STUDENTS’ SATISFACTION IN MATHEMATICS TOWARDS SERVICE QUALITY OF SEMESTER AND ANNUAL SYSTEM

A

THESIS

BY

BASU PANDIT

FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF EDUCATION

SUBMITTED
TO
DEPARTMENT OF MATHEMATICS EDUCATION
CENTRAL DEPARTMENT OF EDUCATION
UNIVERSITY CAMPUS
TRIBHUVAN UNIVERSITY
KIRTIPUR, KATHMANDU
(2016)

STUDENTS’ SATISFACTION IN MATHEMATICS TOWARDS SERVICE QUALITY OF SEMESTER AND ANNUAL SYSTEM – BASU PANDIT 2016

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LETTER OF CERTIFICATE

This is to certify that Mr. Basu Pandit, a student of academic year 2068/69 with campus Roll No. 649/2068, Thesis Number-1104, T.U. Registration No. 6-1-20-432-2004 and Exam symbol No. 281364(069) has completed this thesis under my supervision during the period prescribed by the rules and regulations of Tribhuvan University, Nepal. The thesis entitled **"Students' Satisfaction in Mathematics towards Service Quality of Semester and Annual System"** embodies the results of his investigation conducted under the Department of Mathematics Education, University Campus, Tribhuvan University, Kirtipur, Kathmandu. I recommend and forward that this thesis be submitted for the evaluation to award the degree of Master of Education.

…………………..………………
(Mr. Abatar Subedi)
For Head and Supervisor

Date: …………………………

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LETTER OF APPROVAL

Thesis

Submitted By

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Entitled

"Students' Satisfaction in Mathematics towards Service Quality of Semester and Annual System" has been approved in partial fulfillment of the requirements for the Degree of Master of Education.

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ACKNOWLEDGEMENTS

I owe my deepest gratitude to my supervisor Mr. Abatar Subedi, Lecture, Department of Mathematics Education, Central Department of Education, T.U., Kirtipur, Kathmandu for his invaluable suggestions, guidance and help throughout this study. It is an honor for me to complete this study under his guidance. He has supported in a number of ways by helping me in collecting surveys, providing guidance for the data analysis, editing and so on.

I would like to express my sincere appreciation to Assot. Prof. Laxmi Narayan Yadav, Head, Department of Mathematics Education, Central Department of Education, Prof. Dr. Hari Prasad Upadhyay, Prof. Dr. Hira Bahadur Maharjan, Prof. Dr. Min Bahadur Shrestha, Mr. Bed Prasad Dhakal, Mr. Lok Nath Bhattarai, Mr. Deepak Mainali and other respected teachers of Department of Mathematics Education for their constant inspiration and co-operation.

I am also indebted to many of my friends and participants for their valuable time in collecting the surveys. This study would not have been possible without their help and support.

Last, but not the least, I would like to express my gratitude to my parents, without their support it would not be possible to complete my Master in Mathematics Education from Tribhuvan University.

………………

Basu Pandit

ABSTRACTS

This study examines satisfaction of the students of Mathematics Education towards service quality of Master level of Tribhuvan University, Nepal. The study focuses on a variety of service quality factors such as non-academic aspects, academic aspects, design, delivery and assessment, group size, programs issues, reputation and access.

This is a survey research focused on finding the relationship between service quality variables and students' satisfaction of Master level of Mathematics Education of Tribhuvan University, Nepal. This study has focused to answer on additional research questions: does the level of satisfaction differ between males and females, students of age group of (20-25) years and students of age group of (26-30) years, students whose tuition fee is sponsored by their parents and students who manage tuition fee themselves and the students of semester system and annual system. Students' responses measured through an adapted questionnaire on 5-point Likert scale. Hard copy questionnaire were distributed among the students of Mathematics Education of Master level of Tribhuvan University, Nepal. This research incorporated total 60 samples in which 30 were taken from the annual system and 30 were from semester system. The data were analyzed by analyzed using, frequency, percentage, mean, standard deviation, z-test and regression analysis.

The results of this study show that there is significant relationship between the service quality variables and overall students' satisfaction. The results also show that there is no difference in satisfaction level between the students of semester system and annual system. The satisfaction level of the students of annual system is similar with the students of semester system.

TABLE OF CONTENT

Page No.

Letter of Approval *II*
Letter of Certificate *III*
Acknowledgements *IV*
Abstracts *V*

Chapters

I. INTRODUCTION **1-6**
Background of the Study 9
Statement of the Problem 11
Objectives of the Study 12
Significance of the Study 12
Research Hypothesis 13
Delimitation of the Study 13
Definitions of Terms 13
II. REVIEW OF RELATED LITERATURE **15-13**
Theoretical Framework 20
Conceptual Framework 20
III. METHODS AND PROCEDURES **22-16**
Research Design 22
Population and Sample of the Study 22
Data Collection Tools 23
Reliability and Validity of Tools 23
Data Collection Procedure 23
Data Analysis Procedure 24
IV. ANALYSIS AND INTERPRETATION OF DATA **25-35**
Gender 26
Age 27
Tuition Fee Sponsor 28
Studied System 30
Non-Academic Aspects 31
Academic Aspects 32
Design, Delivery and Assessment 34

Program issues 35
Reputation 36
Group size 37
Regression 39
Comparison of Satisfaction Level among the Students of Semester System and Annual System 34
V. SUMMARY, FINDINGS, CONCLUSION & RECOMMENDATION 44-39
Summary 44
Findings 45
Conclusion 46
Recommendations for Further Study 46
REFERENCES 47-41
APPENDICES 42-55

LIST OF TABLE

Page No.

Table 4.1 Gender wise frequency and percentage 26
Table 4.2 Gender wise mean scores based on service quality variables. 26
Table 4.3 Age wise frequency and percentage 27
Table 4.4 Age wise mean scores based on service quality variables. 28
Table 4.5 Frequency and percentage of tuition fee sponsor 29
Table 4.6 Mean scores of tuition fee sponsor based on service quality variables 29
Table 4.7 Frequency and percentage of studied system 30
Table 4.8 Mean scores of studied system based on service quality variables 30
Table 4.9 Mean and standard deviation of non-academic aspects 31
Table 4.10 Mean and standard deviation of academic aspects 33
Table 4.11 Mean and standard deviation of design, delivery and assessment 34
Table 4.12 Mean and standard deviation of program issues 35
Table 4.13 Mean and standard deviation of reputation 36
Table 4.14 Mean and standard deviation of group size 37
Table 4.15 Mean and standard deviation of access 38
Table 4.16 Variables Entered 39
Table 4.17 ANOVA table analysis between independent and dependent variables 40
Table 4.18 Coefficients of the regression model 41
Table 4.19 : Level of Significance, Critical Values and Z-value of Hypothesis Test 42

Chapter - I

INTRODUCTION

Background of the Study

People have been using mathematics from the very beginning of human civilization. It is believed that mathematics was originated along with the origin of man. Human being themselves created mathematics in the need for application to counting and measuring to both of quantities as well as spatial objects. It has evolved from simple counting measurement and calculation and the systematic study of the shapes and the motion of physical objects. It has become to the broad, complex and often abstract discipline today.

Elementary mathematics was the part of the education system in most ancient civilizations including ancient Greece, the Roman Empire, Vedic society and ancient Egypt. In most cases, a formal education was only available to male children with a sufficiently high status, wealth or caste. In Plato's division of liberal arts into the trivium and the quadrivium, the quadrivium included the mathematical field of arithmetic and geometry. Teaching of geometry was almost universally based on Euclid's Elements. By the twentieth century mathematics was the part of core curriculum in all developed countries.

The methods used in any particular context are largely determined by the objectives that the relevant educational system trying to achieve. Educational system all over the world has never been consistent over the year. Through advancement and exposure to new concepts, educationist investigates possibilities to teach text in various feasible manners. There are innumerable suggestions for reform and change in educational system and there are infinite number of good ideas and research result (Myron; 1994). In mathematics teaching and learning also fundamental changes can be observed. Mathematics teaching and learning has been shifted from traditional rote learning to collaborative learning based on learning by doing. Concept of giving lecture by the teacher in the large class has been started to replace by small class activity based teaching learning system. In Nepalese universities also the semester system of teaching and learning has been introduced. A semester system is an academic term. It is division of an academic year, the time during which a college holds classes. Usually a semester system divides the year into two parts or terms. Sometimes it might be trimester or quarter semester. Literally semester means six month period. Semester system has both advantages and disadvantages. Good aspects of the semester system are less syllabus load; activity based teaching learning system, continuous assessment, high rate of success, timely examination and the publication of results etc. On the other hand semester system of learning is expensive and has no flexibility in time and the regularity in the class.

Annual system is the traditional system. Annual system covers more syllabuses at a stretch and compels the students to remember all this till the end of the year. As the exam is held at last of the session, students will not get chance to improve their study. University committee wants to improve the learning process to benefit the students so they have introduced semester system rather than remaining with annual system to enhance value to the students. There may be various advantages and disadvantages of semester system in education. Semester system will provide an opportunity to students for continuous assessment and a better placed understanding of the subject. There will more focused class interaction because of continuous engagement between students and teachers. This will provide regular study habits among students. The main advantage is that the performance would not be judged at the end of one year rather conducting examinations twice a year will help in regularly evaluating the student's progress. The examination study load of the students shall be halved since they would be required to prepare half of the as they are currently required to prepare for the final examination. As a result it would enable a more in-depth study and understanding of their concerned subject. A semester system allows greater freedom and scope for designing and delivering a variety of courses that the students can pick flexibility to enhance the quality of their learning.

Some students have accepted the proposal of introducing the semester system and have a number of reasons in support of it. While some feel that the semester system will lighten the examination load since they would not be comforted with vast syllabus as in the annual examinations. Some students and teachers are not completely in favour of the new system and feel semester system will create many unwanted challenges for the students. Some felt that the success of the semester system being closely related to adequate time available while others felt that it would overburden them. Some students were under the feeling that the system of examination would become an internal one which would lead to a lack of uniform standard.

Higher education tends to care about student satisfaction because of its potential impact on student motivation, retention, recruitment efforts and fundraising (Schreiber, 2009). Developing student satisfaction at universities level is crucial. If this is achieved, it will facilitate the strategic objectives of the university more effectively. (Seymour, 1993)

Nowadays the students of mathematics education have been aware about the facilities and the academic excellence of the institutions. Students are not satisfied with the traditional teaching learning approach. There is a demand of ICT based teaching and learning. The academic achievement of students is decreasing day by day. Students have started to choose the alternate of the Tribhuvan University for their further study in mathematics education. Students in other institutions like Kathmandu University are increasing. In this context Tribhuvan University, the department of mathematics education should pay attention about the satisfaction of the students. Based on this reality this research has tried to identify the factors which affects the students satisfaction and it may be helpful to make strategic planning and to motivate the students of Tribhuvan University in the days to come.

Statement of the Problem

Every educational institution needs to understand its internal strength and weakness, and external opportunities and threats. In university of Nepal, mathematics students come from different part of the country with different cultural background. Thus their education and perception of satisfaction may differ. Student satisfaction plays a crucial role for the success of a university. Service is one of the important factors enhancing value and can positively influence a college's success. The student perception about satisfaction can act as an essential tool to enhance the universities service quality. This study examines "The relationship between the variables of service quality and student satisfaction of master's level students of mathematics education in Tribhuvan University of Nepal who are studying in annual and semester system". This study focuses on to measure the following things.

- Do the service quality variables influence satisfaction among students of master's in mathematics education of Tribhuvan University?
- Are there any difference in perception of satisfaction among students of semester system and annual system?

Objectives of the Study

The main objective of this study is to identify the satisfaction level of the students of master's level of mathematics education who are studying in semester and annual system in Tribhuvan University on the basis of service quality provided by the university. This study also intended to accomplish the following objectives:

- To identify the factors that contributes satisfaction level of students of master's level of mathematics education in Tribhuvan University.
- To compare the satisfaction level among students of mathematics education of semester and annual system.

Significance of the Study

As there is a tough competition going on all over the world especially in the field of education, quality of service and student satisfaction plays a crucial role for success (Kayastha, 2011). This research is conducted to determine the service quality delivery and student satisfaction among mathematics students of education faculty of master's level studying in Tribhuvan University in semester and annual system. The research and findings may benefit both the department of mathematics education and student of mathematics education. This study will also help the university to know the level of student satisfaction and also which aspects are the most important. The findings of this research will also help the department of mathematics education to serve students more effectively in the future, and develop their quality of service to increase the satisfaction level of its students. These findings may also be useful to the students of mathematics education who want to join master in mathematics education in Tribhuvan University.

Research Hypothesis

This research consisted of two objectives as mentioned above. For the fulfillment of these objectives the following hypotheses were tested.

1. There is a relationship between service quality variables and overall student's satisfaction of the mathematics students of Tribhuvan University in Nepal.
2. There is significant difference in satisfaction among the students of semester system and annual system.

Delimitation of the Study

Single research or study cannot be generalized in all situations. Although the research is concerned with the satisfaction of mathematics students of education faculty, there are some delimitations of this research. The study is limited to University Campus, Kirtipur and Mahendra Ratna Campus Tahachal. There are many variables related to service quality but in this research, just seven variables are taken. Questionnaire was prepared to focus on only one or two specific area of each variables. Data was collected from the students of mathematics education of masters' level only.

Definitions of Terms

Academic Aspect: It includes the items that describe responsibilities of academic staff or instructor.

Design, Delivery and Assessment: It includes course or syllabus design, class time, teaching methodology, and the procedure of evaluating and grading system of the students.

Group Size: It includes the class size, number of students enrolled in a class.

Higher Education Performance: A questionnaire designed uniquely for evaluating the service quality of higher education, which operationalizes service quality into non-academic aspects, academic aspects, reputation, access, and program issue.

Non-Academic Aspect: The aspects relates to the duties carried out by non-academic staff.

Program Issue: It includes the item related to program flexibility, offering wide range of programs, specialization and quality program.

Reputation: The professional image projected by the university.

Service Quality Variable: Variables that determine the service quality of higher education are considered as service quality variables. It includes non-academic aspects, academic aspects, program issues, access, reputation, design, delivery and assessment and group size.

Service quality: The extent to which the service, the service process and the service organization can satisfy the expectations of the user. The questionnaire operationalizes service quality by comparing perception of service received with expectation, in terms of reliability, responsiveness, assurance, empathy and tangibles.

Students' Satisfaction: Students' satisfaction is the positive response of the students towards the institution regarding non-academic aspects, academic aspects, design, delivery and assessment, reputation, access, program issues and group size.

Chapter - II

REVIEW OF RELATED LITERATURE

A review of related literature is the source of the further study of research task. It provides the researcher in making his problem more realistic, precise, researchable and meaningful. It helps to contact the research program and gives a better idea of surveying and research, then it guides towards conclusion. Thus the review Literature is an important and essential of research planning. This chapter deals with the study of the literature related to this study. Mainly the literature includes previous thesis, books, journals and internet web sites.

A contemporary definition of service provided by Kotler (1996), "A service is an activity or benefit that one party can offer to another that is essentially intangible and does not result in the ownership of anything. Its production may or may not be tied to a physical product." According to Drucker (1985), "Quality in a product or service is not what the supplier puts in. It is what the customer gets out and is willing to pay for." Kasper (1999) defined service quality as the extent to which the service, the service process and the service organization can satisfy the expectations of the user.

Sasser (1978), listed seven service attributes which they believe adequately embrace the concept of service quality. These include: security, consistency, attitude, completeness, condition, availability and training. Here security refers to confidence as well as physical safety. Consistency refers to receiving the same treatment for each transaction. Attitude means politeness whereas the completeness refers to availability of ancillary services. Likewise condition is related to facilities. Similarly availability refers to spatial and temporal customer access to services whereas training is related to the service provider.

Parasuraman (1985) suggested service quality variables as a determinants and measuring instrument of service quality. It is considered as a good starting point for providing more detail to a description of service quality. They defined determinants of service quality as a measure of how well the service level delivered matches customer expectations. They designed service quality based on studies in America. They described ten determinants of service quality as reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding the customers and tangibles.

The above studies discussed about the service quality provided by one party to another party of different sectors such as marketing and business. In education sector also there are two parties. The institution as the service provider and the students as the clients, based on this reality the researcher has tried to identify the factors that influence the satisfaction of mathematics students towards the service quality provided by the Tribhuvan University in Nepal.

Firdaus (2005) in his paper "The development of Higher Education Performance a new measuring instrument of service quality for the higher education sector," has developed Higher Education Performance, a new instrument of service quality that captures the authentic determinants of service quality within the higher education sector. He proposed a 41 item instrument which then was empirically tested for unidimensionality, reliability and validity using both exploratory and confirmatory factor analysis (CFA). He explained the results from his study to be crucial because the past studies which measured the service quality were not totally adequate to assess the perceived quality in higher education. Furthermore, previous research were found to be too narrow, with an over emphasis on the quality of academics and too little attention paid to the non-academic aspects of the educational experiences. Fridaus categorized 5 determinants of service quality in higher education. They are non-academic aspect, academic aspect, reputation, access and program issues.

Zeithaml (1990) defined satisfaction as an overall judgment, perception or attitude on the superiority of service. The judgment is based on the discrepancy between expectations and actual experiences of customer. A term "student satisfaction" can be explained many ways. Kaldenberg (1998) discussed and found that in the college, student satisfaction was driven by evaluating the quality of coursework and other curriculum activities and other factors related to the university. Lecturers should treat students with sensitivity and sympathy, and assistance should be provided when necessary. Even simple listening is appreciated.

There are several studies done in past which shows that various service quality of higher education leads to student satisfaction. Firdaus (2005) pointed out the non-academic aspects, academic aspects, program issues, access and reputation are determinants of service quality in higher education. Afjal (2009) reported Design, Delivery and Assessment, Academic facilities, Non-academic facilities, Recognition, Guidance, Student representation, Study opportunities and Group size are the eight dimensions that determine the service quality of the higher education.

Bitner & Zeithaml (1996) have discussed that the communication skills of teaching staff, the effective interaction between staff and students can help students achieve study objectives, leading to higher student satisfaction. Kuh and Hu (2001) have claimed that effective interaction between student and faculty is a strong predicator of student satisfaction. Kara and DeShields (2004) hypothesized that faculty performance, advising staff performance and classes would influence students' academic experience and which in turn would influence the student satisfaction.

In the above researches various instruments to measure the service quality in the higher education sector are mentioned. Among them, most of the variables have overlapped to one another. The researcher has selected five service quality variables purposed by Firdaus and other two variables purposed by Afjal in order to complete this research.

Novarro (2005) surveyed the Spanish University students and observed service quality variables to be teaching staff, teaching methods, and courses administration which the key factors to achieve student satisfaction with short-term, specific programs. They also illustrated that the teaching staff, enrolment, and course organization are the elements that impact student satisfaction with summer courses, and facilities being a potential determinant of student satisfaction. Delaney (2005) reported that academic staff, academic experience, residential life, social life on campus, personal development opportunities, student service and resources were the service quality that lead towards the student satisfaction.

Mai (2005) did a survey on the student satisfaction in higher education and its influential factors. He found that the overall impression of the school, overall impression of the quality of the education, teacher expertise and their interest in their subject, the quality and accessibility of IT facilities and the prospects of the degree furthering students careers were the most influential predictors of the student careers were the most influential predictors of the student satisfaction. Helgesen and Nesset

(2007) suggest satisfaction to have positive relationship with student's perception of the university's reputation.

Brochado (2009) found that Higher Education Performance, distinguished non-academic aspects, academic aspects, program issues, access, and reputation in higher educational service, had high correlation with overall satisfaction, future visits and intention to recommend the university to a friend. Huang (2009) also in his paper found Higher Education Performance service quality sub-variables like academic aspects, non-academic aspects, access superior to determine the student satisfaction of Xiamen University of China. (Citied in Huang, 2009, p.38)

Afjal (2009), in their paper “On student perspective of quality in higher education” proposed eight dimensions of quality in higher education. The survey was done among the students of Pakistan about their perspective of higher education. The surveyed students who were pursuing higher education (MS, MPhil, Ph.D) in technology advanced countries. The link of online survey was sent to the target population, obtaining about 300 respondents. The eight dimensions of quality they proposed are Design, Delivery and Assessment, Academic facilities, Non-academic facilities, Recognition, Guidance, Student representation, Study opportunities and Group size. According to the survey they found the Design, Delivery and Assessment, Academic facilities, recognition to be most important dimensions from student perspectives.

Huang (2009) conducted a study on “The relationship between service quality and student satisfaction in higher education sector: a case study of undergraduate sector of Xiamen University of China”. The research studied the undergraduate student satisfaction in service quality of Xiamen University, which was the first university in china founded by an overseas Chinese. The service quality sub variables used in the research was the combination of variables developed by Firdaus (2005), Angell, Heffernan and Megicks (2008) and Navarro, Iglesias and Torres (2005). The data was collected through questionnaires. A 7 point Likert Scale was used to record the responses with 1 (strongly disagree) to 7 (strongly agree). The SPSS program was applied in analyzing the data. The study showed that the undergraduate student of Xiamen University of China was satisfied with the quality service provided by the university. The main sub- variable for the student satisfaction was the academic aspects followed by non- academic aspects, cost, access, teaching methods, industry links, program issues and reputation. The study showed that academic aspect to be most important for the student satisfaction in Xiamen University of China. According to the results of this analysis, it showed positive correlation between the overall service quality and student satisfaction, which is consistent with the findings of Anderson and Sullivan (1993), that satisfaction is a function of perceived service quality. The better the service quality, the higher will be satisfaction of the students.

This research was based on the past studies of Firdaus (2005), Afjal (2009) and Huang (2009). Huang (2009) conducted the survey using the model developed by Firdaus (2005), Angell, Heffernan and Megicks (2008) and Navarro, Iglesias and Torres (2005). The study showed the academic aspects, non-academic aspects, access to be most important for student satisfaction in Xiamen University of China. As those three variables were of Higher Education Performance and was developed by Firdaus (2005), Higher Education Performance model was adopted to conduct this research. The additional variables were taken from the research conducted by Afjal, (2009). In their paper they found design, delivery and assessment, academic factors and recognition to be the important factors. But design, delivery and assessment and group size were adopted and the other variables like academic factors were overlapped with academic aspects and recognition with reputation of Higher Education Performance model. As the research is about the graduate student satisfaction, group size was also thought to be important factor influencing satisfaction.

Chongbang (2014) in his mini research report "Comparative Study Semester and Annual system of Faculty of Education" found that there is no difference between the two systems regarding the strategies. But there is difference in practiced strategies used by the same teacher in two different systems. He has mentioned in his paper that students in semester system are quite happy with the result publication in time. Two Campuses were selected for the studies which have run both semester and annual system master's degree in education programs.

The above studies explain about the researches related to the satisfaction among the students of universities of different countries towards the service quality provided by the universities. In the countries such as Spain, Pakistan and China service quality variables purposed by Firdaus in his paper "The development of higher education performance, a new measuring instrument of service quality for the higher education sector" was found to be effective. Researchers of those countries found that academic aspects, non-academic aspects, program issues, access and reputation in higher educational sector had high correlation with overall satisfaction of the students. Therefore these studies provided the strong support to choose the service quality variables in this research.

Theoretical Framework

In study by Firdaus (2005), he found out Higher Education Performance. Higher Education Performance is the service quality measuring tools in the field of higher education. Later in the study by Brochado (2009), he proved Higher Education Performance to be an effective tool for measuring the service quality in higher education. The variables of Higher Education Performance regarding service quality are: Non-academic aspects, Academic aspects, Reputation, Access and, Program issues.

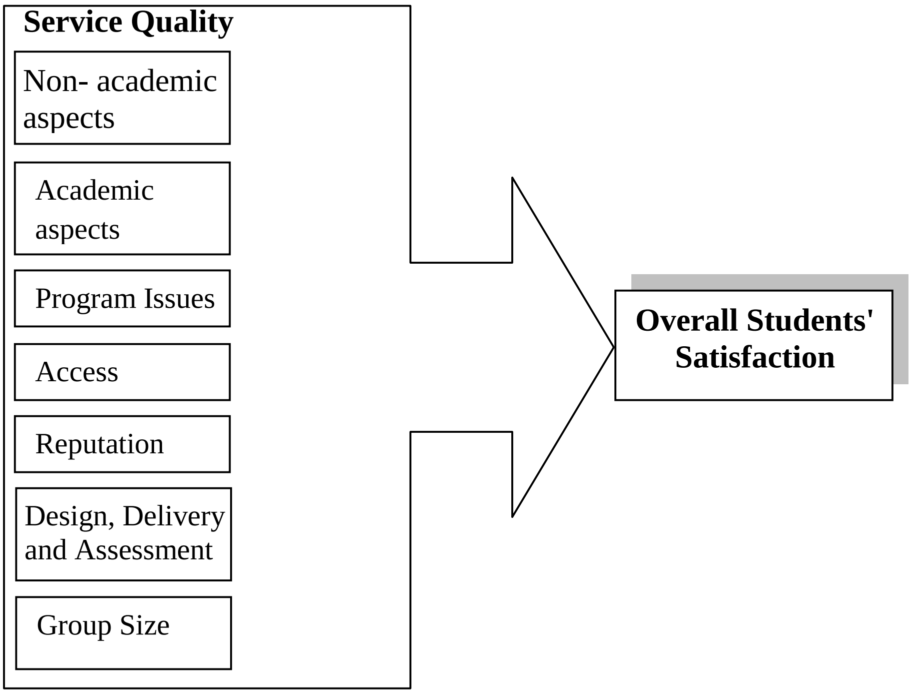
In the study of Afjal (2009) “On student perspective of quality in higher education, they proposed eight dimensions of quality in higher education. The eight dimensions of quality they proposed were Design, Delivery and Assessment, Academic facilities, Non-academic facilities, Recognition, Guidance, Student representation, Study opportunities and Group size. But in this study only two variables was adopted whereas others variables were overlapped with the variables of Higher Education Performance. These are: Design, Delivery and Assessment and Group size

Conceptual Framework

After reviewing various literatures related to service quality variables seven aspects which are closely related to measure service quality in higher education were adopted in this research. This study was developed mainly based on Firdaus "Higher Education Performance (2005)". He has measured service quality in higher education in five aspects as non-academic, academic, program issues, reputation and access. These aspects could be the suitable instruments for measuring the service quality in higher education. So, all these five aspects were adopted as the conceptual framework in this research. Similarly two dimensions were adopted from the study of Afjal (2009) on student perspective of quality in higher education for the conceptual framework of this research. These are design, delivery and assessment and group size. Some of the variables which are suggested in other literatures had same meaning as the above mentioned seven variables where as some are not found closely related to the higher education sector. Therefore the researcher decided to construct the conceptual framework as follows.

Figure: Conceptual Framework

Independent variables **Dependent Variable**


Service Quality
Non- academic aspects
Academic aspects
Program Issues
Access
Reputation
Design, Delivery and Assessment
Group Size
Overall Students' Satisfaction

This framework is designed to identify the factors that contribute satisfaction level of students based on the review of related literatures. Seven variables of service quality as academic aspects, non-academic aspects, program issues, access, reputation, design, delivery and assessment and group size were considered as independent variables whereas the overall student satisfaction was considered as the dependent variable in order to test the hypothesis that whether or not these service quality variables influence the satisfaction level of the students.

Chapter - III

METHODS AND PROCEDURES

This chapter includes the methods and procedures to fulfill the objectives of the research. In fact this chapter explains about the research design, population and the sample of the study, data collection tools, reliability and validity of tools, data collection procedures and the data analysis procedures.

Research Design

The objective of this study is to examine the relationship between the service quality delivered by Tribhuvan University and the overall student satisfaction of master in education. Descriptive research will be used to describe the characteristics of the population. The researcher will use quantitative survey as the major method to find out the relationship among service quality delivered and overall student satisfaction in Tribhuvan University in master in education. Quantitative surveys are designed to fit a questionnaire schedule. This is the most commonly used technique in research.

Population and Sample of the Study

The population of this research was the students of mathematics education who were reading in Tribhuvan University. The study was done among the students of masters' level in mathematics education of University Campus, Kirtipur and Mahendra Ratna Campus, Tahachal. Students who are reading in semester system were taken from University Campus, Kirtipur whereas the students who are reading in annual system were taken from Mahendra Campus, Tahachal.

A sample is a set drawn from the population. As the non-probability sampling is applied, there is no specific method in determining sample size. But, it is not practical to collect data from the entire target population, so the researcher used a sample instead. A sample size of 60 students, 30 from semester system and 30 from annual system were taken.

Data Collection Tools

A questionnaire was prepared as the tool for data collection. There were 2 sections in the questionnaire. In section 'A', questions were categorized on the basis of 7 independent variables of service quality as non-academic aspects, academic aspects, design, delivery and assessment, program issues, reputation, group size and access. The last question in this section was related to the overall satisfaction of the students. Non-academic aspects include 5 questions, academic aspects include 4 questions, design, delivery and assessment include 5 questions, program issues include 3 questions, reputation includes 2 questions, group size includes 2 questions and access includes 4 questions. In this section questions were prepared on the basis of 5-point Likert scale with 1 indicates the strongly disagree, 2 indicates disagree, 3 indicates the neutral, 4 indicates agree and 5 indicates the strongly agree. In section 'B', 4 questions were included to collect the personal information of the respondent for the further analysis of the research. Altogether there were 30 questions included in the questionnaire.

Reliability and Validity of Tools

To examine the reliability and the validity of above mentioned tool, a pre- test was conducted among 10 students of master's level of Tribhuvan University of education faculty. Vague questions were removed after the pre-test which were unanswered by the respondents. Grammatical errors were corrected on the basis of respondents' queries. Besides that adequate suggestions and feedback had received from the experts.

Data Collection Procedure

The researcher collected the primary data by distributing hardcopy questionnaire to the respondents. At first the researcher met the students of central department of education University Campus, Kirtipur who were reading masters level in semester system. Then after the researcher went to Mahendra Ratna Campus Tahachal and met the students of mathematics education who were reading masters in annual system. Researcher met some of the students outside the campus gate at tuition institute and other at the campus premises. After distributing the questionnaire, researcher first explained about his research and tool of research then he requested the respondents to fill up the questionnaire. Some of the respondents agreed to fill it up immediately but some of them took it at home to fill up and returned back next day. Researcher collected data with 33 respondents from University Campus, Kirtipur and with 34 respondents from Mahendra Ratna Campus, Tahachal. 30 data of semester students and 30 data of annual students were finalized for the analysis purpose.

Data Analysis Procedure

All collected raw data was entered in the SPSS data analysis software program. Data which were obtained in section A of the questionnaire presented in appendix - I was kept in the interval scale of measurement whereas the data obtained in section B were kept in the nominal scale of measurement. Frequency, percentage and mean were used to summarize the data on the basis of gender, age range, tuition fee sponsor and study system. Similarly mean and standard deviation were used to analyze on the basis of seven service quality variables. Analysis of regression was done to identify the factors that contribute the satisfaction of the students. Also the hypothesis was tested to identify that whether or not there is difference in satisfaction among the students of semester system and annual system.

Chapter - IV

ANALYSIS AND INTERPRETATION OF DATA

This is a survey research related to find out students' satisfaction in mathematics towards service quality of semester and annual system. This part deals with statically analysis and interpretation of data obtained from the survey. The objectives of this study were to identify the factors that contribute satisfaction level of the students of masters' level of mathematics education in Tribhuvan University and to compare the satisfaction level among students of mathematics education of semester and annual system.

A sample of 60 students 30 from semester system and 30 from annual system who were studying masters in mathematics education in Tribhuvan University was taken by using stratified random sampling. The instrument used in the collection of required statistical data was survey questionnaire based on five point Likert scale. The survey questionnaire constituted of 30 statements in different categories related to academic aspects, non-academic aspects, design, delivery and assessment of the course, program issues, reputation of the university, group size of a class and access of teachers and students.

The primary data was collected by distributing the hardcopy questionnaire to the sample students. The collected data had been translated to SPSS computer program and the analysis was done accordingly. This analysis includes the frequency distribution, the percentage, the mean score, the standard deviation, the regression analysis and the z-test. The data analysis was done by comparing mean, standard deviation, b-values and z-value.

Thus the analysis and interpretation of the obtained data was carried out under the following major headings corresponding to the set of objectives of the study.

- Gender
- Age
- Tuition fee sponsor
- Studied system
- Non-academic aspects

- Academic aspects
- Design, delivery and assessment
- Program issues
- Reputation
- Group size
- Access
- Regression
- Comparison of satisfaction level among the students of semester system and annual system

Gender

In this research, gender refers to biological sex of the human being. In Nepalese society we observe gender gap and discriminations. So, the researcher divided the obtained data into two groups male and female to compare and contrast their frequency, percentage and mean.

Table 4.1 Gender wise frequency and percentage

	Frequency	Percent
Male	39	65.0
Female	21	35.0
Total	60	100.0

The data in the table 4.1 shows that the total number of sample size was 60, out of which 39(65%) were male respondents and 21(35%) were female respondents.

Table 4.2 Gender wise mean scores based on service quality variables.

	Gender			
	Male		Female	
	Mean	N	Mean	N
Non Academic Aspects	3.16	39	3.34	21
Academic Aspects	3.26	39	3.05	21
Design, Delivery and Assessment	2.97	39	2.79	21
Program Issues	2.75	39	2.30	21
Reputation	3.35	39	3.62	21
Group Size	3.51	39	3.50	21
Access	2.90	39	2.68	21

The data in the table 4.2 shows that the gender wise mean scores of the respondents under 7 service quality variables: non-academic aspects, academic aspects, design, delivery and assessment, program issues, reputation, group size and access.

Out of 60 respondents, the majority of the respondents were male. Male students have scored mean 3.16 in non-academic aspects, 3.26 in academic aspects, 2.97 in design, delivery and assessment, 2.75 in program issues, 3.35 in reputation, 3.51 in group size and 2.90 in access. Likewise females have scored mean 3.34 in non-academic aspects, 3.05 in academic aspects, 2.79 in design, delivery and assessment, 2.30 in program issues, 3.62 in reputation, 3.50 in group size and 2.68 in access. Out of 7 service quality variables, males scored higher mean in more service quality variables i.e. 5 service quality variables. Thus male students are more satisfied with the university than females.

Age

In this research, age refers to the time span of the human being from his or her birth. In our society middle age people have more responsibilities in compare to the people of other ages. So, researcher compared frequency, percentage and mean among the respondents of two age groups (20-25) years and (26-30) years.

Table 4.3 Age wise frequency and percentage

	Frequency	Percent
20-25	47	78.3
26-30	13	21.7
Total	60	100.0

The data in the table 4.3 shows that out of 60 respondents, 78.3% (n=47) respondents are between the age group of (20-25) years and 26.7% (n=23) respondents are between the age group of (26-30) years.

Table 4.4 Age wise mean scores based on service quality variables.

	Age Range			
	20-25		26-30	
	Mean	N	Mean	N
Non Academic Aspects	3.23	47	3.22	13
Academic Aspects	3.24	47	3.00	13
Design, Delivery and Assessment	2.96	47	2.72	13
Program Issues	2.75	47	2.05	13
Reputation	3.44	47	3.46	13
Group Size	3.62	47	3.12	13
Access	2.82	47	2.81	13

The data in the table 4.4 shows that the age group wise mean scores of the respondents under 7 service quality variables: non-academic aspects, academic aspects, design, delivery and assessment, program issues, reputation, group size and access.

Out of 60 respondents, the majority of the respondents were in the age group of (20-25) years. Students who are in the age group of (20 - 25) have mean 3.23 in non-academic aspects, 3.24 in academic aspects, 2.96 in design, delivery and assessment, 2.75 in program issues, 3.44 in reputation, 3.62 in group size and 2.82 in access. Likewise Students who are in the age group of (26 - 30) have mean 3.22 in non-academic aspects, 3.00 in academic aspects, 2.72 in design, delivery and assessment, 2.05 in program issues, 3.46 in reputation, 3.12 in group size and 2.81 in access. Out of 7 service quality variables, students who are in the age group of (20 - 25) scored higher mean in more service quality variables i.e. 6 service quality variables. Thus the students who are in the age group of (20 - 25) are more satisfied with the university than the students who are in the age group of (26 - 30).

Tuition Fee Sponsor

In this research, tuition fee sponsor refers to the person or institution who takes the responsibility of paying the college's fee of the respondents. Students who need to manage tuition fee by themselves should hard work in compare to other students. So, the researcher compared frequency, percentage and mean among the respondents of two groups those who manage tuition fee by themselves and by their guardian.

Table 4.5 Frequency and percentage of tuition fee sponsor

	Frequency	Percent
Parents	44	73.3
Self	16	26.7
Total	60	100.0

The data in the table 4.5 shows that out of 60 respondents, 73.3% (n=44) respondents' tuition fee were sponsored by their parents and 21.7% (n=16) respondents manage their tuition fee by themselves

Table 4.6 Mean scores of tuition fee sponsor based on service quality variables

	Tuition Fee Sponsor			
	Parents		Self	
	Mean	N	Mean	N
Non Academic Aspects	3.25	44	3.15	16
Academic Aspects	3.16	44	2.27	16
Design, Delivery and Assessment	3.06	44	2.49	16
Program Issues	2.53	44	2.77	16
Reputation	3.51	44	3.25	16
Group Size	3.64	44	3.16	16
Access	2.77	44	2.95	16

The data in the table 4.6 shows that the mean scores of tuition fee sponsor based on 7 service quality variables: non-academic aspects, academic aspects, design, delivery and assessment, program issues, reputation, group size and access.

Out of 60 respondents, the majority of the respondents' tuition fees were sponsored by their parents. Students whose tuition fee is sponsored by their parents have score mean 3.25 in non-academic aspects, 3.16 in academic aspects, 3.06 in design, delivery and assessment, 2.53 in program issues, 3.51 in reputation, 3.64 in group size and 2.77 in access. Likewise students who manage their tuition fee by themselves have score mean 3.15 in non-academic aspects, 2.27 in academic aspects, 2.49 in design, delivery and assessment, 2.77 in program issues, 3.25 in reputation, 3.16 in group size and 2.95 in access. Out of 7 service quality variables, students whose tuition fee is sponsored by their parents scored higher mean in more service quality variables i.e. 5 service quality variables. Thus the students whose tuition fee is sponsored by their parents are more satisfied with the university than the students who manage their tuition fee by themselves.

Studied System

Recently Tribhuvan University has started semester system in some of the college. In this research, study system refers to either semester system or annual system. Researcher compared frequency, percentage and mean of the respondents under these two groups.

Table 4.7 Frequency and percentage of studied system

	Frequency	Percent	Valid Percent
Annual	30	50.0	50.0
Semester	30	50.0	50.0
Total	60	100.0	100.0

The data in the table 4.7 shows that out of 60 respondents, 50% (n=30) respondents study in semester system and 50% (n=30) respondents study in annual system.

Table 4.8 Mean scores of studied system based on service quality variables

	Study System			
	Annual		Semester	
	Mean	N	Mean	N
Non Academic Aspects	3.21	30	3.25	30
Academic Aspects	3.19	30	3.18	30
Design, Delivery and Assessment	2.69	30	3.12	30
Program Issues	2.46	30	2.73	30
Reputation	3.65	30	3.23	30
Group Size	3.32	30	3.70	30
Access	2.66	30	2.98	30

The data in the table 4.8 shows that the mean scores of studied system based on 7 service quality variables: non-academic aspects, academic aspects, design, delivery and assessment, program issues, reputation, group size and access.

Out of 60 respondents, 30 of them study in each semester and annual system. Students who were studying in annual system have scored mean 3.21 in non-academic aspects, 3.19 in academic aspects, 2.69 in design, delivery and assessment, 2.46 in program issues, 3.65 in reputation, 3.32 in group size and 2.66 in access. Likewise students who were studying in semester system have score mean 3.25 in non-academic aspects, 3.18 in academic aspects,3.12 in design, delivery and assessment, 2.73 in program issues, 3.23 in reputation, 3.70 in group size and 2.98 in access. Out of 7 service quality variables, students who were studying in semester system have scored higher mean in more service quality variables i.e. 5 service quality variables. Thus the students who were studying in semester system are more satisfied with the university than the students who are studying in annual system.

Non-Academic Aspects

In this research, non-academic aspects refer to those aspects that relates to duties carried out by non-academic staffs. Researcher examined whether or not the respondents are satisfied with the university in this aspect.

Table 4.9 Mean and standard deviation of non-academic aspects

	N	Mean	S.D.	Minimum	Maximum
When I have a problem, administrative staffs of department of mathematics education show a sincere interest in solving it.	60	2.97	1.104	1	5
Administrative staffs of mathematics education do not bias the students.	60	3.20	1.147	1	5
Administrative staffs of department of mathematics education provide caring attention to the students.	60	3.08	1.139	1	5
Inquiries of the students are dealt with efficiently by the administrative staffs of department of mathematics education.	60	3.37	0.956	1	5
Administrative staffs of department of mathematics education show positive work attitude towards students.	60	3.52	1.097	1	5
Non Academic Aspects	60	3.23	0.543	2	4

The data in the table 4.9 shows that the question wise mean and standard deviation of non-academic aspects along with minimum and maximum scores of each question. It also includes the overall mean and standard deviation of non-academic aspects along with minimum and maximum scores.

The mean score of the non-academic aspects is 3.23, with the standard deviation of 0.543. There were 5 items (questions) under non-academic aspects. Out of 5 questions 'Administrative staffs of department of mathematics education show positive work attitude towards students' scored the highest with the mean of 3.52 and standard deviation of 1.097. For 'Administrative staffs of department of mathematics education show positive work attitude towards students' respondents' maximum score was 5 i.e. 'strongly agree' and lowest score was 1 i.e. 'strongly disagree'. The item which scored the lowest is 'When I have a problem, administrative staffs of department of mathematics education show a sincere interest in solving it' with the mean score of 2.97 and standard deviation of 1.104. This questions in the Likert scale got the highest score '5' and lowest score '1'. In the above data, we can observe most of the questions mean scores are slightly above 3, which indicates the satisfaction level of the students in non-academic aspects is above the neutral. Hence the students are agree that they are satisfied with non-academic aspects of the university.

Academic Aspects

In this research, academic aspects include positive attitudes, good communication skills, regular feedback to students and commanding over the subject matter of the teachers. Researcher examined whether or not the respondents are satisfied with the university in this aspect.

Table 4.10 Mean and standard deviation of academic aspects

	N	Mean	S.D.	Minimum	Maximum
Teachers have the good mathematical knowledge and commanding in their respective field.	60	3.17	1.181	1	5
Teachers of department of mathematics education deal with courteous manner to the students.	60	3.38	0.993	1	5
When I have problem, teachers of department of mathematics education show a sincere interest in solving it.	60	3.15	1.132	1	5
Teachers of department of mathematics education provide feedback about my progress.	60	3.05	1.126	1	5
Academic aspects	60	3.19	0.682	2	5

The data in the table 4.10 shows that the question wise mean and standard deviation of academic aspects along with minimum and maximum scores of each question. It also includes the overall mean and standard deviation of non-academic aspects along with minimum and maximum scores.

The mean score of the academic aspects is 3.19 with the standard deviation of 0.682. There were 4 items (questions) under this service quality variable. The question 'Teachers of department of mathematics education deal with courteous manner to the students' has the highest mean score of 3.38 and standard deviation of 0.993. The minimum score for this question is 1 i.e. 'strongly disagree' and maximum question is 5 i.e. 'strongly agree. The question 'Teachers of department of mathematics education provide feedback about my progress' has the lowest mean score of 3.05 and the standard deviation is 1.126. In the above data, we can observe all the questions mean scores are more than 3, which indicates the satisfaction level of the students in academic aspects is above the neutral. Hence the students are agree that they are satisfied with academic aspects of the university.

Design, Delivery and Assessment

In this research, design, delivery and assessment refers to course or syllabus design, class timing, teaching methodology and the procedure of evaluating and grading system of the students. Researcher examined whether or not the respondents are satisfied with the university in this aspect.

Table 4.11 Mean and standard deviation of design, delivery and assessment

	N	Mean	S.D.	Minimum	Maximum
Mathematics curriculum designed by the university is standard and contextual.	60	3.30	1.062	1	5
Teaching methodology of mathematics teaching is appropriate.	60	3.05	1.185	1	5
The proportion between theory and practical in mathematics education are appropriate.	60	2.37	1.193	1	5
The assessment and the scoring by the subject teacher of department of mathematics education are fair.	60	3.10	1.217	1	5
Department of mathematics education keeps the records of presence of the students for the purpose of fair evaluation.	60	2.72	1.166	1	5
Design, delivery and assessment	60	2.91	0.766	1	5

The data in the table 4.11 shows that the question wise mean and standard deviation of design, delivery and assessment along with minimum and maximum scores of each question. It also includes the overall mean and standard deviation of design, delivery and assessment along with minimum and maximum scores.

Design, delivery and assessment gains a mean score of 2.91 and standard deviation of 0.766. So, the mean score of design, delivery and assessment is below neutral. There were 5 items that asked about design, delivery and assessment. Among them 'Mathematics curriculum designed by the university is standard and contextual' score the highest. The mean score for this is 3.83 and standard deviation 1.062. The maximum score for this was 5 i.e. 'strongly agree' and minimum score was 1 i.e.

'strongly disagree'. The item 'The proportion between theory and practical in mathematics education are appropriate' got lowest mean score of 3.61 and standard deviation of 1.193. In the above data, we can observe that out of 5 questions, 4 questions mean score are more than 3, which indicates the satisfaction level of the students in design, delivery and assessment of the course is above the neutral. Hence the students are agreed that they are satisfied with design, delivery and assessment of the course in the university.

Program issues

In this research, program issues include providing counseling service, wide range of academic programs and flexibility of self-learning. Researcher examined whether or not the respondents are satisfied with the university in this aspect.

Table 4.12 Mean and standard deviation of program issues

	N	Mean	S.D.	Minimum	Maximum
The department of mathematics education offers various specialization subjects as per need and interest of the students.	60	2.68	1.127	1	5
The department of mathematics education provides counseling and placement service.	60	2.40	1.108	1	5
Department of mathematics education offers various programs to enhance the students’ professional development.	60	2.70	0.962	1	5
Program issues	60	2.59	0.734	1	5

The data in the table 4.12 shows that the question wise mean and standard deviation of program issues along with minimum and maximum scores of each question. It also includes the overall mean and standard deviation of program issues along with minimum and maximum scores.

The program issues have the mean score of 2.59 which is slightly below 'neutral' with standard deviation of 0.734. There were 4 items under this service quality variable. 'Department of mathematics education offers various program to enhance the students' professional development' scores the highest mean i.e. 2.70 and standard deviation is 0.962 and 'The department of mathematics education provides counseling and placement service' has the lowest mean of 2.40 and standard deviation is 1.108. In the above data all questions' mean scores are less than 3, which indicate the satisfaction level of the students in program issues is below the neutral. Thus the students are not satisfied with program issues offered by university for them.

Reputation

In this research, reputation refers to the professional image projected by the university and the employment of graduates. Researcher examined whether or not the respondents are satisfied with the university in this aspect.

Table 4.13 Mean and standard deviation of reputation

	N	Mean	S.D.	Minimum	Maximum
Pass out students of the department of mathematics education easily get job.	60	3.48	1.384	1	5
The academic program run by the department of mathematics education is reputable.	60	3.40	1.012	1	5
Reputation	60	3.44	0.916	2	5

The data in the table 4.13 shows that the question wise mean and standard deviation of reputation along with minimum and maximum scores of each question. It also includes the overall mean and standard deviation of reputation along with minimum and maximum scores.

The reputation has the mean score of 3.44 and standard deviation of 0.916. There were 2 items under this service quality variable. 'Pass out students of the department of mathematics education easily get job.' scored highest mean i.e. 3.48 and its standard deviation is 1.384. 'The academic program run by the department of mathematics education is reputable' has the lowest mean score of 3.40 and the standard deviation of 1.012. In the above data we can observe all the questions' mean scores are more than3, which indicates the satisfaction level of the students in reputation of the university is above the neutral. Thus the students are agree that they are satisfied with the university' reputation.

Group size

In this research group size refers to the class size or the number of students enrolled in a class. Teaching learning activities will be effective if the number of students in a class is appropriate. Researcher examined whether or not the respondents are satisfied with the university about the class size.

Table 4.14 Mean and standard deviation of group size

	N	Mean	S.D.	Minimum	Maximum
The number of students in mathematics class is appropriate.	60	2.88	1.250	1	5
Small class size helps students better understand in mathematics class.	60	4.13	1.033	1	5
Group size	60	3.51	0.909	2	5

The data in the table 4.14 show that the question-wise mean and standard deviation of group size along with minimum and maximum scores of each question. It also includes the overall mean and standard deviation of group size along with minimum and maximum scores.

The mean score gained by group size is 3.51which is close to score 4 i.e. 'agree level' and the standard deviation is 0.909. There were 2 items under group size. 'Small class size helps student better understand in mathematics class.' scored highest with the mean 4.13 and standard deviation of 1.033 whereas 'The number of students in mathematics class is appropriate' scored the lowest with the mean 2.88 and standard deviation of 1.250. On the basis of above data students are strongly agree that the small class size helps students to better understand in mathematics class as its mean score is 4.13 which is above the agree level. But the students are not satisfied with the present number of students in the class as the mean score related to it is 2.88, which is below the neutral. Thus the students are unsatisfied with the group size of the class in the university.

Access

In this research, access refers to the availability of teachers and teaching materials when students need it. It also refers the availability of internet facilities and facilities to use ICT in teaching learning. Researcher examined whether or not the students are satisfied with the university in this aspect.

Table 4.15 Mean and standard deviation of access

	N	Mean	S.D.	Minimum	Maximum
Academic staffs of department of mathematics education are never too busy to respond my request for assistance.	60	3.17	0.924	1	5
Academic and non-academic staffs of department of mathematics education ensure that they are easily contacted.	60	2.97	1.164	1	5
Teachers and students of the department of mathematics education get access of using ICT for teaching and learning mathematics.	60	2.68	1.282	1	5
Reference books of mathematics are easily available in the university’s library.	60	2.47	1.065	1	5
Access	60	2.82	0.651	2	4

The data in the table 4.15 shows that the question wise mean and standard deviation of access along with minimum and maximum scores of each question. It also includes the overall mean and standard deviation of access along with minimum and maximum scores.

Access is the last service quality variable in this research. The mean score of this variable is 2.82 and standard deviation is 0.651. There were 5 items under this variable. 'Academic staffs of department of mathematics education are never too busy to respond my request for assistance.' has the highest mean score of 3.17and its standard deviation is 0.924. In the above data, we can observe that most of the questions' mean scores are less than 3, which indicates the satisfaction level of the students in access of teachers and teaching materials is below the neutral. Hence the students are not satisfied with access of teachers and teaching materials in the university.

Regression

Regression is a statistical tool to establish relationships between two or more variables so that it is possible to predict one or more variables in terms of others. In this research, researcher used regression to identify the influence of seven independent variables; academic aspects, non-academic aspects, design, delivery and assessment, program issues, reputation, group size and access to the dependent variable overall satisfaction of the students.

Table 4.16 Variables Entered

Model	Variables Entered	Method
1	Access, group size, Reputation, Non Academic Aspects, Academic Aspects, Design, delivery and assessment, program issue	Enter

a. All requested variables entered.
b. Dependent Variable: Overall, I am satisfied with the department of mathematics education for the service provided.

The summary table presented in appendix II provides the value of r, r^2 and adjusted r^2 for the model that has been derived. ‘r’ represents the value of the multiple correlation coefficients between the predictors and the outcome.

Here, r has a value 0.389, this value represents the simple correlation between group size, academic aspects, access, design, delivery and assessment, reputation, program issue and non-academic aspects and overall student satisfaction ‘r^{2}′ is a measure of how much of the variability in the outcome is accounted for by the predictors. The value of r^2 is 0.151 which tells us that these seven service quality variables can account for 15.1% of the variation in the overall student satisfaction. This means that 84.9% of the variation in overall student satisfaction cannot be explained by these seven service quality variables. So, there must be other variables too that have an influence. ‘The adjusted r^2’ gives an idea of how well the model generalizes and ideally its value is likely to be the same or very close to the value of r^2

(Field, 2005). Here, the difference between r^2 and adjusted r^2 is 23.8% (0.389 – 0.151= 0.238). This means that if the model were derived from the population rather than a sample it would account for approximately 23.8% less variance in outcome.

Table 4.17 ANOVA table analysis between independent and dependent variables

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.720	7	1.246	1.322	.259
	Residual	49.013	52	.943		
	Total	57.733	59			

a. Predictors: (Constant), Access, Group Size, Reputation, Non Academic Aspects, Academic Aspects, Design, delivery and assessment, Program Issue

b. Dependent Variable: Overall, I am satisfied with the department of mathematics education for the service provided.

The data in the table 4.17 is the output reports of an analysis of variance (ANOVA). ‘F-ratio’ represents the ratio of the improvement in prediction that results from fitting the model, relative to the inaccuracy still exists in the model.

According to Keller (2009), “A large value of ‘F’ indicates that most of the variation in ‘Y’ is explained by the regression equation and that the model is valid. A small value of ‘F’ indicates that most of the variation in ‘Y’ is unexplained”. From the table we can see, F is 1.322, which is significant at p (sig.) value <.0.275, i.e. 0.259< 0.275. This result tells us that there is less than a 16% chance of F-ratio being this large. Therefore, the regression model significantly improved our ability to predict overall student satisfaction (outcome, or dependent variable).

Table 4.18 Coefficients of the regression model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.714	1.071		0.667	0.508
Non Academic Aspects	0.040	0.254	0.022	0.159	0.874
Academic Aspects	0.069	0.210	0.048	0.329	0.743
Design, delivery and Assessment	-0.103	0.193	-0.080	-0.535	0.595
Program Issues	-0.077	0.207	-0.057	-0.373	0.711
Reputation	0.024	0.155	0.022	0.154	0.878
Group Size	0.197	0.166	0.181	1.191	0.239
Access	0.565	0.215	0.372	2.632	0.011

The data in the table 4.18 shows beta values, represent the relationship between overall student satisfaction and each predictor (i.e. service quality variables).

According to Field (2005), if the value is positive we can tell that there is a positive relationship between the predictor and the outcome whereas negative coefficient represents a negative relationship. The beta value also tells us to what degree each independent variable affects the dependent variables if the effects of all other independent variables are held constant. In the table 4.18 five service quality variables have a positive beta value, which indicates the positive relationships between the service quality variables and overall student satisfaction. As non-academic aspects quality increases, students' satisfaction increases; as reputation increases, students' satisfaction increases; likewise as quality of access, academic aspects, group size increased, so do the students satisfaction increase. Here, for e.g., if reputation increases by one unit, student satisfaction would be increased by 0.022, other variables held constant.

The beta value tells us the number of standard deviations that the outcome will change as a result of one standard deviation change in the predictor (Field, 2005). Higher beta value signifies stronger correlation with the dependent variable. In table 4.18, access have the highest beta (0.372), followed by group size (0.181), academic aspects (0.048), non-academic aspects (0.022), reputation (0.022), program issue (-0.057), design, delivery and assessment (-0.080). This represents as if the quality of access increases by one standard deviation, overall student satisfaction standard deviation increases by 0.372, if the group size increases by one standard deviation, overall student satisfaction standard deviation increases by 0.181, if the non-academic aspects increases by one standard deviation, overall student satisfaction standard deviation increases by 0.206 and so on. But the interpretation is true only if the other variables are held constant while measuring the relationship between dependent variables and one of the independent variables. So, from the result of multiple regressions we can infer that reputation influences the graduate students' satisfaction the most followed by academic aspects, non-academic aspects, and access and group size.

Comparison of Satisfaction Level among the Students of Semester System and Annual System

Test of hypothesis is one of the tools commonly used in quantitative research. In this research, researcher used z-test to compare the mean of two groups those who are studying in annual system and semester system.

Table 4.19 : Level of Significance, Critical Values and Z-value of Hypothesis Test

	Semester System	Annual System
Number of Students	30	30
Mean	2.97	2.90
Standard deviation	1.129	0.845
Level of significance	0.05	
Critical values	± 1.96	
Z-value	- 0.27188	

Researcher tested the hypothesis to identify whether or not there is difference in the level of satisfaction among the students who read in annual system and in the semester system. For this purpose z-test concerning difference between two means was performed. Research applied two tailed test with the level of significance |ℑ=0.05. In the test, the computed value of z is obtained - 0.27188. As the computed value of z falls into the acceptance region, the null hypothesis is rejected. Hence it is concluded that there is no significant difference in satisfaction level among the students of semester system and annual system.

In this chapter all the collected data which were analyzed in SPSS were presented. Descriptive analysis and hypothesis testing were performed. Descriptive analysis helped to see perceptions of the respondents towards service quality. Hypothesis testing was under to find out the relationship between the service quality variables and overall student satisfaction.

Chapter - V

SUMMARY, FINDINGS, CONCLUSION AND RECOMMENDATION

After the analysis and interpretation of collected data as per the design of study and the research questions, in this chapter an attempt has been made to derive important conclusions. Summary of the study, major findings, conclusion and recommendation have been considered in the sequence under the following sub-headings.

Summary

The study was carried out to examine students' satisfaction in mathematics towards service quality of semester and annual system of masters' level in mathematics in Tribhuvan University. The objectives of the study were to identify the factors that contribute satisfaction level of students of masters' degree of mathematics education in Tribhuvan University and to compare the satisfaction level among the students of mathematics education in semester and annual system. To achieve these objectives, the researcher gathered data by questionnaire survey using 5 point Likert scale. The population of this study was considered as all the students who were studying masters in mathematics education in Tribhuvan University. The sample of the study was taken 60 students, 30 from semester system and 30 from annual system of University campus Kirtipur and Mahendra Ratna Campus Tahachal respectively. A questionnaire having 30 items based on 5 points Likert scale was prepared as the tool for data collection as it is presented in the appendix-I. The pilot study was conducted among 10 graduate students and also adequate suggestions were taken from the supervisor to establish reliability and the validity of the test. Mean, regression coefficient and z-test were used to compare the satisfaction level in mathematic towards quality.

As per analysis most of the service quality variables mean score is more than 3 and thus the satisfaction level of the students was above the neutral, it means students were agree that they are satisfied with most of the aspects out of service quality variables. Out of 7 service quality variables beta values of 5- service quality variables were positive, which indicated that there was positive relationship between the service quality variables and the students' satisfaction. Moreover test of hypothesis showed that there is no significant difference in satisfaction level among the students of semester system and annual system.

Findings

In this study, the researcher had selected altogether 60 students, 30 from semester system and 30 from annual system as the sample of the study. The data was collected from the survey questionnaire based on 5 point Likert scale. The collected data were presented in the SPSS computer program and analyzed using mean, beta value and z-test. After statistical analysis of the collected data, the researcher derived the following results as findings of the study.

- Male students are more satisfied with the university than females for the service provided.
- Students who are in the age group of (20-25) are more satisfied with the university than the students of age group of (26-30) for the service provided.
- Students whose tuition fee is sponsored by their parents are more satisfied with the university than the students who manage their tuition fee by themselves.
- Students who were studying in the semester system are more satisfied with the university campus than the students who were studying in annual system.
- Students are agreed that they are satisfied with non-academic aspects, academic aspects, design, delivery and assessment of the course, reputation of the university and access of teachers and the adequate materials in the university.
- Students are not satisfied with the program offered by the university and the size of the class in the university.
- Service quality variables: academic aspects, non-academic aspects, design, delivery and assessment, reputation and access have positive relationship with the satisfaction of the students.
- There is no significant difference in satisfaction level among the students of semester system and annual system.

Conclusion

In a nutshell, after the findings presented above, it can be said that the male students, students of the age group of 20 to 25 years, those whose tuition fee is sponsored by their parents and the students from the semester system comparatively are more satisfied and optimistic towards the service provided by the University Campus. Likewise, the five service quality variables which are non-academic aspects, academic aspects, design, delivery and assessment of the course, reputation of the University, assess of the teachers and the materials have significant function with the overall satisfaction of the students. However, there are some weak areas where the university has to make some improvements to satisfy the semester students. Thus, in this globalized world of economy, where quality education and practical knowledge are comparatively important, the educational institutions and the universities have to attract the students by providing better quality education. In this regard, high service quality and student satisfaction play a crucial role for universities to remain in its optimum position and to attract more new students for the overall success of the institution.

Recommendation for Further Study

The findings of the study cannot be generalized to all the situations and in all levels of students of different subjects due to the limitation of the study. Based on the study the following recommendations can be suggested for the further study.

- Future research can be conducted by adding other service quality variables that influence student satisfaction.
- Future study may change target population from students of masters level to graduate level, under graduate level or mix both and compare.
- More detailed comparisons might be explored between public and private universities.
- For future study, researchers might expand the scope of the survey and larger sample size.
- The researchers may also conduct their survey in other languages.

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APPENDIX-I

QUESTIONNAIRE

Name: …………………………………..

Name of Institution:.....................................

Level:..

This questionnaire is a part of my research entitled "Students' Satisfaction in Mathematics Towards Service Quality of Semester and Annual System" for the partial fulfillment of Masters' degree of mathematics education, Tribhuvan University Nepal, under the supervision of Mr. Abatar Subedi. This survey is completely anonymous and confidential. Your responses are a critical part of my research. Please answer all the questions as candidly and completely as possible.

Section - A

These sections are related to certain aspects of the service that you experience in your University. Please give a tick **(Ĕ)** mark to the appropriate response to indicate your own personal feeling based on the following scale.

1 = strongly disagree **2 = disagree** **3 = neutral**

4 = agree **5 = strongly agree**

	Non- academic aspects	1	2	3	4	5
1	When I have a problem, administrative staffs of department of mathematics education show a sincere interest in solving it.					
2	Administrative staffs of mathematics education do not bias the students.					
3	Administrative staffs of department of mathematics education provide caring attention to the students.					
4	Inquiries of the students are dealt with efficiently by					

	the administrative staffs of department of mathematics education.					
5	Administrative staffs of department of mathematics education show positive work attitude towards students.					
	Academic aspects	1	2	3	4	5
6	Teachers have the good mathematical knowledge commanding in their respective field.					
7	Teachers of department of mathematics education deal with courteous manner to the students.					
8	When I have problem, teachers of department of mathematics education show a sincere interest in solving it.					
9	Teachers of department of mathematics education provide feedback about my progress.					
	Design, delivery and assessment	1	2	3	4	5
10	Mathematics curriculum designed by the university is standard and contextual.					
11	Teaching methodology of mathematics teaching is appropriate.					
12	The proportion between theory and practical in mathematics education are appropriate.					
13	The assessment and the scoring by the subject teacher of department of mathematics education are fair.					
14	Department of mathematics education keeps the records of presence of the students for the purpose of fair evaluation.					
	Program issues	1	2	3	4	5
15	The department of mathematics education offers various specialization subjects as per need and interest					

	of the students.					
16	The department of mathematics education provides counselling and placement service.					
17	Department of mathematics education offers various program to enhance the students' professional development.					
	Reputation	1	2	3	4	5
18	Pass out students of the department of mathematics education easily get job.					
19	The academic program run by the department of mathematics education is reputable.					
	Group size	1	2	3	4	5
20	The number of students in mathematics class is appropriate.					
21	Small class size helps student better understand in mathematics class.					
	Access	1	2	3	4	5
22	Academic staffs of department of mathematics education are never too busy to respond my request for assistance.					
23	Academic and non-academic staffs of department of mathematics education ensure that they are easily contacted.					
24	Teachers and students of the department of mathematics education get access of using ICT for teaching and learning mathematics.					
25	Reference books of mathematics are easily available in the University's library.					
26	Overall, I am satisfied with the department of mathematics education for the service provided.					

Section - B

The following questions are related to your personal opinions and personal information. Those information help to conduct this research more precisely, all responses will be kept confidential. Your co-operation in providing this information will be greatly appreciated

Please tick **(Ě)** in the appropriate box.

(1) Please tell me in which gender you are.

Male ☐ Female ☐

(2) Please tell me your age range.

Below 20 ☐ 20-25 ☐ 26-30 ☐
31-35 ☐ Above 35 ☐

(3) Who sponsors your tuition fee?

Parents ☐ Self ☐ ……….. (If any other)

(4) Please tell me in which system are you studying?

Semester ☐ Annual ☐

Thank you for your time

APPENDIX – II

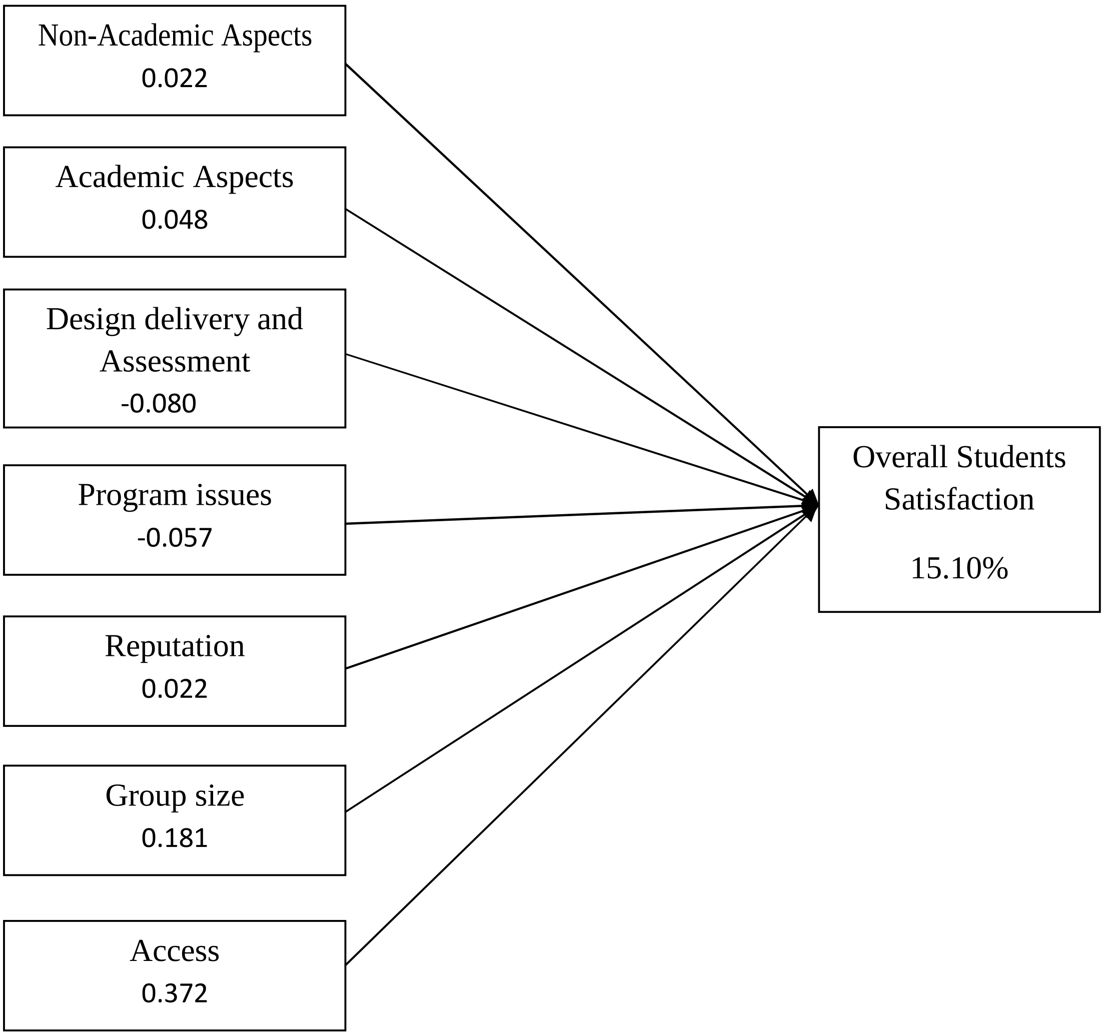
SUMMARY OF THE MODEL

R	R squares	Adjusted R Square	Std. Error of the Estimate
.389	.151	.037	.97085

Predictors: (Constant), Access, Group Size, Reputation, Non Academic Aspects, Academic Aspects, Design, delivery and assessment, Program Issue

APPENDIX – III

RESULTS OF REGRESSION ANALYSIS


Non-Academic Aspects
0.022
Academic Aspects
0.048
Design delivery and Assessment
-0.080
Program issues
-0.057
Reputation
0.022
Group size
0.181
Access
0.372
Overall Students Satisfaction
15.10%

APPENDIX – IV

STEPS OF HYPOTHESIS TESTING

1. Null and alternative hypotheses

$H_o: \mu_1 = \mu_2$

$H_1: \mu_1 \neq \mu_2$

2. Level of significance: $\alpha = 0.05$

3. Critical region: $Z_{\alpha/2} = Z_{0.025} = 1.96$

$-Z_{\alpha/2} = -Z_{0.025} = -1.96$

4. Computation:

$n_1 = 30$, $n_2 = 30$, $\bar{x}_1 = 2.90$, $\bar{x}_2 = 2.97$, $s_1 = 0.845$ and $s_2 = 1.129$

Now,

$$Z = \frac{(\overline{x_1} - \overline{x_2}) - (\mu_1 - \mu_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

$$= \frac{(2.90 - 2.97) - 0}{\sqrt{\frac{0.845^2}{30} + \frac{1.129^2}{30}}}$$

$$= \frac{-0.07}{\sqrt{\frac{1.988666}{30}}}$$

$$= \frac{-0.07}{\sqrt{0.06628887}}$$

$$= \frac{-0.07}{0.25746611}$$

$$= -0.27188044$$