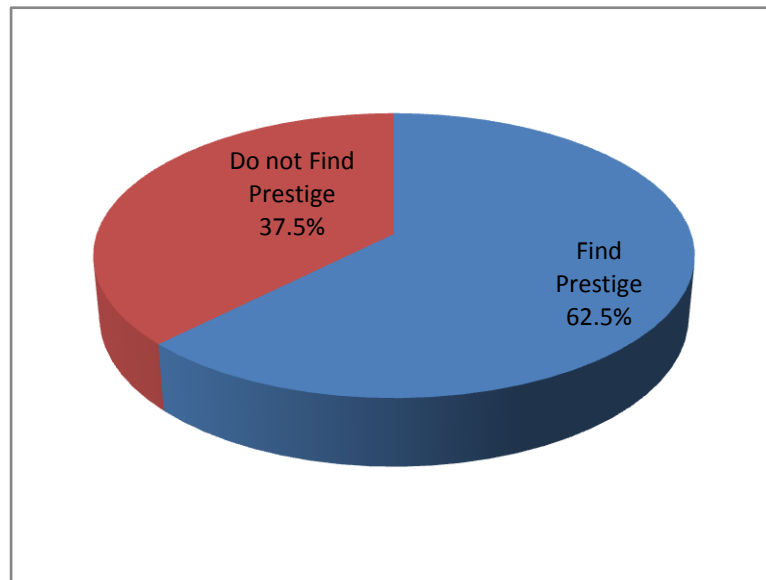


Figure 2: Perception about Social Recognition

While 37.5% sampled officer do not find prestige in his/her society represented in the figure 2.

Table 11: Perceptions of Status in the Community

Question(s)	Description	Frequency	Percentage
Q12: Does being an officer of BCS (FP) give you prestige in your community (i.e. your family, friends' etc)? (N=40)	Yes	25	62.5
	No	15	37.5

4.2 Statistical Inferences

4.2.1 T-test for Gender-wise Analysis of Officers

The mean values and S.D. for male and female respondents in different dimensions are tabulated in table 12. Here, T-test is done considering null hypothesis H_0 : "There is no difference in opinion between male and female respondent".

Table 12: T-test for Gender-wise Analysis ($\alpha=0.05$)

Dimension	Gender	N	Mean	Std. Dev.	Calculated 't' Value	't' Value in t-chart at $\alpha/2=0.025$ (d.f.)
Assurance	Male	25	2.59	1.357	0.505	2.145 (14)
	Female	15	2.37	1.353		
Responsiveness	Male	25	1.78	0.975	0.360	2.145 (14)
	Female	15	1.67	0.959		
Empathy	Male	25	2.24	1.052	0.666	2.145 (14)
	Female	15	2.00	1.134		
Reliability	Male	25	2.18	1.024	1.656	2.145 (14)
	Female	15	1.70	0.794		
Tangible	Male	25	2.40	0.764	-0.714	2.145 (14)
	Female	15	2.60	0.910		

The calculated value of t for assurance dimension is 0.505 where, at $\alpha/2=0.025$ significant levels with degrees of freedom 14 tabulated value of t is 2.145. It means

there is no significant difference exists (null hypothesis cannot be rejected as the calculated value of t is less than tabulated t value) between the opinions of respondents of male and female regarding assurance dimension at 95% confidence level. Similarly the calculated values of t are 0.360, 0.666, 1.656 and -0.714 for responsiveness, empathy, reliability and tangible dimension respectively where all are less than tabulated t value (2.145) at $\alpha/2=0.025$ significant levels with degrees of freedom 14. T-distribution is given in Appendix-4.

Hence, at 95% confidence level there is no significant difference exists (calculated value of t is less than tabulated t value) between the opinions of respondents of male and female regarding responsiveness, empathy, reliability and tangible dimension.

4.2.2 Single Factor ANOVA for Experience-wise Analysis of Officers

Table 13 depicts the mean values and standard deviations for respondents having different level of experience regarding responsiveness, empathy, reliability and tangible dimension. ANOVA analysis is done considering null hypothesis H_0 : "There is no difference in opinion among various experience groups" and tabulated in table 13. The summary of the ANOVA result is given in appendix 3 and F-distribution is annexed in Appendix 5.

The value of F is 2.179 for assurance dimension where critical value of F at $\alpha=0.05$ is 3.053. It means there is no significant difference exists (null hypothesis cannot be rejected as the calculated value of F is less than critical F value) between the opinions of respondents of various experience group with 95% confidence level. Similarly, the values of F are 0.038, 2.435, 1.036 for responsiveness, empathy and tangible dimension where critical value of F are 3.115, 3.251, 3.252 respectively which mean there are no significant difference exists for different experience level. On the other hand, reliability dimension has an F value of 9.096 which is greater than the critical F value of 3.115. So, it means with 95% confidence level there is a significant difference exists between the opinions of respondents of various experience groups regarding reliability dimension.

Table 13: One-way ANOVA for Experience-wise Analysis ($\alpha=0.05$)

Dimension	Experience (Yrs.)	N	Mean	Std. Dev.	F Value	Critical F Value
Assurance	Below 5	8	2.63	1.497	2.179	3.053
	5-below 10	7	2.93	1.489		
	Above 10	15	2.35	1.250		
Responsiveness	Below 5	8	1.69	0.793	0.038	3.115
	5-below 10	7	1.79	1.424		
	Above 10	15	1.74	0.876		
Empathy	Below 5	8	2.75	1.035	2.435	3.251
	5-below 10	7	2.43	1.134		
	Above 10	15	1.88	1.013		
Reliability	Below 5	8	2.75	0.856	9.096	3.115
	5-below 10	7	2.21	0.975		
	Above 10	15	1.70	0.863		
Tangible	Below 5	8	2.75	0.463	1.036	3.252
	5-below 10	7	2.14	0.378		
	Above 10	15	2.48	0.963		

4.2.2 Chi-Square Test for Perception of Status in the Society

From table-11, we find that 62.5% of total respondents agree about the role in generating prestige in the society having served as BCS (FP) officer whereas 37.5% denied of that.

In order to find the perception of status in the society, I have taken the following hypothesis to be tested: Does being an officer of BCS (FP) have any social prestige in the community?

To test the hypothesis, let us consider the null hypothesis H_0 : Being an officer of BCS (FP) has no role in building social prestige, i.e, every sample has the equal chance (probability=1/2) to say ‘Yes’, or ‘No’.

The computation for the χ^2 statistic is exhibited in table-14. Here, the degrees of freedom is (2-1)=1 and from the Appendix-6, we have found that the rejection region R: $\chi^2 \geq 3.84$ since $\chi_{.05}^2 = 3.84$ with d.f.=1.

Table 14: The χ^2 Goodness of Fit Test for the Data in Table-11

	Yes	No	Total
Observed freq(O)	25	15	40
Expected %	50%	50%	100%
Expected freq (E)	20	20	40
$(O-E)^2/E$	1.25	1.25	2.5

From the Table-14, χ^2 is calculated as 2.5 which is less than 3.84. As a result, the null hypothesis cannot be rejected at $\alpha=0.05$. So, we can conclude that the found data in Table-11 do not reject the statement ‘being an officer of BCS (FP) has no role in building social prestige’ at 95% confidence level.

4.3 Research Questions Answered

Research question one - asked what are the levels of service satisfaction regarding personnel management decision in the controlling ministry of BCS (FP) as measured by the SERVPERF, at the global level, SERVPERF dimensional level and at the SERVPERF item level?

In direct contrast to above results it is immediately noticeable that the officers’ perceptions fell well below the average mean for all of the dimensions. The dimension with the cause for greatest concern is that of responsive. This is followed by the reliable dimension, which was also rated negatively. The third most important

dimension for officers is empathy. On the other hand it should be noted that officers felt a bit more positive in their attitude towards the assurance dimension.

Zeithaml and Bitner (2003) refer to the results of surveys such as this one as a deliberate effort on the part of the university to find out where its students feel disappointment. The logic which underlies this apparent paradox allows companies an opportunity to develop recovery strategies and gain even greater loyalty as a result.

The Ministry and Directorate will have to look carefully at the responsive and reliability results of officers as it is emphasised in the literature that reliability i.e. doing things right the first time, is the most critical determinant of service quality across industries.

Research question two - asked Are there any significant gender differences on the assessment of quality of service and on which dimensions- reliability, assurance, responsiveness, empathy, tangibles- do these differences occur?

According to article 4.2.1, T-test for gender-wise analysis of officers is given and the inference from the t-test with a 95% confidence level, it can be summed up that respondents have no significant gender difference on the assessment of quality of services in different dimensions like, reliability, assurance, responsiveness, empathy, and tangibles.

Chapter Five: Limitation

6.1 Limitation of the Study

The study involves several constraints which impeded the study during its execution are as follows:

Firstly, only the immediate users i.e. officers' perception were sampled. Due to time constraint I had to surveyed only 40 officers among 160 BCS(FP) cadre.

Secondly, survey instruments such as SERVPERF was developed in cultural settings different from Bangladeshi context. More particularly, sub-cultural adaptations will have to be considered for application in the Bangladesh Civil Service.

Thirdly, the present study is a pilot on which possible further studies can be based. The intention was not to validate the instrument. This process as well as a full factor analysis will have to be undertaken in a follow-up study.

A fourth point relates to the need to revisit each of the dimensions used in this survey and compare its continued relevance in more current literature. This should also lead to future appraisal of each item within the dimensions so as to ensure that the factors which make up the service quality construct have a sufficient number of items that allows for valid and reliable analysis.

The number of items (questions) in the tangibles and particularly empathy dimensions were low. These will require more items in order to improve measurability for future research. Careful item analyses needs to be done in order to weed out items which do not really discriminate on the construct it purports to measure.

The possible effects of culture on the perception of service quality were ignored in the present study. This needs to be investigated in future studies.

Chapter Six: Recommendations and Conclusion

6.1 Recommendations

The main purpose of this study was to gain more insight into the dimensions that officer could use to evaluate service quality and to identify which components of the service delivery process are most important in their judgement. Additionally, to assess in a preliminary way, the controlling Ministry and Directorate's service quality (performance) from the point of view of their officers (clients) and the following are suggested as pointers:

1. For future studies a full factor analysis should be done on a sufficiently large sample, then explain the underlying theoretical structure of SERVPERF, particularly within Bangladeshi cultural environment.
2. These results suggest that management within the controlling Ministry and Directorate should undertake efforts in the area of service quality and customer satisfaction. On a positive note this research can be seen as a step in that direction. This survey's results can serve as a benchmark for future studies into the department's service performance.
3. Regular presentation of the findings should serve as a basis for discussion in the organization in order to begin to cultivate a culture of service quality.
4. For surveys such as these to be meaningful it should be periodically administered so as to track performance and to determine whether changes made have been successful in improving quality.
5. The officers should be promoted in time and having their job related administrative service properly to get more output from them.
6. The results can be used as a basis for discussion within focus groups with officers. This process can help to further define service quality determinants.

6.2 Conclusion

This pilot study showed that the heterogeneous dimensions of service quality described by Parasuraman et al. (1986) are applicable in public sector career development context. The exploratory research results are analysed and several insights and suggestions concerning officers' perceptions of service quality in personnel management has been reported.

The results of the response rating show management is average or below par with the officers regarding personnel management decision. Officers do not agree that the directorate's and controlling ministry's service are particularly responsive when engaged. Mostly same level of perception exists among different categories of experience measured in service length and gender.

As the quality of service delivery within career development influences the member of BCS (FP) directly, it should be a concern of the management of directorate and ministry to offer promotion in time, grant selection grade, deputation and other job related administrative service properly to motivate them towards responsibilities and to cope up with the problems in population sector.

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Appendixes

Appendix 1: The Questionnaire

Civil Service College, Dhaka

This study is a part to accomplish in partial fulfilment for the degree of Masters of Public Affairs in Governance & Public Policy. The topic on “Assessing Perception Regarding Service Quality of Personnel Management Decision: A Case Study on Bangladesh Civil Service (Family Planning) Officers” is a perception based study and hence the responses of BCS (Family Planning) cadre officials will be taken into account on the assessment process.

Please complete the following questionnaire. Please note/important, this is an anonymous survey ensure that you do not put your name and designation onto the questionnaire.

Please Read each of the statements below. Circle 5 if you strongly agree with the statement. Circle 1 if you strongly disagree. If your feelings are not strong, please circle a number between 1 and 5. There is no right or wrong answer.

Please answer from here:

BCS Batch (18th/20th/...Please mention): -----BCS

Gender: Male / Female

1. All management level officers are consistently well-mannered to me.

Strongly disagree

strongly agree

1 2 3 4 5

2. The recruitment process in BCS(FP) post is fair.

1 2 3 4 5

3. The selection for the training is appropriate and unbiased.

1 2 3 4 5

4. Management grant Lien/Study leave/deputation within the time one might reasonably expect.

Strongly disagree

strongly agree

1 2 3 4 5

5. Politician and senior management do not interfere in posting and transfer of an officer.

1 2 3 4 5

6. Rewards are offered to excellent performance of an individual.

1 2 3 4 5

7. Promotion is given according to rules within the time one might reasonably expect.

1 2 3 4 5

8. Top management deals with me in a caring fashion.

1 2 3 4 5

9. Job related complaint is addressed accordingly.

1 2 3 4 5

10. Physical facilities like computerized database system is working properly for Human Resource Management.

1 2 3 4 5

Circle either Yes or No for the following:

11. Do you think getting promotion/selection grade in time helps to improve your performance in the organization?

Yes

No

12. Does being an officer of BCS(FP) give you prestige in your community (i.e. your family, friends' etc)?

Yes

No

Thank you for your participation.

Appendix 2: The Summary of the Responses against Questionnaire

5-point Likert scaled question (strongly agree, agree, indifferent, disagree, strongly disagree) is used in the questionnaire. A score of 1 for the response ‘strongly disagree’, 2 for ‘disagree’, 3 for ‘indifferent’, 4 for ‘agree’, 5 for ‘strongly agree’ is assigned.

Table 15: The Summary of the Response against Questionnaire

Sl. No.	Gender	BCS Batch	Exp_range	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
1	Male	18	10-above	3	4	1	2	1	1	1	2	1	1	YES	NO
2	Female	22	5-below 10	3	4	2	2	1	2	1	1	3	2	YES	YES
3	Male	18	10-above	2	4	2	3	3	2	1	2	2	2	YES	NO
4	Male	18	10-above	4	4	3	2	2	2	1	3	4	1	YES	NO
5	Male	18	10-above	2	4	2	1	2	1	1	1	2	3	YES	NO
6	Male	22	5-below 10	4	5	3	1	3	2	1	3	4	3	YES	YES
7	Female	18	10-above	1	5	1	1	1	1	1	1	1	3	YES	YES
8	Female	22	5-below 10	5	5	2	4	1	2	1	2	1	2	YES	YES
9	Male	27	0- below 5	2	5	3	1	1	1	1	3	3	3	YES	NO
10	Female	22	5-below 10	2	4	1	1	1	1	1	1	1	2	YES	YES
11	Male	18	10-above	2	5	1	3	1	1	1	1	1	3	YES	YES
12	Male	30	0- below 5	3	5	3	3	1	2	1	4	3	2	YES	YES
13	Female	18	10-above	1	5	3	2	1	1	1	4	2	4	YES	NO
14	Male	18	10-above	2	3	2	3	1	2	2	3	2	2	YES	YES
15	Female	18	10-above	3	3	2	2	1	2	1	4	3	2	YES	YES

Sl. No.	Gender	BCS Batch	Exp_range	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
16	Female	18	10-above	3	3	1	2	1	3	1	3	2	2	YES	YES
17	Female	18	10-above	4	3	1	3	1	1	1	2	1	2	YES	NO
18	Female	20	10-above	2	4	1	2	1	1	1	1	1	3	YES	NO
19	Male	18	10-above	3	4	3	4	2	1	1	3	2	2	YES	YES
20	Female	18	10-above	3	2	1	3	1	1	1	1	1	1	YES	NO
21	Male	18	10-above	3	5	4	3	2	3	1	3	1	2	YES	YES
22	Female	22	5-below 10	4	4	2	4	3	2	1	3	3	2	YES	YES
23	Male	18	10-above	3	5	4	4	1	2	1	2	2	1	YES	YES
24	Male	29	0- below 5	2	5	2	1	1	1	1	1	1	2	YES	YES
25	Male	25	5-below 10	4	5	1	1	1	1	1	4	3	2	YES	YES
26	Male	22	5-below 10	3	4	2	5	1	5	1	3	3	2	YES	NO
27	Male	20	10-above	2	5	2	2	1	2	1	1	2	3	YES	YES
28	Male	20	10-above	2	4	1	3	2	2	2	2	2	4	YES	YES
29	Male	20	10-above	2	4	1	2	1	1	1	1	1	3	YES	NO
30	Male	21	10-above	2	3	2	2	2	2	1	2	2	3	YES	NO
31	Male	21	10-above	2	4	1	2	1	2	2	1	1	2	YES	YES
32	Female	21	10-above	3	3	2	3	2	2	1	1	1	4	YES	YES
33	Male	27	0- below 5	3	5	4	2	2	2	1	3	3	3	YES	YES
34	Female	27	0- below 5	2	4	2	2	2	1	1	2	2	3	YES	NO
35	Male	30	0- below 5	4	5	4	3	2	2	2	4	4	3	YES	YES
36	Female	30	0- below 5	3	5	3	3	1	1	1	3	3	3	YES	YES
37	Male	28	0- below 5	2	5	2	2	2	2	2	2	2	3	YES	YES
38	Male	20	10-above	2	5	2	2	1	2	1	1	1	3	YES	NO
39	Female	20	10-above	2	5	1	1	1	2	1	1	1	4	YES	YES
40	Male	20	10-above	2	4	1	2	1	1	1	1	1	2	YES	NO

Sl. No.	Gender	BCS Batch	Exp_range	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
	Gender	Male (n=25)	AVG	2.6000	4.4400	2.2400	2.3600	1.5200	1.8000	1.2000	2.2400	2.1200	2.4000		
			STD	0.7638	0.6506	1.0520	1.0360	0.6532	0.8660	0.4082	1.0520	1.0132	0.7638		
		Female (n=15)	AVG	2.7333	3.9333	1.6667	2.3333	1.2667	1.5333	1.0000	2.0000	1.7333	2.6000		
			STD	1.0998	0.9612	0.7237	0.9759	0.5936	0.6399	0.0000	1.1339	0.8837	0.9103		
	Experience	0-below 5 yrs. (n=8)	AVG	2.6250	4.8750	2.8750	2.1250	1.5000	1.5000	1.2500	2.7500	2.6250	2.7500		
			STD	0.7440	0.3536	0.8345	0.8345	0.5345	0.5345	0.4629	1.0351	0.9161	0.4629		
		5-below 10 yrs. (n=7)	AVG	3.5714	4.4286	1.8571	2.5714	1.5714	2.1429	1.0000	2.4286	2.5714	2.1429		
			STD	0.9759	0.5345	0.6901	1.7182	0.9759	1.3452	0.0000	1.1339	1.1339	0.3780		
		10 yrs. Above (n=25)	AVG	2.4000	4.0000	1.8000	2.3600	1.3600	1.6400	1.1200	1.8800	1.6000	2.4800		
			STD	0.7638	0.8660	0.9574	0.8103	0.5686	0.6377	0.3317	1.0132	0.7638	0.9626		
	over all (n=40)		AVG	2.6500	4.2500	2.0250	2.3500	1.4250	1.7000	1.1250	2.1500	1.9750	2.4750		
			STD	0.8930	0.8086	0.9737	1.0013	0.6360	0.7910	0.3349	1.0754	0.9737	0.8161		

Source: Field Survey

Appendix 3: The Summary of Single Factor ANOVA Analysis

Assurance Dimension

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
10-above	100	235	2.35	1.563131
5-below 10	28	82	2.928571	2.216931
0- below 5	32	84	2.625	2.241935

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	7.886607	2	3.943304	2.179103	0.116553	3.0536283
Within Groups	284.1071	157	1.8096			
Total	291.9938	159				

Responsive Dimension

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
10-above	50	87	1.74	0.767755
5-below 10	14	25	1.785714	2.027473
0- below 5	16	27	1.6875	0.629167

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.072857	2	0.036429	0.038208	0.962531	3.1153658
Within Groups	73.41464	77	0.953437			
Total	73.4875	79				

Empathy Dimension

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
10-above	25	47	1.88	1.026667
5-below 10	7	17	2.428571	1.285714
0- below 5	8	22	2.75	1.071429

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	5.245714	2	2.622857	2.435013	0.101513	3.2519238
Within Groups	39.85429	37	1.077143			
Total	45.1	39				

Reliability Dimension

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
10-above	50	85	1.7	0.744898
5-below 10	14	31	2.214286	0.950549
0- below 5	16	44	2.75	0.733333

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	14.14286	2	7.071429	9.096659	0.000284	3.1153658
Within Groups	59.85714	77	0.777365			
Total	74	79				

Tangible Dimension

SUMMARY

<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>
10-above	25	62	2.48	0.926667
5-below 10	7	15	2.142857	0.142857
0- below 5	8	22	2.75	0.214286

ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	1.377857	2	0.688929	1.036314	0.364828	3.2519238
Within Groups	24.59714	37	0.664788			
Total	25.975	39				

Appendix 4: The Table of T- Distribution

Appendix 5: The Table of $F(v_1, v_2)$ - Distribution at $\alpha=0.05$

Appendix 6: The Table of Chi Square- Distribution