



Impact of Computerization on Service Efficiency of Educational Administration

Dr. Prasad V. Kulkarni



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Foreword

Higher Education system in India is passing through transformational phase. The process of educational planning and administration are the prime areas of concern in view of benefits to the end users of the system. Apart from end users, all other stakeholders are also to be taken into account as far as the implementation is concerned. This book by Dr. Prasad V. Kulkarni has very genuine importance because of these aspects. Dr. Kulkarni, being a Computer Engineering graduate with further Post graduation & Ph.D. in Management, has appropriately analyzed the issues like administration, computerization with automation and its impact on advantage to the various stakeholders. I believe this book will be practically helpful in the process of computerizing the administrative activities in higher education institutes.

Dr. Anand Dadas

**Director, Neville Wadia Institute of Management, Pune
Chairman, Board of Studies, Faculty of Commerce & Management,
S.P.Pune University**

Preface

Education is one of the important services the society deserves to be made available with proper quality, the most important service which should be provided to the society by maintaining proper quality. The soul of the system is administration process of an educational institute or a college, which works as prominent link between students, faculty, and management. The information technology and computers have proven to be the best ways to upgrade the standards of the service. This book emphasizes on a detailed study of administrative processes and activities generally carried out at college-level and recommend the measures for its effectiveness. It elaborates various differentiators of “Education” as a service.

Several books and papers are written on introducing the computers in commercial organizations. After a survey it was observed that very little work has been done on computerization of college Level administration. The concept of service efficiency is observed to be entered in the areas like banking, transportation, insurance etc., but in the field of education still it is felt that the concept of service efficiency is new as on today and does not seem to be addressed to the required depth. On this background, this book will contribute in the existing knowledge and information in this area.

Dr. Prasad V. Kulkarni

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I have completed doctoral research on **“Impact of computerization on “service efficiency” – a study of undergraduate education in and around Pune city”** under the guidance of Dr. S.U. Gawade. I shall ever remain deeply indebted to him for his inspiring encouragement and expert guidance for expeditious completion of this study.

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Dr. Prasad V. Kulkarni

Table of Contents

Foreword	IV
Preface	V
Acknowledgement	VI
Table of Contents	VII - XII

Sr.No.	Title of Chapters	Page No.
1	INTRODUCTION	
1.1	An Introduction	1
1.2	Overview And Growth Of Higher Education In India	1
1.3	Education - A Very Large System	1 – 2
1.4	Growth Of Higher Education	2 – 3
1.5	Objectives Of He	3
1.6	Controlling Authorities In Higher Education	3 – 5
1.7	Quality Improvement In H.E.	5
2	NEED & IMPORTANCE OF STUDY	
2.1	Service Organization	6
2.2	Importance Of Education As A Service	6
2.3	Accessibility Of Service In Educational Field	6
2.4	The Difficulties In Education As A “Service”	7

2.5	Service Characteristics & Implications For Marketing Education	7
2.6	Interaction Between Service Provider & Customer	7
2.7	Approaches To Improve Service Efficiency In Education	7
2.8	Need Of Guidelines For Educational Services	8
2.9	Importance Of Study Undertaken By The Researcher	8
3	REVIEW OF PREVIOUS LITERATURE	
3.1	Educational Reforms	
3.1.1	The Transformation and Reconstruction of the Higher Education System: A way to improve the Service efficiency	9
3.1.2	Reforms in India	9 – 10
3.1.3	Some questions on rising cost of education	10
3.1.4	Privatization on higher education	10 – 11
3.1.5	Challenges	11
3.2	Assessment Of Educational Services	
3.2.1	Need & Concept	12
3.2.2	Productiity / Efficency in Education	12 – 17
3.2.3	Importance of measuring service efficiency – a worldwide overview	17 – 19
3.3	ISO For Education	
3.3.1	Why ISO?	19

3.3.2	Benefits of ISO 9000 in Education	19
3.4	Globalization of Higher Education: Threat or Opportunity?	19 – 20
3.5	WTO & GATS	
3.5.1	Background	21
3.5.2	Education under GATS	21
3.5.3	Why Trade in Educational Services?	21 – 23
3.5.4	Privatisation of higher education & necessity of W.T.O. & G.A.T.S.	23 – 25
3.6	Previous Research In Educational Administration	25
4	THEORETICAL BACKGROUND	
	Computerization Of Educational Administration – A Tool To Improve	
4.1	Service Efficiency	
4.1.1	Background	26
4.1.2	What is computerization?	26 – 27
4.2	A View At University Level	
4.2.1	Information System in the University: Objectives & Obstacles	27 – 29
4.2.2	Computerization & University Management	29 – 31
4.2.3	Uses of Information Technology to Educational Administrators	31 – 32
4.3	A View At College Level	
4.3.1	Computers and activities in the college administration	32

4.3.2	Functions to be carried out by computers	32 – 33
4.3.3	Steps to be taken to computerize an educational institution	33 – 34
4.4	Impact Of Computerization On Educational Set Up	
4.4.1	Concept	34 – 35
4.4.2	Nature of impact	35
4.4.3	Preparing the college administration for computerization	35 – 36
4.4.4	Virtual Education	36 – 38
5	RESEARCH METHODOLOGY	
5.1	Research Methodology	39
5.2	Research Steps	39
5.3	Objectives Of Research Study	39
5.4	Selection Of Sample	39
5.5	Data Collection	
5.5.1	Primary Data for this research	40
5.5.2	Secondary Data for this research	40
5.6	Types Of Research Study & Nature Of Research Undertaken	41 – 42
5.7	Hypotheses	42
5.8	Scope Of Research	42 – 43

6	PRESENTATION & ANALYSIS OF PRIMARY DATA	
6.1	Primary Data Analysis	
6.1.1	Office-Staff - (Q. No. 1 To 30)	44 – 64
6.1.2	Students - (Q. No. 31 To 38)	64 – 69
6.1.3	Principals - (Q. No. 39 To 73)	70 – 90
6.1.4	Computer Centre I/C – (Q. No. 74 To 95)	91 – 103
6.1.5	Accounts Section - (Q. No. 96 To 107)	103 – 109
6.1.6	Library – (Q. No. 108 To 121)	109 – 116
6.2	Hypotheses Testing – P 264	116 – 126
7	RESEARCH AT A GLANCE	
7.1	Background - A New Angle For Looking Towards Education	127
7.2	Role Of Computerization In Improving Service Efficiency	127 – 128
7.3	Peculiarities Of Education As A Service	128
7.4	Importance Of This Research	128 – 129
7.5	Objectives Of Research	129
7.6	Research Methodology	129 – 130
7.7	Types Of Research Study & Nature Of Research Undertaken	131 – 132
7.8	Hypotheses	132

7.9	Hypotheses Testing	132 – 142
7.10	Conclusions	142 – 146
7.11	Suggestions	146 – 147
	ANNEXURE – QUESTIONNAIRE	148 – 167
	BIBLIOGRAPHY	168 – 169

CHAPTER 1

INTRODUCTION

1.1. An Introduction

System of education in India was developed in particular historical context. After independence it had inherited a nature that was mainly designed to strengthen the British Raj in India. Later it got some modifications according to changing requirements.

After independence it was not possible to radically alter the education system. It was felt by political leadership that old system should be strengthened with new changes.

Modern management techniques are having great importance in educational planning and administration. It is essential to find solutions to the problems in educational administration by taking overall view.

1.2 Overview and growth of higher education in India

Education:

Education has been defined differently by different philosophers and educationists. Froebel defined education `as the unfoldment of what is already enfolded in the germ. For Swami Vivekananda, 'education is the manifestation of the divine perfection already existing in man'. According to Mahatma Gandhi 'Education is an all round drawing out of the best in the child and man - body, mind and spirit'. However, for the purpose of educational statistics, education, according to UNESCO (1), 'is understood to involve, organized and sustained communication designed to bring about learning'. Here, the words organized sustained, communication and learning need to be explained.

- Organized means planned in a pattern with specific aims. It involves a providing agency (person or persons or a body) that sets up the learning environment and a method of teaching through which the communication is organized. The method is typically someone who is engaged in communicating or releasing knowledge and skills with a view to bringing about learning.
- Sustained means that the learning experience has the elements of duration and continuity. No minimum duration has been stipulated. The appropriate minima differ from course to course and program to program.
- **Communication:** Communication is a relationship between two or more persons involving the transfer of information in the form of messages, ideas, knowledge, strategies, skills etc.
- **Learning:** Learning is any improvement in behaviour, information, knowledge, understanding, attitude, values, skills etc.

1.3 Education - A Very Large System

Despite serious handicaps of means and resources, the country has built up during the last 50 years a very large system of education and has created a vast body of men and women equipped with a high order of scientific and technological capabilities, robust humanist and philosophical thought, and creativity.

Though riddled with explosion in the growth of population, a large illiterate population and problems of economic poverty affecting one-third of the people, modern India is still set to forge a bright future and to contribute significantly to the higher goals of world peace, human unity and universal welfare. Much credit for this goes to the ancient but ever-young spirit of the nation and to what higher education has striven to fashion in terms of determining great objectives and implementing them under very difficult conditions (28).

India has one of the largest 'Higher Education System in the world (1).

Following numbers are explanatory enough to support this.

Teachers: 3.21, 000

Colleges: 12, 600

Students: 6.75 million

1.4 Growth of Higher Education

Prior to independence, the growth of institutions of higher education in India was very slow and diversification in areas of studies was very limited. After independence, the number of institutions has increased significantly. There are today(1), 214 universities and equivalent institutions including 116 general universities, 12 science and technology universities, 7 open universities, 33 agricultural universities, 5 women's universities, 11 language universities, and 11 medical universities. Besides, there are universities focusing on journalism, law, fine arts, social work, planning and architecture and other specialized studies. In addition, there are 12,600 colleges where **80% of undergraduate** and 50% of postgraduate education is imparted. The number of students has reached the level of 6.75 million and there are 3,31,000 teachers in the higher education system. The government expenditure alone was of the order of Rs.42,126 millions in 1996-97, and during the subsequent period this has risen even higher.

This massive development has been guided by a process of planning and recommendations of several national commissions set up by the Government of India. The objectives of higher education have gradually become more and more precise and a system of governance is developing in the direction of increasing autonomy and accountability.

But, in spite of vast efforts over the last 50 years, it is only now that the country is slowly emerging out of the old ideas and rigid structures, built during the colonial rule. There is at present a demand for radical changes which have the potential to actualize a national system of education that was visualised during the freedom struggle.

Growth in figures:

Growth in Higher Education in India

Institutions	1950-51	1990-91	1996-97
Universities	30	117	214
Colleges	750	7346	10,555
Enrolment('000s)	263	4925	6755
Teachers('000s)	24.0	272.7	321

As on 31.3.1997, there were 221 Universities and Deemed Universities in the country, which included – 16 Central Universities, 156 State Universities, 7 Open Universities, 39 deemed

Universities and 4 institutions established under State Legislation. There were 12,600 colleges, of which 4815 have been recognized by the UGC under Section 2(f) of the UGC Act (36).

In 1997-98, an estimated 70.78 lakh students were enrolled in the institutions of Higher Education as against 67.55 lakh in the previous year and the faculty strength was 3.31 lakh as compared to 3.21 lakh in the previous year.

1.5 Objectives of HE

Pursuit of integral knowledge and liberation, which has been a constant endeavour of Indian culture, is also the central objective of education. Education is also visualised as an evolutionary force so that each individual is enabled to evolve from purely material consciousness towards superior planes of intellectual and spiritual consciousness. Education is also perceived as a bridge between the past, present, and the future and as a means by which the best of the heritage is transmitted to the new generations for its further progression.

In receiving the modern message of learning to be, our endeavour is to harmonize it with the insight of our ancient Indian wisdom according to which this goal can be achieved only by the realization of our internal and imperishable being. Our educational system also aims at promoting environmental protection, universal peace, and international cooperation; and since harmony and unity in external space can best be realised through internal purification and perfection, our educational system endeavours to promote harmonious relationship between both the inner and outer dimensions of the individual, environment and the cosmos.

Our objective in higher education is not only to promote equality and social justice, but also to provide the right kind of work culture, professional expertise and leadership in all walks of life. Above all, our attempt is to foster among teachers and students and, through them in society generally, integral development of values inherent in physical, emotional, rational, aesthetic, ethical and spiritual education.

1.6 Controlling Authorities in Higher Education:

University Grants Commission (UGC)

In order to determine and maintain standards in universities, the University Grants Commission (UGC) was established (2) in 1952 and was constituted as a statutory body under the Act of Parliament in 1956. In performing its basic functions, the UGC allocates and disburses grants placed at its disposal by the Central Government to the universities, after an assessment of their needs. The Commission provides development and maintenance-grants to universities established by the Central Government and provides development grants to the other universities established by the State Governments.

The major initiatives taken by the UGC in improving the quality and standards of higher education are:

- Improvements in the quality and standards of teaching and research through programmes for setting up Centres of Advanced Study and Research, improvements in college teaching, strengthening research and infrastructure, etc.
- Periodic review and renewal of curricular content of courses in various disciplines, and special schemes for introduction of emerging areas of education and training.

- Establishment of common facilities for research networking of resources for information and documentation.
- Induction of electronic media in higher education.
- Provision of scholarships and fellowships to students.
- Launching of special programs for greater participation of women, disadvantaged groups and the weaker sections in higher education.

All-India Council of Technical Education (AICTE)

There is also an All-India Council of Technical education (AICTE), the major function (3) of which is the planned and coordinated development of technical education in the country. The major programs are related to review and renewal of the curriculum for education and training of engineers and technicians, modernization of the laboratories and workshops and removal of obsolescence and establishment of community polytechnics. It supports engineering colleges, management of educational institutions and polytechnics engaged in training of technicians.

National Council for Teacher Education (NCTE)

The National Council for Teacher Education (NCTE) is designed to ensure planned and coordinated development of teacher education and determination and maintenance of its standards (4). The Council lays down norms for specified categories of courses and guidelines.

Open University System

The country has also a developing open University system and the Indira Gandhi National Open University (IGNOU) set up in 1985 has nation-wide jurisdiction in the field of distance education (5). A Distance Education Council has been established as a statutory authority under the IGNOU Act, which provides development funds to open universities and distance education institutions from the funds placed at its disposal by the Central Government. The open University network has established common pool of programs consisting of contributions from different open universities, which can be shared by any open University through the process of adoption, adaptation and transmission.

In order to implement these objectives, a complex structure and system of governance has been evolving. The structure of higher education consists of three years of education (after 12 years of school education) leading to a bachelor's degree in arts and science and four years in professional fields like engineering and medicine. This is followed by two years of study for a Master's degree; and three years at least beyond the Master's degree for a Ph.D degree which generally takes longer. There are also postgraduate diploma programs open to graduates, and certain professional programs like those in education and law require a first degree as a pre-condition for admission in most places.

The universities are of various kinds: with a single faculty, or multi-faculties, teaching or affiliating, or teaching-cum-affiliating, single campus or multi-campus.

Most of the universities are "affiliating universities", which prescribe to the affiliated colleges the courses of study, hold examinations and award degrees, while undergraduate and, to some extent, postgraduate instruction is imparted by the colleges affiliated to them. Universities impart postgraduate education and conduct and promote research in a variety of disciplines.

Colleges in India are established by State Governments and private agencies. In some cases, universities themselves establish colleges. Most of the colleges seek support from the State Governments for their maintenance. Universities have been set up by the Central or State Governments by means of legislation. Most of the colleges mainly impart under graduate education.

Autonomous Colleges

Apart from these initiatives, a number of regulatory measures have been taken to bring about structural reforms and ensure quality in higher education. A scheme of autonomous colleges has been launched under which teachers in the colleges themselves prescribe the curriculum and conduct the evaluation of their students through a system of continuous evaluation. At present, there are 119 autonomous colleges. The UGC constitutes review committees in order to oversee and assess the quality of the University programs.

The UGC and the Council of Scientific and Industrial Research have also set up the National Educational Testing Programs. UGC has also set up a national level institution for quality assessment and accreditation.

University Affiliated Colleges:

A special feature of Indian Education system is “Affiliated Colleges “(6). There are around 7,000 affiliated colleges in the country. **In these approximately 88% enrollment is at under graduate level. Thus under graduate education constitutes major part of higher education. The problem of quality of services rendered and education offered by Universities are mainly the problems of University affiliated colleges.**

Today’s age is age of Information Technology and Computerization. The Indian Universities are required to be strong enough to withstand in the competition with Foreign Universities.

1.7 Quality Improvement in H.E.

A number of measures have been taken for quality improvement. These include the development of infrastructure, curriculum, human resources and research and establishment of centres of excellence and interdisciplinary and inter-institutional centres. The scheme of academic staff colleges was started in 1986-87, under which 45 such colleges have been set up. These colleges conduct orientation programs for training new teachers and also refresher courses in various disciplines for in-service teachers to enable them to update their knowledge.

To enrich the quality of higher education, a country-wide classroom program was launched. Under this scheme, special films on various subjects are prepared and telecast for the benefit of students and teachers. Twenty one centres have been set up to produce special films, and a large number of video tapes are being produced for transmission on the national TV network.

CHAPTER 2

NEED & IMPORTANCE OF STUDY

EDUCATION AS A “SERVICE”

2.1 Service Organizations:

The service organizations are quite varied (7) and are different from each other and can be put in to four categories.

1. Public Agency Sector
2. Private Non profit Sector
3. Business Sector
4. Manufacturing Sector

“Service” is basically defined as activities, benefits, or satisfactions which are offered for sale or provided in connection of sale of goods.

2.2 Importance of Education as a Service:

Education is the most important service which should be provided to the society by maintaining proper quality. **The backbone of education system is college administration. Administration in the colleges is the prominent link between students, faculty, and management. The computers, today have proven to be the best tools for improving the quality of the service.** There are limitations to the human beings which may degrade the quality. For example handling large number of students’ records. This problem can be solved by computerizing the administration in the colleges imparting the under graduate education.

THIS RESEARCH STUDY FOCUSES ON A DETAILED STUDY OF COMPUTERIZATION AT COLLEGE LEVEL AND COVERS THE COLLEGES FALLING IN THE REGION IN AND AROUND PUNE

Several books and papers are written on introducing the computers in commercial organizations. After a survey it was observed that very little work has been done on computerization of college level administration. The concept of service efficiency is observed to be entered in the areas like banking, transportation, insurance etc. but in the field of education still it is felt that the concept of service efficiency is new as on today and not yet addressed in a systematic way. So it is felt that this study will contribute in the existing knowledge and information in this area.

2.3 Accessibility of service in Educational field:

In educational institute the accessibility of the service depends upon the following factors:

1. The number and skill of the persons associated with providing the core, facilitating and supporting services.
2. Office hours, class and seminar schedules, time used for other services.
3. Exterior and interior of offices, classrooms, facilities etc.
4. Tools, equipments, study materials etc., and
5. The number, quantity and aptitude levels of students involved in learning process.

2.4 The Difficulties in Education as a “SERVICE”

1. Education can not be seen or touched and is often difficult to evaluate
2. Precise standardization is difficult.
3. Education as a service can not be patented.
4. Production and consumption are simultaneous activities.
5. No inventories can be built up.

2.5 Service Characteristics & Implications for marketing Education:

Education is the most in-tangible (7) service and that is why it impossible to see, touch, or feel. Today it has become necessary that evaluation of this service is required to be done on the basis of its service content and service delivery system. The consumer in this field like any other consumer has too many choices before him and may make the evaluation by his own methods and judgements, opinions of others etc. At the end of service consumer gets something tangible to show, i.e. for ex. “ a degree certificate or grade card “ denoting his proficiency in the course / program given to him.

2.6 Interaction between service provider & customer:

To study the quality of services it is necessary to see the various types of interaction between service provider and customer taking the education as a service.

1. Interaction under resource facility (their expertise, skill, attention, attitudes),
2. Interaction with other services interfaces (admission, evaluation, student enquiries, student welfare office, office staff, hostel wardens, reception – attitude and willingness of response, accurate answers),
3. Interaction with physical environment (space, cleanliness, maintenance, noise levels),
4. Interaction with accessory service system (waiting line for admissions, results, enquiries, payment receipts etc.),
5. Interaction between students,
6. Interaction of various sub systems with each other (faculty, facilities, office personnel, other service departments).

2.7 General approaches to improve Service Efficiency in Education:

1. Service providers to work harder and skillfully through better selection and training procedures.
2. Increase the quantity of service while balancing the quality.
3. Industrialize the service by adding the technology and standardizing the procedures.
4. Reduce the need of service by innovative and self explanatory course material
5. Design more effective service.
6. Present the customers with incentives.

2.8 Need of guidelines for educational services

Dr. M. Anandakrishnan, honorary Fulbright Academic Advisor with the U.S. Educational Foundation of India (USEFI) has opined that India needs to evolve policy guidelines (8) on international educational services within the country before any multilateral agreements are reached.

Addressing a USEFI organized program on "National empowerment through international education" here, Dr. Anandakrishnan said education was one of the items listed for negotiations under the WTO-General Agreement on Trade and Services (GATS).

Once framed the policy guidelines, service providers and minimum standards could be used in multilateral negotiations. The final agreement could then benefit the country.

On the changing face of international higher education, he said the number of Indians students going to the U.S., the U.K., Canada or Australia had increased manifold in the last 3-4 years. New destinations like Germany and Japan were emerging. The U.K. had announced the relaxation in restrictions on students seeking work permits after completing their courses.

On its part, the Indian Government was keen on promoting international higher education.

A committee looking into internationalisation of education was working on draft guidelines for approval of international services and ensure that they were relevant, non-discriminatory and accredited in their respective countries and that they adhered to certain codes of ethics and avoided gross commercialisation of education.

The forms of international education in India went beyond physical migration. Foreign universities were opening 'Twinning programs' where part of the course was done in India and the other in the foreign centre, foundation bridge courses (to enable students to complete the mandatory 16-year formal education for PG programs) and franchise programs (a centre here could be given franchise to run a course based on the syllabus and content of a foreign University, in whose name the degree is awarded).

2.9 Importance of Study undertaken by the Researcher:

This research will create a unique and centralized database about the various aspects of computerization in the college administration in undergraduate education. Teaching faculty imparts education but non-teaching / administrative staff plays a major role in the process of offering various services to students. This staff is interface between student and the college.

This research project will help the colleges and the University for planning and organizing the computer-training programs in future.

The research will help to provide the valuable information to the University about the computer resources and the ways in which they may be best used to improve communication between colleges and University.

The research will also help in getting the students' feed back about their satisfaction, suggestions about the services available at college level and impact of computerization on the efficiency of the same. In short this research will help as a tool for computerization of Educational Administration in present and future.

CHAPTER 3

REVIEW OF LITERATURE

3.1 Educational Reforms

3.1.1 The Transformation and Reconstruction of the Higher Education System: A way to improve the Service efficiency

The National Plan for Higher Education, which was approved by Cabinet in February 2001, identified five key policy goals and strategic objectives necessary for achieving the overall goal of the transformation of the higher education system.

These are:

- To increase access and to produce graduates with the skills and competencies necessary to meet the human resource needs of the country.
- To promote equity of access and outcomes and to redress past inequalities through ensuring that student and staff profiles reflect the demographic composition of South African society.
- To ensure diversity in the institutional landscape of the higher education system through mission and program differentiation to meet national and regional skills and knowledge needs.
- To build high-level research capacity, including sustaining current research strength and to promote research linked to national development needs.
- To restructure and consolidate the institutional landscape of the higher education system to transcend the fragmentation, inequalities and inefficiencies of previous system and to enable the establishment of institutions consistent with the vision and values of a non-racial, and democratic society.

3.1.2 Reforms in India

Critical appraisals undertaken by the governmental committees and independent academicians have highlighted the reasons behind the need of reforms:

- Over-production of “educated” persons
- Increasing educated unemployment
- Weakening of student motivation
- Increasing unrest and indiscipline on the campuses
- Frequent collapse of administration
- Deterioration of standards; and above all
- The demoralizing effect of the irrelevance and purposelessness of most of what is being done

While the politicians and policy makers have often spoken about the need for reconstruction of the system, what has been achieved in reality is only moderate reformism.

Given the mounting pressure for increasing accessibility and over- democratization, the trend in the universities is towards reducing everything to the lowest common denominator or leveling down quality rather than raising it. The Indian University system is extraordinarily rigid and pronouncedly resistant to change. The impetus to change does not come from within the system. When experiments or innovations are introduced from outside, they are resisted. The fate of such innovations as the merit promotion scheme, faculty-improvement program, vocationalization of courses, semesterization of courses, curriculum-development centers, annual self-appraisal report, college-development council, academic-staff college and refresher and orientation courses are too well known. It is indeed ironic that higher education, which is expected to function as an agency of change, should itself be resistant to it. The void created by the paralysis and drift of the conventional University system is being filled by private entrepreneurial initiatives. Thus, significant educational innovations and experiments are currently taking place in institutions outside the University orbit and in the private sector. In view of the rapid expansion of and increasing variety in knowledge and skills, there is enormous scope for educational innovations and initiatives. The private institutions have been more responsive to the demands of the economy and industry and the changing employment scenario. They have also shown their ability to match relevance with flexibility both in costs and regulation. This does not, however, mean that all private institutions are necessarily good. Some are running after money making. As in any commercial operation in a market economy, such establishments get exposed. Privatization of higher education is apparently a fledgling but welcome trend. Higher education requires it to maintain creativity, adaptability and quality.

3.1.3 Some questions on rising cost of education

Following are some basic questions on which a thought should be given as far as improvement in service efficiency in higher education is concerned (9).

1. What impact do the rising costs of higher education have upon enrollments?
2. Do the rising costs of higher education impact college choice?
3. Do the rising costs of higher education impact students differentially, on the basis of race/ethnicity, gender, age, disability, or other student characteristics?
4. On what basis is the need for a student service or program determined?
5. By what criteria is the effectiveness of a student service or program determined?
6. On what basis is the cost effectiveness of a student service or program determined?
7. What are effective means of justifying our services and programs to intended audiences, such as administrators, faculty, governing boards, students, and other stakeholders?

3.1.4 Privatization on higher education

Privatization on higher education appears to be a remedy to improve the quality and service efficiency in education. The process has already been started in India in the Southern states of Tamilnadu and Karnataka. The enrolment of students in these institutions is also larger than Govt. funded or aided institutions. The Government, therefore, has allowed the private sector to set up universities. Recently, a couple of prominent Indian industrialists have prepared a report entitled “A Policy Framework for Reforms in Education” as a part of Prime Minister’s Council

on Trade and Industry. In this report, it has been recommended that the Government's role should be 'maximum' in the sphere of primary education but 'minimum' at the stage of higher education. The report is popularly known as Ambani-Birla report. This report has evoked strong objection from the University teaching community, because it has suggested the establishment of private universities. It has stated, "A private Universities Bill should be legislated to encourage the establishment of new private University", adding that "a redefinition of Governments role in higher education would call for a major privatisation of University education system in India". The report has also recommended that all educational institutions in India – schools, colleges, universities and other institutions of higher education must be rated by independent agencies, in view of their efficiency as is the case with the financial sector. It has also been strongly recommended that the funding should be linked to the service efficiency of educational institutions.

Following observations are worth considering for the future development of higher education in India:

- i) It is ideal for the Government in the developing country like India to contribute to the development of education in view of its high and social return on investment. However the financial helplessness of the Govt. should not throw the system out of gear. The University system should develop built-in-flexibility and ability to render qualitative students related services to reduce the dependence on government finance.
- ii) Privatization of higher education is inevitable especially in India's undergraduate education.
- iii) The globalization in the world leaves no option before our universities excepting improvement of quality of education imparted, so as to make it comparable to international standards, failing which, their very survival will be in danger. For example Indian education system should understand the role of Information Communication Technology in distance education (35). The universities have to redesign their programs so as to make them flexible, cost-effective and efficient keeping relevance with the market economy.

To sum up, we need a proactive leadership in higher education at the Central and State Government levels for formulating appropriate policy and practice in developing the potential of the future generation through an efficient and relevant higher education with accountability. Higher education is a futuristic investment in social, political and economic sense of the term. It deserves a better attention than what it gets at present.

3.1.5 Challenges

It is struggling to remain competitive when the foreign countries have flooded the domestic market with goods and services. The key to meeting this challenge is to ensure quality assurance that too cost effectively and remain globally competitive. Information technology is a tool to support the education system to survive in this competitive environment (30). Therefore, we have to learn from management experts how to ensure quality in the education sector, its sustenance and enhancement.

3.2 Assessment of educational services

3.2.1 Need & Concept:

Two higher education topics receiving considerable attention in policy circles and within academe today are productivity and efficiency. As enrollments in higher education continue to expand, public funding is becoming increasingly scarce, particularly as competition increases from other recipients of public funds such as healthcare and corrections. In light of this many policymakers have found themselves asking if higher education institutions are using their resources productively. Over the past decade, questions of this kind have given rise to a number of studies seeking to assess productive and cost efficiency. Yet the increase in studies of this type can also be attributed to the development of parametric and non-parametric techniques for estimating efficiency that have only recently moved beyond theoretical construction and gained popularity in more applied settings. These increasingly sophisticated approaches have finally provided researchers both the ability and flexibility necessary for modeling the complex production processes and cost structures within higher education institutions. As a result, one can look across education systems in several countries and find a growing repository of empirical studies that shed new light on our understanding of higher education efficiency. Remarkably though, within any given country it is not possible to identify more than a handful of empirical studies. In short, the best evidence researchers have about higher education efficiency is scattered among a diverse set of educational systems that are more apt to be different than similar in many aspects.

Nevertheless, it is worth asking whether there is anything to gain by combining what is known about higher education efficiency and reflecting on the state of the art. What common threads exist to tie these different studies together? What can be learned by examining how one studies of efficiency in one system that has yet to be applied in another? How do the efficiency findings from one country's higher education system compare to another? Is it even possible to draw such comparisons?

3.2.2 Productivity / Efficiency in Education:

The concept of productivity in economic jargon is as old as the discipline itself (10). It is generally defined as the output per unit input and is measured as the ratio between output and the input.

There are problems of aggregating outputs and inputs and there is the problem of correcting for price changes over time when time series data for inputs and outputs are used. **However these concepts and measures are also extended to the education sector to assess efficiency in education since education is treated as a service-industry which produces "the education value added"**.

Efficiency is not the same thing as productivity. According to Daniel Rogers, efficiency is defined as "either achieving the greatest amount of output from given set of inputs or achieving a specified amount of output utilizing a minimum quantity of inputs". In education, efficiency measures the ratio of index of educational outputs to the corresponding index of educational expenditures in real term. Efficiency refers to the optimal combination of inputs to produce a given output that is to say, producing that output at least cost. The reference to costs shows that

efficiency depends critically on the relative prices of inputs: every change in relative price involves a different efficient combination of inputs.

Realizing the importance of measurement of efficiency in education, the UNESCO European Centre conducted a seminar on this topic in Bucharest in January 1975. The final report of this seminar explained the concepts of efficiency in two terms, namely “internal efficiency” and “external efficiency”.

INTERNAL & EXTERNAL EFFICIENCY IN EDUCATION:

Society usually assigns a number of overriding cultural, social and economic objectives to education system. External efficiency lies in the success in meeting these objectives. This task is made difficult by the fact that the objectives are not always explicit and also not compatible with each other.

The education system or an institution has more specific targets established within its framework. The internal efficiency of an educational system or an institution is a measure of its success in meeting these operational targets with the resources made available to it.

There is cause and effect relationship between efficiency and productivity in education. Therefore it is perfectly possible that education is conducted inefficiently at every moment and yet enjoys productivity improvement as time passes. Similarly education may be conducted efficiently at every moment in time but yet exhibits no technical dynamism over time, simply because there are no inventions forthcoming that can be adopted to the educational process. Further, when this concept is used within the internal operation of educational system, it is called as “internal efficiency”, while its use with reference to the economical system as a whole of which educational system is subsystem, is called as “external efficiency”.

External efficiency measures the success of educational system, over a period of time by considering the broader objectives and goals of education (socio-economic-political-cultural) in addition to narrowly defined specific operational targets connected with the concept of internal efficiency.

As far as the efficiency in education is concerned one must be very cautious while applying the concepts of efficiency to the education because sometimes the operation of an educational system may be internally efficient, yet the use of its products outside the system may turn out to be extremely unproductive.

ASSESSMENT & ACCREDITATION - NAAC

The University Grants Commission (UGC) established the National Assessment and Accreditation Council (NAAC) in September 1994, at Bangalore (11), in pursuance of the National Policy on Education and the Programme of Action (POA), 1986.

NAAC is entrusted with the task of performance evaluation, assessment and accreditation of universities and colleges in the country.

The philosophy of NAAC is based on objective analysis and continuous improvement rather than being punitive or judgmental, so that all institutions of higher learning are empowered to maximize their resources, opportunities and capabilities.

Education plays a vital role in the development of any nation. Therefore, there is a premium on both quantity (increased access) and quality (relevance and excellence of academic programs offered) of higher education.

Like in any other domain, the method to improve quality remains the same i.e. finding and recognizing new needs and satisfying them with products and services of international standards.

The NAAC has been set up to help all participating institutions assess their performance against set parameters. A rating agency for academic excellence across India, and the country's first such effort.

Advantages of Accreditation:

- Helps the institution to know its strengths, weaknesses and opportunities through an informed review process.
- To identify internal areas of planning and resource allocation.
- Outcome provides funding agencies objective data for performance funding.
- Initiates institutions into innovative and modern methods of giving educational services
- Gives institutions a new sense of direction and identity.
- Provides society with reliable information on quality of education offered.
- Employers have access to information on the quality of education offered to quality-manpower.
- Promotes intra and inter-institutional interactions.

Concept of excellence in higher education & its requirements

INTRODUCTION

An institution of higher education is a community dedicated to the pursuit and dissemination of knowledge, to the study and clarification of values, and to the advancement of the society it serves.

Characteristics of Excellence

They are designed as a guide for those institutions engaged in self-review. In their self-review processes, institutions demonstrate how they meet these accreditation standards within the context of their own institution mission and goals. No assurance is given or implied that every accredited institution manifests these characteristics and meets these standards (15) in equal proportion. Accredited institutions are expected to demonstrate these standards in substantial measure, to conduct their activities in a manner consistent with the standards, and to engage in ongoing processes of self-review and improvement.

The emphasis on institutional assessment and assessment of student learning follows naturally from the existing standards laid down by various authorities and decades of attention to outcomes assessment through publications, workshops, and training sessions. Commission is aware of the institutional effort and cultural change that the increased relative emphasis on assessment may require.

Factors deciding service efficiency in education :

1: Mission, Goals, and Objectives

The institution's mission should clearly define its purpose within the context of higher education and explains whom the institution serves and what it intends to accomplish. The institution's stated goals and objectives, consistent with the aspirations and expectations of higher education, should clearly specify how an institution should fulfill its mission. The mission, goals, and objectives should be developed and recognized by the institution with its members and its governing body and should be utilized to develop and shape its programs and practices and to evaluate its effectiveness.

2: Planning, Resource Allocation, and Institutional Renewal

An institution should conduct ongoing planning and resource allocation based on its mission and should use the results of its assessment activities for institutional renewal. Implementation and subsequent evaluation of the success of the strategic plan and resource allocation should support the development and change necessary to improve and to maintain institutional quality.

3: Institutional Resources

The human, financial, technical, physical facilities, and other resources necessary to achieve an institution's mission and goals should be available and accessible. In the context of the institution's mission, the effective and efficient uses of the institution's resources be analyzed as part of ongoing outcomes assessment

4: Leadership and Governance

The institution's system of governance should clearly define the roles of institutional constituencies in policy development and decision-making. The governance structure should include an active governing body with sufficient autonomy to assure institutional integrity and to fulfill its responsibilities of policy and resource development, consistent with the mission of the institution.

5: Administration

The institution's administrative structure and services should facilitate learning and research/scholarship, foster quality improvement, and should support the institution's organization and governance.

6: Integrity

In the conduct of its programs and activities involving the public and the constituencies it serves, the institution should demonstrate adherence to ethical standards and its own stated policies, providing support to academic and intellectual freedom.

7: Institutional Assessment

The institution should develop and implement an assessment plan and process that evaluates its overall effectiveness in: achieving its mission and goals; implementing planning, resource allocation, and institutional renewal processes; using institutional resources efficiently; providing leadership and governance, providing administrative structures and services; demonstrating institutional integrity; and should assure that institutional processes and resources support appropriate learning and other outcomes for its students and graduates.

8: Student Admissions

The institution should admit students whose interests, goals, and abilities are congruent with its mission.

9: Student Support Services

The institution should provide student support services reasonably necessary to enable each student to achieve the institution's goals for students.

10: Faculty

The institution's instructional, research, and service programs should be devised, developed, monitored, and supported by qualified professionals.

11: General Education

The institution's curricula should be designed so that students acquire and demonstrate college-level proficiency in general education and essential skills, including oral and written communication, scientific and quantitative reasoning, critical analysis and reasoning, technological competency, and information literacy.

12: Assessment of Student Learning

Assessment of student learning should demonstrate that the institution's students have knowledge, skills, and competencies consistent with institutional goals and that students at graduation have achieved appropriate higher education goals.

Structural Reforms

The regulatory system was introduced as early as in 1857 along with the establishment of the modern University in India. The main purpose was to ensure the standardization of curriculum in undergraduate program, as well as objective and impersonal evaluation of students. The system of affiliated colleges involved determination of curriculum by the University. Implementation of this curriculum was carried out by the affiliated colleges and University departments and the evaluation of students through comprehensive examinations. So long as the system remained small in size, it worked reasonably well.

But, with the expansion in the number of institutions and students, this system has caused serious damage to the process of teaching and learning; diversification of higher education, social relevance of the curriculum and evaluation of students. In order to remedy this situation, the following steps have been taken:

- ***Critical inputs and recognition:***

Other regulatory measures, such as creation of minimum level of infrastructure, the specified number of qualified staff and well-defined administrative procedures, are insisted upon before any institution is affiliated to a University, or before a University can be recognised by the UGC for financial assistance. These measures discourage the opening of substandard institutions.

- **Evaluation and Monitoring:**

UGC review committees and visiting committees oversee and assess the quality of University programs. These committees are constituted for different areas and disciplines and for all the universities that receive financial assistance from the UGC.

- **Another UGC measure is the National Educational Testing (NET)**

Programme. The UGC and the Council of Scientific and Industrial Research (CSIR) conduct tests in science subjects twice a year for Junior Research Fellowships (JRF) and an eligibility test for the teaching profession.

Universities and colleges are required to consider the candidature of only such persons who have qualified for teaching jobs. These tests have proved to be important indicators of quality of students engaged in the teaching and research profession.

UGC has already indicated that its plan-based development support to educational institutions will be related to the outcome of assessment and accreditation. It has already extended financial support to the extent of Rs. 5 lakhs to each University to meet the expenses involved in undergoing the accreditation process. Likewise, the autonomous colleges are provided with financial support for this purpose as a part their annual grant from the UGC.

3.2.3 Importance of measuring service efficiency – a worldwide overview

The concepts of accountability and quality assessment in higher education constitute an international phenomenon. National education systems call upon universities to establish performance indicators to measure progress towards the establishment of national goals.

In Europe and Australia, central governments are involved directly in establishing “indicators.” In the United Kingdom, for example, quality control, quality audit, and quality assessment are being carried out by the Higher Education Quality Council and the three Higher Education Funding Councils. A new central agency to gather and analyze data, the Higher Education Statistics Agency (HESA), has also been established. More specifically, library performance indicators have flourished in the United Kingdom as the restructuring of the British higher education system. The European Commission has been supporting an effort to create a reliable statistical base for libraries in Europe. In December 1997, the Commission hosted a workshop to focus attention on statistics that address service quality.

In the U.S., there have been discussions about a greater united role in institutional accreditation or if such a system might be based on “results” and “performance.” Whether it is the federal government or some other entity that will undertake the responsibility to define “quality & service efficiency” for higher education in the U.S., critics of higher education have warned that, if “the academy does not respond, the public demand for results will expand and crystallize around the use of external performance indicators to measure results. And the jury is still out on the results desired.” To some extent, this is already happening through the widespread ranking systems that popular magazines like *U.S. News and World Report* are promoting. In the 1997 issue dedicated to ranking colleges, the editors point out that **“the nation cannot afford to let higher education become less and less affordable for more and more students. The high cost of college is no longer just an academic affair; it is a national concern as well.”**

A recent report that presents the results of a two-year study by the Commission on National Investment in Higher Education highlights the fact that the “present course of higher education—in which costs and demand are rising much faster than funding—is unsustainable.” The authors call upon the “nation to address the fiscal crisis now, before millions of Americans

are denied access to a college education” and they recommend “increased public-funding of higher education and wide-ranging institutional reforms.”

In particular, they articulate the following recommendations:

1. Institutions of higher education should make major structural changes in their governance system so that decision makers can assess the relative value of departments, programs, and systems in order to reallocate scarce resources.
2. As part of the overall restructuring, colleges and universities should pursue greater mission differentiation to streamline their services and better respond to the changing needs of their students.
3. Colleges and universities should develop sharing arrangements to improve productivity.
4. It is time to redefine the appropriate level of education for all American workers in the 21st century. All citizens planning to enter the workforce should be encouraged to pursue—as a minimum—some form of postsecondary education or training.

To some extent, these recommendations are the result of a fundamental societal transformation from the Industrial Age to the Information Age and the corresponding challenges and opportunities it presents for higher education. Performance measures are becoming the method of choice to track the transformation of higher education. Critics are calling for the development of a compelling vision for learning in the 21st century, a vision that would transform higher education by realigning it with three conditions:

- 1) The changing nature of information, knowledge, and scholarship;
- 2) The needs of individual learners; and
- 3) The changing nature of work and learning.

In the discussion regarding performance indicators in the U.S., the primary focus has been on **cost efficiency and access to undergraduate education** as well as on the long-term transformation of higher education and its effect on graduate education and research

Investment in Higher Education

Higher education in India is in deep financial strain, with escalating costs and increasing needs, on the one hand, and shrinking budgetary resources, on the other. The share of higher education in total planned resources increased (1) from 0.71% in the first Five-Year plan to 1.24 % in the fourth Five-Year plan. But ever since, it has declined continuously to 0.53% in the seventh Five-Year plan and further down to 0.35% in the eighth Five-Year plan (1992-97), though the actual expenditure has increased by more than 100 times from Rs.140 million in the first Five-Year plan to Rs. 15,000 million in the eighth Five-Year plan at current prices, and 6.5 times in terms of real prices. Thus, although higher education in India is characterized by massive public investment, this investment is still regarded as much below the optimum.

Recently, major efforts have been mounted for mobilization of resources and it has been recommended that while the Government should make a firm commitment to higher education, institutions of higher education should make efforts to raise their own resources by raising the fee levels, encouraging private donations and by generating revenues through consultancy and other activities. It is clearly seen that if higher education has to be maintained and developed

further, the Government will have to step up measures for encouraging self-reliance while providing a much more massive investment than that in present.

Customer satisfaction in education

Customer satisfaction is the key for upgrading quality, as without full customer satisfaction it is not possible to increase market share.

Students complain that they are not able to exercise choice in selecting what they would like to study. They want to study what would suit their aptitude and also meet their future needs. Also, the general perception is that contents of courses that are being offered at present may not be helpful to them in acquiring skills and abilities required by their future employers.

Student satisfaction may have to be used as an effective instrument for raising the quality of educational services. This will require acceptance of learners by the higher education system. New courses and course combinations may have to be offered for meeting varying learning needs of students. The other driving force for raising quality will be the commitment of teachers to their students and to the pursuit of excellence.

3.3 ISO FOR EDUCATION:

3.3.1 Why ISO?

Why are educational institutes / colleges are looking at ISO 9000 registration?

- Increased community awareness about quality of the education
- Establishing a common methodology for continual improvement
- Reduction of internal costs
- Focusing on their students as customers
- More open lines of communication
- Preparing students with an understanding of quality standards
- Preparing greater collaboration with business and industry

The traditional focus of the ISO 9000 standard has been manufacturing companies. Recently a growing number of educational institutes have adapted and adopted (12) the "best business practices" found in the ISO 9000 requirements to their educational environments.

3.3.2 Benefits of ISO 9000 in Education

Educational institutes find that an ISO 9000 provides a central management tool (13) to make sure all internal and external stakeholders are satisfied - starting with their students. Through the use of internal and external audits, top administration receives ongoing feedback as to how well the college is performing. Internal day-to-day operations are assessed to ensure consistency and discrepancies are reported for quick resolution. Internal and external performance measures give an indication as to how well quality objectives are being met.

3.4 Globalization of Higher Education: Threat or Opportunity?

The phenomenon of globalization, which transformed world trade, communications and economic relations in the latter part of the 20th Century, is having a similarly profound effect on

education at the start of the 21st. Student options for higher education, in particular, are no longer constrained by national boundaries. Innovative forms of transnational education - Internet-based distance learning, branch campuses, educational "franchising" -- have greatly expanded opportunities for students to study and learn outside their country of origin. In addition, there is now increasing global competition for the "best and brightest" students, as more and more countries recognize the economic potential of higher education as a service export sector. For the first time in history, large segments of the world's student population truly have access to a "global marketplace" of higher education.

For higher education leaders in India, this new environment holds both threats and opportunities (14). The threats are obvious: as more and more Indian students look to Australia, Britain and the U.S. for both undergraduate and post-graduate studies, the quality of Indian universities will continue to suffer. **Lacking computer facilities and Internet access, many of India's resource-starved institutions - such as colleges in remote rural districts - will be on the wrong side of the "digital divide."** In this age of globalization and internationalization of higher education, digital technology has a great impact (33). Even India's elite institutions - the Indian Institutes of Technology and Indian Institutes of Managements (IITs & IIMs) - will find it increasingly difficult to attract and retain world-class faculty members in the face of attractive offers from foreign universities, research institutes and multi-national corporations. So, there is a substantial risk that Indian universities (27) and their students could end up as serious losers in the global higher education "game".

But there are also real opportunities for India to benefit significantly from the global revolution in higher education. To do so will require major policy reforms in the way Indian universities are structured, funded and regulated. It will also require closer links between Indian industry, especially the growing technology-based sector, and Indian universities. And, it will require a new, globally oriented, entrepreneurial style of leadership by Indian Vice Chancellors and other top-level administrators.

The corporate sector has discovered a trillion-dollar industry. It is yet to be fully explored and exploited. **This is a service sector industry in the area of education as 'service' with a huge global market in which students, teachers, and non-teaching employees constitute resources for profit-making.** In this industry, the students are consumers, teachers are service providers, and the institutions or companies catering to education services are organizers, and the teaching-learning process is no longer for the building of a nation but a business for profit-making.

Education, at all levels, will continue to grow, because it cultivates the human mind and makes people important and useful in the all-round development of a country. However for the corporate sector it will grow as a big service industry. Powerful transnational corporations are targeting public education, particularly higher education, for profit-making. Though predominantly a government supported service, most governments are, as a consequence of modern and liberal economic reforms, withdrawing from it. The government of India through extensive privatization, commercialization and deregulation is encouraging this process.

3.5 WTO & GATS

3.5.1 Background

The World Trade Organization (WTO), established by replacing the General Agreement on Trade and Tariffs at the Uruguay Round in 1994, is a forum for corporate interests to push their agenda down the throats of developing countries without any democratic accountability. The General Agreement on Trade in Services (GATS) covered in the WTO is a legally enforceable agreement aimed at deregulating international markets in services, including education. Before this agreement, trade agreements used to be in relation to eliminating tariffs and other barriers for the goods produced in one country and sold in other countries. Some services used to be exchanged but there was no mechanism for trade in services, because they were considered to be place specific and thus non-tradeable. According to the European Commission, the GATS is "first and foremost an instrument for the benefit of business."

The WTO has defined and drawn up the rules so as to give itself enormous powers. According to the WTO website (16), "The GATS is the first multilateral agreement to provide fully enforceable rights to trade in all services. It has a 'built-in' commitment to continuous liberalization through periodic negotiations. And it is the world's first multilateral agreement on investment, since it covers not just cross-border trade but every possible means of supplying a service, including the right to set up a commercial presence in the export market." The WTO has explicitly stated that one of the advantages of the GATS is that it will help to overcome domestic resistance to change.

3.5.2 Education under GATS

When the services are entirely provided by the government, they do not fall within the GATS rule. For a service to be out of the purview of the GATS rule it has to be entirely free. However, when the services have been provided either by the government partially or some prices are charged (as happens in education where some fees is charged), or provided by the private providers, they shall fall under the GATS rule.

WTO has classified the educational services into five parts: (a) primary education services; (b) secondary education services; (c) higher education services; (d) adult education, and (e) other education services.

The idea behind this is the creation of an open, global marketplace where services, like education, can be traded to the highest bidder. GATS covers the educational services of all countries whose educational systems are not exclusively provided by the public sector, or those educational systems that have commercial purposes. Since total public monopolies in education are extremely rare, almost all of the world's educational systems fall under the GATS umbrella. In India, we cannot get exemption in education from the application of GATS because education at all levels, particularly at higher education level, is not entirely free (i.e. some fees has to be paid).

3.5.3 Why Trade in Educational Services?

Precedence for trade in educational services goes back in ancient times. In the Golden Age of India, universities at Nalanda and Takshashila were famous the world over, attracting students from foreign lands. **In fact, universities (Vishwa Vidyalayas), by definition, have to be international in character.** Prior to independence, children of the rich and students earning

fellowships did go to United Kingdom (UK) for higher education and returned with a wider worldview of things. After independence, students went abroad on Commonwealth and Fullbright scholarships and returned home to transplant their training and experience to the domestic conditions.

And, the latest phase began when (post) graduate students started going to the United States (US) for higher studies with dollar assistantship in their pocket, never to return as if they had entered Alibaba's Cave! Of late, there are many Indian students going abroad for undergraduate education as well. Is there a potential for growth in trade in educational services, especially when significant contribution to this sector comes from government? Is trade in educational services compatible with WTO norms? As per Article I.3 of GATS, government services remain outside the purview of GATS, provided they are not meant for commercial purpose and do not have any competition from private service suppliers.

Hence, education does come under the purview of GATS trade liberalization, since there are already many institutes, colleges, high schools, and coaching classes operating in private sector in India. These private service providers are in direct competition with the government-run institutions. Moreover, one must not forget that the leading public educational institutions like the IITs, IIMs and agricultural universities were funded primarily by foreign funds. The shrinking budgetary resources for education are in no way helping the cause of promoting knowledge in India. Even if government substantially increases its educational spending via deficit financing, it amounts to an inflation tax. Hence, private sector participation and trade in educational services seems quite essential. The scarcity of funds points out the fact that capital is a scarce factor and human resource an abundant factor in India.

In the last decade, awareness of knowledge as an engine of growth has gained ground and **education is now looked upon as a tradable service. Developed countries are also keen to use this opportunity to avoid under utilization of infrastructure that exists in their educational institutions.**

FUTURE OF HIGHER EDUCATION IN INDIA

In the beginning of the last decade, some foreign universities tried to market their higher education programs in India. Representatives of several countries visited India to market certain percentage of their medical and engineering seats. Some foreign universities have also engaged Indian agencies and firms to recruit students to study in their universities. Others have started franchisee or commercial presence in India by allowing students to be enrolled in India and carry out studies for a part of the period in India and completing the other part of the degree in the institutions abroad. In certain cases even full degree institutions in India for giving foreign University conduct their programs. Some also have twinning programs between foreign and Indian universities. Some offer programmes through distance mode, through print, computer, television and electronic mode, i.e. the virtual universities. Under these circumstances higher education system in India have to be more careful about the quality (33).

Thus the export of higher education to India by universities of several countries has been through modes of consumption abroad, cross border supply, franchisee, twinning programs and virtual universities. In 1999, about 20,000 students went abroad for education mostly to USA, Australia, UK, Canada and France. However, on an average only 1500 students per year mostly

from Gulf and South Asian countries come to India for education. It is not known as to how many Indian students are enrolled under cross border supply, franchisee and other modes. Fee charged from students ranges from Rs 50,000 to Rs 340,000 per annum.

A recent estimate given by Global Alliance for Transnational Education indicates that about 27 billion dollars worth of higher education is exported to Asia and Pacific by three countries namely USA, UK and Australia. A business of 37 billion dollars trade in tertiary education services in Asia and Pacific region is projected for future.

An analysis of the advertisements issued by foreign universities or on their behalf in India reveals that some times concurrent degree programs, i.e., two degrees in the same period are offered. No conditions of minimum qualification, are insisted upon, only 10+2 degree/certificate plus an interview is enough. Quite often the duration for getting degree may also be less than that required in India for the same degree. Largest number of universities advertising in India is from UK followed by Australia, Canada and Austria.

As far as India is concerned, the foreign education suppliers are interested in higher education with the use of all the four modes of trade. They are targeting at economically well-to-do group in the society in order to maximise profits. The impact of GATS would be that the non-organised private education suppliers in India would be the first ones to take an advantage. The public education suppliers would be marginalised in the race due to unequal rules of the game. There is bound to be an unfavourable balance in the trade of education services.

Indian Scenario

WE entered the twenty-first century with unprecedented demand for higher education: general as well as professional. Instead of meeting this demand for higher education and ensuring further growth of the country, the central government and the UGC have resorted to several measures with ever-faster speed under the dictates of the World Bank and as a part of ongoing negotiations with the WTO on trade in services. Rising of fees, autonomy to institutions with practically no control over managements, funding linked to mandatory assessment and accreditation, and students loan scheme are some of their decisions taken in order to usher in massive privatisation and commercialisation of higher education.

3.5.4 Privatisation of higher education & necessity of W.T.O. & G.A.T.S.

"Major efforts have been mounted for mobilisation of resources and it has been recommended that while the government should make a firm commitment to higher education, institutions of higher education should make efforts to raise their own resources by raising the fee levels, encouraging private donations and by generating revenues through consultancy and other activities," said the former HRD minister, Murali Manohar Joshi in the Country Paper presented in the UNESCO World Conference (17) on Higher Education held at Paris, in 1998. Justifying privatisation of higher education, he added, "It is not only justifiable but desirable to raise money from private sources in order to ease pressure on public spending." He said, "The government wants to encourage private initiatives in higher education but not commercialisation." What we are witnessing today is, in fact, commercialisation of education at all levels.

Mukesh Ambani and Kumarmangalam Birla, in their Report on "A Policy Framework for Reforms in Education" submitted to the prime minister's Council on Trade and Industry in April

2000 considered education as a very profitable market. These two industrialists made a case for full cost recovery from students and immediate privatisation of several segments of higher education. Only those who will be able to pay exorbitant amount of fees will enroll in higher education. For Ambani and Birla, education is a very profitable market over which they must have full control and for their industrial requirements "education must shape adaptable, competitive workers who can readily acquire new skills and innovate."

A large number of students enrolled in universities and colleges situated in small towns are first generation learners. These students could go to institutions of higher education because of the subsidy given to higher education and the prevalent fee structure. But this is also a fact that very few of the students in the age group of 17-23 years could afford to go to universities and colleges. What about those that are left out? They could not bear even the so-called "paltry fees" which the government wants to increase several folds.

In order to strengthen national intelligence, to increase contacts with the scientific and intellectual community of the world, and to increase capabilities and upgrade knowledge for further development, our country has no option but to strengthen its public higher education system. These key issues cannot be delegated to private institutions.

ABSOLUTE NECESSITY OF WTO AND GATS in HIGHER EDUCATION:

It is absolutely clear from the recommendations given in the Tenth Five Year Plan Proposal and the Report of the NIEPA (National Institute of Educational Planning and Administration) Seminar that the government is going in the direction of bringing higher education under the umbrella of GATS. Even when no specific commitment has been made, the government has already taken steps in line with the provisions of the GATS. All the modes of trade in education service are being used. The UGC has already issued instructions for reserving 15 per cent seats in addition to already existing ones as supernumery seats for foreign students. Thus the class size and the workload of teachers and employees are going to be increased without any additional funds.

The deemed universities are allowed to open their campuses anywhere in the country or abroad. Thus, any existing private institution or a new one with bare minimum funds and facilities will be encouraged to get the status of a deemed University in order to run courses for profits.

Globalisation has forced the education system to reinvent itself. The main role of universities to create, assimilate and disseminate knowledge is being given up in favour of the marketplace.

The government at the centre has already declared students loans and the limit of loans has been increased upto Rs 15 lakh. They prefer to cater to economically better-off students. The conditions of guarantee based on co-obligation, the mortgage of immovable property, etc. would further exclude a large section of students. Since dowry is an important social phenomenon in several countries including India, loans to students would work as a 'negative dowry' resulting in decline in the enrolment of girls in higher education. It is being argued that the student loan programme may be revitalised to generate some resources for higher education in the long run. A margin money of 5 to 15 per cent is also proposed. By this measure those who do not have resources to study would be forced to pay further for future investment. Instead of student loan program the government must bear the full cost of education and the students belonging to the weaker sections should be given scholarships to meet fees and other expenses.

CONCLUSION - HIGHER EDUCATION, WTO & GATS:

Under the dictates of the World Bank, WTO and GATS, the cherished function of higher education, the enquiry search, creation and dissemination of knowledge and instilling sensitivity or social awareness in its students in India is under fire. The steps (e.g. reducing state funding limited access to higher education, heavy cost recovery, loans to students, terming higher education as a non-merit good, assessment and accreditation of institutions, autonomous status to colleges, self-financing courses and institutions, and privatisation and commercialisation of higher education, etc.) taken by successive governments at the centre and now actively pursued by the government would lead to the dismantling of the state funded higher education system.

The World Bank, WTO and GATS dictated policy on higher education must be reversed. As citizens of India, we have to ensure that the government takes care of public interests and acts to protect public services like health and education. Otherwise, the country would be dependent on developed countries for its requirements in qualified manpower, essential for its all round development. Therefore, the future progress of our country is at stake. It is the responsibility of the whole society to rise to the occasion and take measures so that the process of dismantling the higher education system in the country is reversed.

3.6 Previous Research in Educational Administration:

Amongst the educational research endeavors (18), the surveys are oldest. In 1817, Marc Antoine was founder of comparison, analysis, and research in educational administration field. The questions were posed at that time but unfortunately they were not chased and answered at that time.

Modern questionnaire technique was developed by Stanely Hall in the end of 1800s.

CHAPTER 4

THEORETICAL BACKGROUND

4.1 Computerization of educational administration – a tool to improve service efficiency

4.1.1 Background:

At the end of the last century, Computers and Computer networks including Internet brought a fascinating economic growth to world economy. Everyone on the earth started to feel like a single family and human civilization started to unite under one roof. Internet brought a free flow of information without any barriers all over the world. When the world was facing the future with great certainty, American presidential elections, September 11 terror attacks and financial scandals in large American companies all once again brought a huge wave of uncertainty to the world economy? Today the world is faced with several questions. When will the present economic recession be over? Whether all the dreams about technical perfection about the Internet is true? Whether all the multimillion dollar investment we have made on the internet and information superhighways is necessary. **All the questions above can be summarized into one single question: What are the social challenges of computerization?**

4.1.2 What is computerization?

Computerization studies how the usage of computers influences and changes individuals, groups, organizations, relationships between these social components and society as a whole. This field tries to examine and answer the following groups of questions:

- What is the impact of computers on industrial production?
- Does it improve productivity?
- Is it increasing the risk of unemployment?
- Do computers empower the workers especially women or does it actually weaken them against market forces?
- How do computers help to improve service sectors like health care, **educational services**, and government services?
- How do electronic mail and Internet influence individuals' social groups and human relations?
- How computers bring changes in morals and social values?
- How can computers help us to improve the information management system and bring a new culture in management practice?

Sources of Advice & Information about Computerization:

It has been proved from previous research that there are different sources of information and advice about computerization (18). This suggests that it may be hard to target advice to researchers, particularly as no single direct targetable source type (e.g. books, articles and other "static" sources) was used by more than 30 % of researchers.

The following table shows various sources of advice and information. Total adds up to well more than 100 % because most of the researchers used more than one source.

SOURCE	% OF USING THIS SOURCE
Departmental colleagues	67 %
University Computer Center	56 %
Program / Computer Manuals	50 %
Books	29 %
Computer magazine articles	24 %
Academic journal articles	17 %
Departmental superiors	14 %
Colleagues in other departments	7 %
Local computer shop	7 %
Colleagues in other institutions	5 %
Computer manufacturer	3 %

The percentage shown above is in general and may vary slightly according to the various situations viz. time, place etc.

The most popular source of advice normally is the departmental colleagues and that is why the research process of this topic will mainly include the close interaction with the staff members actually working in the college-offices and use the computers fully or partially in their routine. One thing should be noted that previous records of research show that no one has relied solely on manuals.

4.2 A View at University level

4.2.1 Information System in the University: Objectives & Obstacles

The main usage goals of the Information system are specified. The processes, which are planned to computerize in the future (20), and organizational solutions employed in Information system creation process are indicated. The computerization level and the problems in computerization of the University processes are reviewed. The main University Information system future development directions are formed.

1. INTRODUCTION

Information system is very important part of the today's University. The University achievements in the education and the science areas straightly depend on the University activities computerization and the level of that computerization.

2. Purposes of Use of Information System

Increasing of Competitive Ability of University

The evaluation criterion of the University activity is its competitive capacity comparing with other universities. This is competitive capacity is moved by the University academic production, which is stipulated by graduates, teachers, scientists, academic results, publications, arrangements, quality, etc. It is the time to realize the importance of Information Technology in improving the educational administration (31).

Improvement in the University Management

Information system requires the systematization of computerized process, the establishment general parts of processes and the integration of separate processes. Information technology can play a major role in developing these systems (29). Such a system helps for the University administrators to make decisions and increases their reliability.

Decreasing Administrative expenses:

For example, after the introducing of new scholarships division and the payment order, the servant has only to form the division of scholarships documents and instructions, in order information system would start to calculate scholarships and send the calculated results to banks through communication lines, and the rest is performed by information system. It releases the bookkeeping and other subdivisions from the inputting of infinite documents into the databases, their controlling, etc., and in addition, it decreases the mistake probability.

Effective and Precise Presentation of Information

Information system allows effectively and precisely to form the confirmed forms reports for various authorities.

Transparency of Financial and Economical Activities (Accountability)

Information system creates the ability for various competent authorities to observe the processes at University. It increases the transparency and accountability of these procedures. **Spreading correct information about it strengthens the prestige and service ability of University.** That's why the information system has to be more open for the society. It has to be accessed not only for users of the University community, but also for parts of the society outside the University. The system has to be accessible in Internet.

3. Technological and Organizational Solutions

The University information system is created as the integrated system, aiming to computerize all University processes. Processes use general University registers, general classifications. It allows for individual users to avoid the different interpretation of the same data. All data are stored in a centralized database. This way it allows the avoiding of data duplication. Information is gathered, put to the database and managed, where the first sources are placed, i.e. in the University subdivisions.

That's why the circulation time of documents decreases, less logic mistakes are made, and search and elimination of mistakes can be done effectively.

The information system is based on University computer network. The fiber optic lines connect the most University subdivisions. It ensures quick and reliable information's transmission. Information system operates using suitable database management system. The client-server architecture is used for information system, it enhances data reliability and security, in connection with technologies of Internet.

4. Computerizing Processes

The University information system contains all basic processes at University. The all processes of information system are not computerized in the same scale. The level of computerization of processes was defined by these factors: the priority of information demand of that process, the potential ability of process to computerize by itself, the University's financial ability to give

funds for the computerization, quite often changing of computerized processes. Let's examine every separate process, and pointed its computerization level and supplying advantage (usefulness).

Human Resources

The computerization of human recourses allows the receiving of the complete information concerning University staff, to observe the staff occupancy, to execute the control of certification of the University workers. Exhaustive and operative information about University staff provides the University administration with the opportunity of effective using of human resources. In addition, precise information about taken posts, the work time, the salary of every servant is necessary for bookkeepers for the accounting of salaries.

Management and Administration of University

The information system is a model of the majority processes, executing at University. The fact that the University heads operatively can get reliable information helps to control them in real environment. The registration of the received and sent documents was created in information system, improving the University administration. At the same time, the executing control of assignments and responses according these writings is carried out. In addition, the signed contracts between the University and other organization are registered. Information system renders the information concerning these contracts and helps for conclusion.

4.2.2 Computerization & University Management

Information technology is one of the wonderful inventions in 20th century. The prime concern of this technology is better information management in minimum amount of time. Whenever information, knowledge and wisdom is concerned, University comes in to picture as a generator of betterment of individual and betterment of society.

This is the age of information and in this age of information, **Universities or in more broader terms our educational system can not play effective role giving services to the stakeholders without adopting these new means of information management and communication i.e. the information technology.** If we consider the nature of University system and its management (19) for computerization point of view it seems much complex and quite different from any other management.

The management of educational system includes the following:

- Students management
- Academic management
- University administration (personal administration, financial management and planning etc.

Each of these units has different type of functions and follows entirely different procedures to achieve predefined aims and objectives. The educational management differs from management of other government departments, industries not only in the aims and objectives but also in the nature of work and procedures followed. This complexity must be thoroughly understood, discussed and rectified before planning for computerization of University management.

The computerization i.e. application of information technology in universities has provided a chance to redefine and modify the procedures, policies, decision making process etc. to keep pace with time.

Need for computerization of University management:

The University being an information/knowledge producing institution needs computerization and networking to compete with academic community of the rest world. The application of new means of information management and communication is also essential. The Universities need the applications of these technologies:

1. To accelerate the decision making process for better planning and administration by eliminating the barriers of time and space in communication.
2. To avoid the duplicity and to improve the standards of education research and development by providing common forum of discussion to the members of University and academic community.
3. To provide the better exposure of information technology to the society.
4. To decentralize the University system by insuring the free flow of information to all at anytime anywhere.
5. To offer the education at doorstep and for reducing the crowd of students from University campus and in turn to balance the growth rate of the universities with growth rate of population.
6. To make University system more objective, accountable and result oriented.
7. To develop better coordination amongst University members and also to make University system more transparent.
8. To reduce cost and volume of documentation.
9. To ensure the best possible use of all available resources.
10. To help to improve the efficiency in rendering educational services to student community and society

Apart from above points of application of information technology in University will certainly bring all the benefits of free flow of information and together-ness. Let us accept it as a means of bringing together the decision- makers, academicians, educational administrators and students who are scattered around the globe. It must generate better environment for integration and coordination and will improve the quality and reduce the duplicity in education, management, research and development works of the universities.

Steps in computerizing University System

The long term strategic planning based on critical analysis is required to transform traditional University management into computer based objective and result oriented management. The plan should be able to provide the complete vision and anticipation of computerized University management. It may be divided in to two steps as given below.

1. Analysis :

It is the most important and crucial part of planning of computerized University management. It requires the complete analysis of present University system. Before thinking for computerization we have to have clear-cut factual vision about the functions, processes, activities and objectives of the University to be computerized. It requires crystal clear concept about objectives and their fragmentation in various processes by which, it is anticipated to achieve the defined objectives. The computerized University management system should be able to utilize all available resources in effective way to produce best results so, fragmentation and analysis of present system is a must to formulate the guidelines for anticipated system. It will also provide a chance to redefine and reform the obsolete procedures and policies.

2. Feasibility Study :

To evaluate the benefits of the computerization it is necessary to compare the present and projected University management system and study the practical applicability of the projected system. To select the most suitable software for defined objectives, comparison between projected University management system and application of the software available in the market. Discussion with software developer is also necessary as it requires the detailed information about the available software. Each of its functions should be tallied with the guidelines of the requirement that are prepared on the basis of analysis.

4.2.3 Uses of Information Technology to Educational Administrators

1. To sensitize administrators about the recent developments in Information Technology
2. To train the administrators with the use of computers and application of Information Technology in improving the quality and efficiency of University management
3. Planning for future application of Information Technology in realizing the goals of the University
4. Assessment of training needs for various uses of computers and application of Information Technologies in administrative and activities of universities (21) and software requirements thereof.

Technical Aspects:

The different aspects involved are:

- i. General
- ii. Information Technology
- iii. Office Management Software
- iv. Demonstration/ Hands- on -Training
- v. Computer for Campus Administration
- vi. Current Trends in E-Learning
- vii. Libraries in the IT Age
- viii. Empowerment of Universities through Website

The management in University administration has two important components, viz., Academic and Administrative and emphasized that the constant changing scenario in education demands an effective administrative set up tuned to faster planning and execution of programs. For this, modern tools like Information Technology are of great help in improving the University system. The first and most important thing is to improve the examination system methodology and research and teaching in universities and suggested that computerization may lead to improve the efficiency and delivery in the University system by creating data bank and linking various departments and offices of the University.

IT Strategy for UGC

IT strategy for UGC involves - incremental computerization to improve efficiency of operations of the UGC offices and units and systemic design, development and deployment of comprehensive information system (Higher Education Information System Project – HISP) covering various activities to smoothen the interface with the internal and external stakeholders of the higher education systems.

Incremental computerization effort would involve effective utilization of existing hardware / software infrastructure including training of the staff. It also involves procurement/ upgradation of additional PCs / printers, other hardware / software, and appropriate maintenance of the infrastructure through Annual Maintenance Contracts. Both these efforts are proposed to be launched in parallel that need to converge eventually.

E-Governance in the University Administration

It is recommended for creating Websites for universities and departments; setting up Web-enabled services and facilities like results on the Web, applications of various courses via Web, putting information bulletin on the Web; automation of the entire procedure of various sections, e.g. Establishment, Finance, Examinations; and setting a LAN of PCs in different section of the University and providing necessary software to improve their functioning.

4.3 A view at college level

4.3.1 Computers and activities in the college administration

Microcomputers can vastly improve the efficiency of data management, data analysis, and communication in the college office. Implementation, however, should be carefully planned in advance, with attention to relative cost for benefits obtained, appropriateness of software and hardware to tasks required, and potential security risks.

4.3.2 Functions to be carried out by computers:

The administrative uses of microcomputers (22) fall into four broad categories:

- data management
- data analysis
- word-processing
- communication

A brief sample of the college-records that can be stored and manipulated by microcomputers includes student records, personnel records, inventory of equipment, financial records, and

special management records (such as transportation, food service, energy management, and sports program management).

The electronic spreadsheet, for example, shows instantly the overall classification of any alteration in a college budget or other quantifiable data, such as enrollment projections, time schedules, or test averages. Other available software permits the user to translate raw data into bar graphs, and tables, or to perform complex calculations in a fraction of the time otherwise required.

Word processing is easily the most far-reaching innovation in written communication since the typewriter or the printing press. Currently available word processing programs enable administrators to compose, address, revise, correct, combine, rearrange, or delete written copy before it ever reaches paper, and then to print multiple letter-perfect copies in a wide variety of formats preaddressed and personalized, if necessary. Versatile graphics programs offer the same flexibility with anything that can be drawn in black and white or in color.

Communication:

The linkage of microcomputers with one another or with a mainframe computer--include such applications as electronic mail (replacing the burden of interoffice correspondence). Through the use of a modem, administrators can thus transform their micros into terminals for sending or receiving information, via telephone lines, to and from another computer anywhere in the district--or indeed, in the world. An advanced form of communications is the local area network.

4.3.3 Steps to be taken to computerize an educational institution:

Because of the rapid progress in computer technology, a well-conceived plan in designing and implementing a computer system is essential. There are three basic steps:

1. decide what functions should be automated and in what order of priority,
2. identify software that best automates these functions, and
3. identify hardware that runs the selected software

In developing a priority list of tasks to be computerized, you should conduct a cost-benefit analysis for each function considered, making sure in each case that a computer-based solution is most cost-effective. Carefully outline user requirements for each task, with input from all potential users. Develop a timeline based on priorities, and assign specific responsibilities to staff members for implementation.

Word processing is a good place to start in computerizing college operations, because word processing programs are normally easy to use and therefore quickly dispel "computer phobia." From there, the next step is to explore electronic spreadsheets and other quantitative analysis programs, before making final decisions about a data management system.

PROCESS OF SELECTION OF SOFTWARE AND HARDWARE:

In reviewing software, the most important prerequisite is to be well informed of the range of options for each task. Software of general applicability is likely, at first, to be more cost-effective, flexible, and available than software designed specifically for functions of educational administration.

Consider such factors as availability of support from supplier (including user training and follow up advice, refundability, and a discount on multiple copies), a balance between flexibility and ease of use, and compatibility with other software. With regard to the latter, the IBM-compatible MS-DOS microcomputer operating system has emerged as the industry standard for administrative use in both the public and private sector.

The current trend in computerized administration is toward "integrated management" systems, which combine database management programs, spreadsheets, word processing, graphics, and communication in a single versatile program. One step in this direction is "database management systems" (DBMS), which combine record keeping and data analysis in one system.

Determination of hardware should then be based on the selected software. The minimum microcomputer configuration for administrative purposes should include a standard typewriter keyboard, an 80-character wide screen with a diagonal measure of 12 inches, a 132-column wide dot matrix or character-impact printer, a 64K memory, two floppy disk drives and CD ROM drive. In considering the cost of the overall system, include maintenance, software, and training along with initial purchase cost.

BASICS ABOUT LOCAL AREA NETWORKS:

A local area network (LAN) interconnects computers (23) and their peripherals by wires and cables so that information can be transmitted at high speeds over limited distances--between offices, classrooms, or buildings. Unlike the modem, which allows two computers to communicate via telephone lines, local area networks can tie together a large number of users simultaneously.

At present, the best recourse is to wait or to install a small low-cost prototype network in order to gain hands-on experience with the emerging LAN technology.

SECURITY OF NETWORK:

Computerization poses a range of new concerns for the security of college records, especially when a local area network gives many users access to the database. For this reason, a key criterion in evaluating data management software is how much and what kind of security it provides. Ideally, programs should provide for accessibility to different parts of the database by people with different levels of security authorization through a system of passwords, locking codes, and so forth.

Programs are written for local area networks that will allow access of college records to many different users (for example, teachers, counselors, and administrators) and at the same time restrict access by some users to certain fields within a database. Database security remains one of the major challenges of the computer age.

4.4 Impact of computerization on educational set up:

4.4.1 Concept

The information technologies not only stimulate the information education for civilian but also affect the current education system. While the reformation of education system is encountering various dead ends, information technologies may break the limitation of traditional teaching environment which always regards the teacher as the main role in teaching-learning group, by multimedia computer assist instruction (CAI), computer network and by distance learning with

self-learning databases, through which students can learn by themselves according to their own interests and abilities and teachers can be counselors or assistants to help them study, thus the idea of permanent study and different education for different people can be fulfilled. In addition, the educational administrators can fully understand the learning situation of students and offer their helps to students accordingly from the educational administration databases, past students records and counselors network of all levels of colleges.

4.4.2 Nature of impact

As mentioned above, we realize that the current campus might have encountered the following impacts during the process of computerization (18).

1. The interrelationship between teachers and students might be changed.

The speedy circulation, handy accessibility and diversity of information have changed the ways of applying information in education and research, and hence have affected the interrelationship between teachers and students.

2. The current education, research and administrative procedures need to be reexamined and reengineered.

Under the positive pressure of computerization, for example, the opening of information will bring about a striking effect on pointing out defects, so the current education, research and administrative procedures need to be reexamined and amended. Computerization insists on re-engineering of an existing manual systems in administration.

3. Multimedia applications will bring revolutionary influences on education and research activities. The computerized applications, especially multimedia applications, will bring revolutionary influences on education and research activities, especially on creativity and cognitive learning environments.

4. Decision making procedure for campus democracy and campus problems will be established. By the new information and communication media (computers and networks), teachers and students communicate with each other very easily, it will be an important issue to establish and practice a reasonable decision making procedure for campus democracy and problem-solving.

We will introduce the way by which colleges can prepare themselves for the coming of the computerizing era in the following paragraph.

4.4.3 Preparing the college administration for computerization:

According to the impacts mentioned above, our strategy is to establish promoting organizations and enlarge the functions of computer center on campus. A Computer Committee can be established on campus to setup strategies of computerization for campus.

Under the Committee some task groups can be formed to promote computerization for campus administration or to construct campus network. A computer center can be the executive unit for the above committee or task groups. Its function should be defined as being able to plan, construct and manage the campus network, to promote computerization for campus administration, to support teachers and administrative staff in computerizing the routine activities and provide application services, information education training for people in/out of campus, and necessary technical service to library.

Having built the above computing environment, we can help students, teachers and all civilian through E-mail and distance education on networks to access various permanent study databases, library information, test samples database and CAI software, additionally, to discuss with each other and accept instructions to make interactive learning, and establish a permanent study environment fitting various peoples' need.

4.4.4 Virtual Education

A concept of virtual education is rapidly coming up as it has proved to be an ideal use of new technology to improve the service efficiency in education.

As with the other segments in the IT industry that have been greatly impacted by the revolutionary changes taking place in the areas of technology, the training market too is getting affected by some of the new developments.

Advances in technology are altering training delivery. Developments in hardware, intranets and the Internet, multimedia software and videoconferencing have created a tremendous potential for multiple-site delivery and bringing training to people's work sites.

With the Internet and intranets proliferating both at the level of the global and Indian domestic market, one is witnessing the rise of a new form of training delivery -- E-training or on-line education.

On-line education is the next generation tool that has already started developing its roots in India. It is expected to allow both corporates and the Government to deliver state-of-the-art training to company personnel, students and home workers, and enable them to create the kind of skilled computer workforce required for the next millennium.

This kind of virtual education is being catalyzed by the continuing decrease in costs related to technologies, particularly computer hardware. The demand from all types of learning for more equitable access and service is also fueling the trend.

On-line Education in India

On line education is the best way to improve the service efficiency in education as it focuses on the convenience of the learner i.e. the customer. The On-line education market (24) in India is showing marked potential and is expected to be a significant revenue earner for the industry in the years to come.

Already a number of key initiatives are being taken by the industry to incorporate Net-based training as part of their curricula. Steps are also being taken by various State Governments in India to incorporate Net based training into their IT agendas.

Some of the developments taking place in the on-line education market are as follows:

- **Growth in the education to home market:**

The Government has shown interest in this segment of the computer education market. An example are the Andhra Pradesh and Madhya Pradesh Governments who have initiated pilot programs involving education dissemination through the television, with student responses coming back over the Internet.

- **Distance learning:**

The concept of distance learning is being adopted by leading private and Government funded educational institutes as a means of reaching a wider and more remotely located audience. Leading private sector computer institutes have already launched Net based courses which students can follow easily. Internet based distant education is becoming popular now a days (32).

- **Foreign University-Indian training institute tie up:**

Yet another trend has been of foreign Universities tying up with leading Indian education institutes for offering Net based education. At the end of these self paced programs, students give an exam over the Net and receive a certification from the foreign University. Courseware too is usually free over the Net.

- **Collaborations between Indian Universities and Indian training houses:**

In the recent months a number of computer institutes have tied up with Indian universities to jointly offer Net based training. The tie up of IGNOU (Indira Gandhi National Open University) with Satyam Infotech is a case in point.

On Line Training: The Enlarging Impact

On line training is not just the monopoly of the computer sector. The impact of such training will extend to various segments across a variety of industries. Such a mode of education will be used to reach out to students (both at the level of schools, colleges and institutes of higher learning) and even corporates to enhance the base of skilled manpower within their set ups. In fact, in the latter case, already a number of leading organizations are using tools such as video conferencing and on-line, self paced learning modules for employees.

Similarly, a host of educational sources have come up to offer various levels of courses that are targeted at segments such as students, teachers and even professionals. India's leading computer education houses such as NIIT and Aptech have also diversified into the on-line training space and boast sites that provide courses that can be **administered** on the Web.

Delivering Training

Today, a number of methods have been devised to deliver on-line training so as to improve the service efficiency while delivering the training. These include live training, class room based support learning environments, stand alone, self paced learning, CD-based, and Web based education that facilitates the use of technology and in the creation of a virtual education community.

Opportunity for India

It is important that India takes the jump into the on-line education waters. A number of opportunities have opened out with the arrival of the on-line training trend in India as a part of upgrading service quality. These are as follows:

- **Skilled manpower generation:**

The demand-supply gap for skilled manpower is still fairly wide. Demand constantly outpaces supply and India is constantly looking at ways and means of bridging this gap. On-line education opens up a major new avenue for training manpower and for meeting the manpower

targets. Using on-line training Indian educational institutes can address the manpower issues both at the level of the domestic market as well as the global markets.

- **Technology and content for global markets:**

India has the opportunity to develop technology and content to capture a share of the global on-line training market as well.

- **On-line learning support services:**

India can provide online learning support services to developed and developing countries on their educational sources.

Summary – online education

The online education market in India is poised to take-off. The advantages of training over the Internet far outpace the conventional means of disseminating computer education. Online education will enable both private and Government run institutes to reach a wider audience and rapidly expand their base of both student and professional users. Internet based distant learning is also the need of today's age (32).

As telecom infrastructure improves in the country, online education is likely to receive an additional boost. It is an opportunity that needs to be exploited for complete benefit.

21st century learning skills

These skills include inventive thinking, digital literacy, effective communication, teamwork, and the ability to create high quality products. Acquisition of these skills is facilitated by technology.

Technology, particularly the Internet, is a tool well suited to learning. Our understanding of how people learn has advanced tremendously in the last 30 years. In *How People Learn: Brain, Mind, Experience, and School* (40), the educationist contend that the Internet provides an ideal learning environment that allows people to learn by doing, to receive feedback, to refine understanding and build new knowledge, and to visualize difficult concepts through modeling and visualization software. **Therefore it can be concluded that Internet is viewed as the best tool to improve the quality of education when it is rendered as a “service” in today's environment of competition.**

Although our understanding of how we learn has advanced tremendously in the last 30 years, research on the impact of educational technology on learning is lagging. A review of the literature by several groups has concluded that technology has great potential to enhance student achievement and teacher learning, but only if it is used appropriately.

Specifically, technology can be used to:

- Bring exciting curricula based on real-world problems into the classroom;
- Provide platforms and tools to enhance learning;
- Give students and teachers more opportunities for feedback, reflection, and revision;

Build local and global communities that include teachers, administrators, students, parents, practicing scientists, and other interested people

CHAPTER 5

RESEARCH METHODOLOGY

5.1 Research Methodology

Research is a scientific and systematic search for pertinent information on a specific topic. Research is an art of scientific investigation. Research is systematic gain of knowledge. Research should add to the existing knowledge (25). The information and observation gathered should support the concerned people, society, and further research in the allied areas.

5.2 Research Steps

1. Define the area and scope of research.
2. Review literature.
3. Formulate the “Hypothesis “.
4. Research Design.
5. Data Collection.
6. Analysis of the data. (Testing the hypotheses)
7. Interpretation and report writing.

5.3 Objectives of Study:

- To obtain the factual information about computerization at college level administration.
- Where the offices are fully or partially computerized or claimed to be, study the effect of the same on student related services.
- To arrive at the firm conclusions / suggestions which can help the undergraduate education sector in future in automating the colleges and their administrative functioning.
- To study whether the institutes are integrating all their work on a computer.
- To find out and analyze the problems in introducing and expanding the computerization in academic sector, particularly to find out the obstacles in adopting the integrating computerization at college level administration.
- To carry out an analytical study of college level computerization to create the data useful in future for colleges and Universities.

5.4 Selection of sample –

The population is the undergraduate colleges in and around Pune city. Every college starting from very oldest college to newly opened college is almost same in structure and way of functioning as the norms regarding these factors are decided by the University and they are applicable to each and every college. So the sample was found to be quite homogeneous.

Looking in to this fact a purposive sample of 15 colleges out of 98 was selected for research. It is customary to provide for sample size around 10% of the population. In this case it comes out to be **15.3%**.

5.5 Data collection

The task of data collection begins after defining the hypothesis and deciding the research-scope. Conventionally there are two types of data which are required to be collected for the purpose of research.

1. Primary Data
2. Secondary Data

Primary Data: It is the data which are collected in fresh form and for the first time. This data is original in nature. Normally it is collected from actual site or place of research.

Secondary Data: These are the data which are already collected by someone else and which has already passed through the statistical process.

The methods of collecting primary and secondary data differ due to differences in their nature and according to requirement. For example the primary data is compulsorily collected from the site whereas collection of secondary data merely involves the compilation of the existing data.

5.5.1 Primary Data for this research:

Primary data was collected by following ways.

- ◆ Actually visiting and observing the functioning the administrative offices of the colleges.
- ◆ Primary data was collected through scheduled questionnaire.

The categories at various levels are:

- a) Office staff
- b) Principal
- c) Accounts staff
- d) Student
- e) A person looking after computer related work
- f) Library staff

This data was collected during the period – September 2003 to November 2004.

5.5.2 Secondary Data for this research:

The secondary data was collected from following sources.

1. Various records in colleges. (Policies, Students' Registers, rules and regulations etc.)
2. UGC journals / Magazines.
3. Newspapers.
4. University Circulars, Ordinances etc.
5. Other relevant historic documents related to this subject.
6. Internet

5.6 Types of research-studies & the nature of research undertaken:

There are three categories of research studies (26).

1. Exploratory study (search for understanding)
2. Descriptive study (search for generalization)
3. Experimental study (search for replication)

Exploratory Studies –

This type is applicable where there is lack of clear idea of the problems that will be met during the study. Through exploration concepts are developed more clearly, priorities are established, and research design is improved. This type of research is done where previous research is not available, the concept is new, and it is required to create a knowledge base about the subject. Exploratory study creates inputs for descriptive studies. Exploratory research is a research for understanding.

This research is done for transformation from “general” to “specific”. Exploration saves time and money. In exploratory studies more formal studies may be cancelled. In this research idea of research is new and so vague that researcher required doing the exploration to learn something about the research problem. No formal hypotheses are needed for exploratory studies. Exploratory Research heavily relies on “qualitative techniques” than on “quantitative techniques” because of absence of problem-specific hypotheses.

The purpose of exploratory research (37)**Study may be:**

- ◆ To generate new ideas or
- ◆ To increase researcher’s familiarity with the problem or
- ◆ To make precise formulation of the problem or
- ◆ To gather information for clarifying concepts

Descriptive Studies –

These are more formalized studies and are structured by clearly stated hypotheses. It is more specific than exploratory study. For descriptive study, the prime requirement is that problem must be describable and not arguable. Second is the data should be amenable to an accurate, objective and quantitative assemblage. The previous research is available in this type of studies. They may have specific investigative questions. Descriptive study can be demanding of research skills as causal study. Degree of clarity is more in descriptive studies than that in exploratory research study. The research undertaken does not fall in this category because nature of data is qualitative than the quantitative, the problem not being crystal-clear due to absence of extensive previous research.

Causal Study –

To establish the cause & effect relationship is the aim of causal research. This type of research is more specific than descriptive research study. A degree of clarity about the subject is higher in causal research than that in descriptive research study. In causal (also called as analytical

study), the nature of data is totally quantitative and suitable for applying statistical techniques. The analytical study's design approximates the model of an experimental design (39) as every aspect of the study is clear in this study.

WHY THIS IS AN EXPLORATORY RESEARCH?

From the description of various types of research-studies given above it is clear that this research clearly belongs to "Exploratory" type of study. Whether the computerization exactly results in to up gradation of service efficiency was not clear at the beginning. This is because it is common trend to keep computers at work places even just to increase the aesthetic value of the office and not for its extensive use in routine work. Hence the exploratory type of research was badly needed in this matter. So instead of very formal hypotheses, some working hypotheses were formulated. Further "Qualitative techniques" were adopted for analyzing the data both primary and secondary. Truly speaking "exploratory study" does not aim at testing hypotheses. It just attempts "to see what is there rather than to predict the relationships that will be founded" (38)

5.7 Hypotheses:

Being an "Exploratory Study", hypotheses testing in case of this subject has been treated differently. In case of Causal and Experimental Study, the data is well defined and hypotheses are well defined and problem-specific. So the quantitative techniques / statistical tests can be applied. However in Exploratory Studies, no formal hypotheses are present. Working hypotheses are formulated just to give proper direction to study and to define a scope for the research. These working hypotheses are indicative in nature. The collected data doesn't allow itself for easy and precise quantification.

Working Hypotheses:

The following "working hypotheses" were formed to carry out the research.

- ❖ Computerization improves the quality of service in academic sector.
- ❖ College level administration, now-a-days has been aware of the importance of using the computers in offices but still not actively entered in computerizing their work procedures.
- ❖ Many applications which are claimed to be computerized are still partially carried out manually.
- ❖ College administration staff is curious in getting computer training and use them in routine work but at the same time they carry fear of failure in their mind due to lack of confidence.
- ❖ In spite of 100 % support from management, till today total computerization is not observed in undergraduate colleges.
- ❖ Inadequate training results in wrong or partial results inspite of good infra structural facilities regarding computer centers.

5.8 Scope of Research:

The research was conducted by surveying all the under graduate colleges located in and around Pune and affiliated to University of Pune. So Medical, Ayurved etc. colleges are not included in the study as they are affiliated to M.U.H.S. Nasik. It has covered all the variety ranging from well-developed colleges to colleges under development and also the newly opened colleges. The

research was mainly aimed at the critical study of extent of computerization achieved by the colleges only in the Administrative part, and not the Academic part.

The computers can be used in teaching process (CBT i.e. computer based teaching) in many ways and these are in practice at many places. CBT is a separate area of study. This research is mainly aimed at the critical study of extent of computerization achieved by the colleges mainly in administration involving the various applications regarding services rendered to the students and other concerned users of “information system” of college administration.

CHAPTER 6

PRESENTATION & ANALYSIS OF DATA

6.1 PRIMARY DATA ANALYSIS

6.1.1 OFFICE-STAFF - (Q. No. 1 to 30)

The concept behind each question and the observations with analysis of the feedbacks received is explained below.

1. *How many computers are available in your office?***Concept –**

The number of institutions imparting under graduate education and ultimately the number of students taking under graduate education is increasing day by day. It has become necessary that education system must be strengthened to cope up with needs of increasing number of students.

Further due to increasing competition in the field of education, the under graduate colleges will have to improve the quality of their student related services in totality. As a part of this use of computers on the administrative offices of various colleges has become inevitable now a days. Whether the computers are available in the offices or not can be viewed as one “key indicator” for measurement of service efficiency. It is obvious that the substantial use of computers in the college offices makes the college more efficient for the student who is the center of entire educational system.

Analysis –

	Zero	Five	Five to ten	Twenty	Above twenty
Computers in office	nil	7	7	1	nil

It is very remarkable to note that there was no institution found that has no computers in the office. This means that computers are no more something new for every college but it is realized that their use is a part of routine work.

During the survey it was found that on an average college has minimum number of five hundreds (500) student strength. There are also the colleges having number of students in terms of thousands. So looking in to various aspects and variety of work carried out in college office it is presumed that at minimum **ten (10)** computers are required to be available for the office exclusively.

46% colleges were observed to be having enough number of computers in their offices. This means that they have gone ahead first step towards good service efficiency. Round about **46%** colleges were observed to be having moderate computer facilities i.e. having four to five computers in the office. These are the colleges who have started to equip their offices with information technology but yet to reach the satisfactory level to cope up with the existing needs. It is further interesting to note that there is also a college having excellent number of computers to render variety of services to students. Further, **8%** colleges were observed to have excellent computers facilities in office. They have 20 or more computers for administration.

2. *Whether the computers in your office were brought all at once or step by step?*

Concept –

Keenness in purchasing computers is also very important as it reflects the attitude towards and policy about the computerization as a tool to improve the service efficiency. Many times it happens that computers are brought step by step without any planning in totality. Information technology changes day by day and therefore computers with more and more stronger configurations and intelligent facilities are coming in the market day by day. If the computers are purchased step by step later many technical problems are required to be faced. They may prove not to be compatible with later versions and hence incapable to run the intelligent software which offers on line services to the students saving their time and thus supporting their academic growth also. Further with computers with varying configurations it also becomes inconvenient to go for networking which is key requirement to facilitate easy access to required information to the concerned users in minimum time. Computers if all brought at once naturally belong to latest technology which is always better for future developments relating to computerization. In short computers brought all at once facilitate many direct and indirect advantages while going for planned computerization.

Analysis –

	All at once	Step by step
Way of bringing computers	8	7

53% colleges have brought the computers all at once. These are the colleges who were having definite intension and future planning at least to some extent about improving their quality.

47% colleges were found to be having the computers in their offices that are brought step by step. It is possible that they may not have a concrete plan to go for total computerization in near future but are aware of the importance of computers.

3. *Out of total computers in the office are all computers accessible to all?*

Concept –

The college offices normally include the window type counters to give various services to students. Student approach the respective counter for getting some work done like obtaining some certificate, paying fees of some kind, getting deposit back, merely getting some sort of information and many such other reasons. To entertain every request by the student across the counter, the person sitting on window must have some information or database with him. The different computers may be dedicated for different type of activities or services like giving certificates, acceptance of fees, enquiries for some information etc. The set up where all the computers are accessible to all is obviously a flexible set up able of giving “single window” type of services where student can go to any window for any type of work. This facility is possible if computers are accessible to all and are connected to each other by means of network. If this is not done the administration becomes person oriented. If any body is absent, his services can not be provided by any other person in the office.

Analysis –

	Computers are accessible	Computers are not accessible
Accessibility to all computers to all	13	2

87% of the colleges have kept the computers in their office accessible to all and it is indicative of their awareness about importance of student related services. They are on the way of having entire networked computer set up in their administration.

Where as **13%** colleges still not have a flexible set up. Reasons may be technical or administrative but it can be said that in view of service efficiency they are lagging behind the others. As all the computers are not accessible to all, it puts restrictions on daily work at operational level which ultimately cause inconvenience to students.

4. How are the computer facilities in your office?**Concept –**

Improvement in service efficiency can be done only with the availability of good computer facilities. It is very much necessary that the persons actually working in the offices must be satisfied with the computer facilities made available for them for routine work. Then only they will be in position to work to the best of their abilities and it has prime importance in view of service efficiency of any college as a whole. One can not expect quality services from the manpower of good quality with poor computer facilities. The opinion of the office staff about the computer set up at their work places is, there fore a vital issue because it decides their involvement in the work. In well-equipped computer set ups, naturally the staff members work with more involvement which ultimately proves to be beneficial to the students who are viewed as the customers of the educational institute.

Analysis –

	Good	Bad	Moderate
Computer facilities	14	Nil	1

The picture about what office staff feels about the computer facilities provided to them is quite satisfactory. On the basis of this it can be stated that entire under graduate system can be said to be on the way of achieving best possible service efficiency comparable with any of their competitor.

93% staff members from the college offices are fully satisfied about the computer facilities in their offices.

Only **7%** are still not fully satisfied about the computer facilities. But it can be noted that the 7% are not totally dissatisfied with their computer facilities also. So there is a definite possibility that these 7% can become like 93% group in near future.

5. Do you feel that a formal training is must to start the use of computers in routine work?

Concept –

Training is an important aspect when we go for practical use of any technology. Training always ensures the efficient use of technology. In old days that is the days when computers were very new to the majority of administrative staff working in under graduate colleges there was a fear in the minds of people about their ability to make right use of computers. Today picture has been definitely changed. It is no more viewed as highly technical to use the computers. It is as common as to be able to drive a vehicle in the city.

So the angle of the staff looking towards the activity of computer training can be of different types like – it is not possible at all to use computers without the training, or one can just start working with computers if desire is there and systematic training can be received later etc. The variety of opinions are indicative of the awareness or ignorance, wholehearted interest or phobia about working with computers in course of their routine work.

Analysis –

	Training felt necessary	Training not felt necessary
Necessity felt for training	12	3

80% staff feels that computer training is must if they are expected to work on them as a part of their routine. This expectation is undoubtedly genuine and this percentage is indicative of the fact that they have thought over or tried for the computer usage in their administrative work.

At the same time it is very interesting to note that **20%** of this class is in a position to start the work with computers without any formal training. These are the people who can be termed as “well aware” of the fact that computers are not something very new, difficult or highly technical but now they are very common to be utilized in their daily work.

6. Have you received any formal computer training?

Concept –

As it is mentioned earlier, training is the most important aspect while using any technology. To opine about the present scenario it is naturally necessary to know about the training facilities that are presently offered to the staff members working in the college offices. The training must be not only felt essential but should be professionally imparted to the staff members who are going to work with computers. Many times it is possible that training activity is taken very casually and not seriously which results in the picture that the training is given but expected results are not observed to be achieved. So the training should be viewed as investment for future development. “Formal Computer Training” means the training which is imparted following proper training methodology.

Analysis –

	Formal computer training received	Formal computer training not received
Formal training	12	3

80% of the staff members have received a formal computer training and it is indicative that majority of colleges in the under graduate education are keen in training their administrative manpower systematically and have understood the importance of training in view of providing services of best possible quality to their students. The second reason for this may be that now a days there are sufficient number of computer training institutes in the market. There are the institutes where they provide the training as per the requirements of the client. They study the administrative systems of the college and frame the training course accordingly. So 80% have the right input to utilize computers in a service oriented approach which is appreciable.

20% have still not received formal computer training. Variety of reasons may be there behind this. But it should be noted that in spite of flowing the waves of information technology all around still there are 20% staff members lacking for right guidelines for computer usage.

7. If you have not received the formal training what might be the reasons behind the same

Concept –

It has already been clear that percentage of staff who has received training is more than that who did not receive formal computer training. Even though only 20% of staff have not received the training, it is important to know about the reasons behind not getting the training. This information may perhaps help to solve the problems if any in providing the training in true sense.

Analysis –

Reasons behind not receiving computer training	No. of colleges where the reason is applicable
Lack of management's support	Nil
Lack of adequate funds	Nil
Lack of interest amongst the office	Nil
Lack of initiative	1
Unavailability of suitable external professional agency	Nil
In process	1
No real need	1
Not applicable -	12

- Out of 20% staff members not received training, all have support from their respective managements as far as training is concerned. This means all managements today are visionary enough to be agreed for believing in imparting formal computer training to their employees.
- No body today is facing problems to receive computer training at least because of inadequate funds
- Every staff member is having interest to undergo a formal computer training program which will improve the quality of his routine official work.
- In case of approximately **6.66%** cases the process of training the staff is in progress.

- The another group of **6.66%** is not getting training just because of proper initiative. This may be because of absence of motivation or feeling of confidentiality amongst the staff members.
- It is really very interesting to know that last group of **6.66%** seems to be quite acquainted with computers as a part of their general knowledge and their training was in progress.

8. *If yes, what was the source of training?*

Concept –

To know about the service ability of any educational institute the activity of “Training should be studied from all angles. Out of these various angles the most important is the source of training. That decides how much one is serious about the concept of training. Many times training is given just for the sake of formality. Such training programs are never organized in a systematic way and lack in professionalism. They normally fail to give the expected results in terms of improved services. Normally it is presumed that if the training is to be given as per norms of training methodology it is better to entrust this task to outside agencies that are engaged in organizing various training programs for administrative staff as per their needs in office automation. Those who follow this path, most probably get good results by improving the quality of their work.

Analysis –

	Outside agency	College faculty	Not applicable
Source of training	8	4	3

53% of the office people can be seen as perfectly in position to satisfy the student community in their all type of service needs as these people have undergone computer training that is professionally organized. Of course to upgrade entire undergraduate education system this percentage should be increased more and more in near future.

Approximately **27%** of the office staff has undergone the computer training but this training was of in house type of training. i.e. The training given by the faculty of the respective colleges it self. In other view this is a very good concept and definitely be appreciated because the faculty knows the needs of administrative staff of the college naturally better than any other faculty out side. This training system always proves to be economical but fails to be fruitful if not managed professionally.

However it should be seriously noted that there are still **20%** of the office staff who have not received training about computers at all. This picture is certainly not favourable in order to survive in the competition in the field of under graduate education. This class still lags in service efficiency.

9. *What is your opinion about the training given to you?*

Concept –

After the training is given the next step is the feedback about the training from those who undergone the training. The opinion of the staff about the training is the most important factor for predicting about the utility of the training. This feedback helps to make suitable changes in the training modules to make it more and more effective. If the opinion of the staff is not given

proper consideration the training programs even though systematically organized do not give the desired results.

Analysis –

	Adequate	Inadequate	Not applicable	Excellent
Opinion about training	11	Nil	3	1

73% of the office staff had undergone the training and all the administrative staff members belonging to this class were found to be happy with the computer training they received. This means that there was no body who had undergone the computer training but was not satisfied with the same. Now-a-days computer training facilities are easily available with affordable costs and this may be the reason behind this satisfactory situation. In 7% colleges the staff members opined that training imparted to them was “excellent”.

20% of the office staff members were not in position to respond to this question as they did not receive computer training at all. The probable reasons behind this situation are already analyzed. Proper initiative, motivation may be the solutions to this problem.

10. If it was inadequate, have you informed about the same to the Management?

Concept –

It is very much necessary to know about alertness of the office staff members to extract all the necessary inputs from the training provided to them. If the training is given and some of the requirements of the staff were left to be fulfilled and the same are left un attended by the participants, the resource faculty will never come to know that there are some lacunas. In order to fill these gaps it is required that participants on their own should bring such points to the notice of their respective managements so that the can be clarified and care will be taken in future while organizing any training.

Analysis –

	Intimated	Not intimated	Not applicable
Intimation to Mgmt. About inadequate training	Nil	Nil	15

We have seen that 80% of the staff has received computer training and all of those i.e. 100% are fully satisfied with the training they received as there requirements might have fulfilled. For this class there was no question about informing the management about the drawbacks as the training had satisfied all of their working needs.

There is a class of 20% who did not receive training at all. So in case of these staff members also there was no question about informing management about something which was required to be taught but was not explained to them.

11. How much useful did you find this training in view of using computers in daily work?**Concept –**

There are two aspects of opinion about training program. One is the overall impact on the participants and the image of the training created in their minds after receiving the training. This is the situation when the general opinion about the computer training is formed but it is doubtful to say that every body will be in a position to tell about the utility of the computer training they received in accordance with the official work the do as a part of their duty. This feedback carries a true importance because it creates inputs both for trainers and trainees for training programs during the future.

Analysis –

	Very useful	Not that much useful	Not useful at all	Not applicable
Utility of training in daily work	12	Nil	Nil	3

80% of the entire office staff in the selected sample has undergone the computer training and it can be appreciated that **all** have complete satisfaction about computer training not only theoretically but also practically. That is they have experienced that training was really very much useful while they worked with computers.

20% of the entire class again is not in position to have this opinion as the did not have any computer training.

12. Was there any advice that you would have found useful but you didn't receive?**Concept –**

The persons working in the offices are the right persons to suggest the areas in which the computer training should be given. The utility of training imparted can be evaluated only when the staff members start an actual work with computers. In due course of time it is very much possible that during their work they may experience that they identify some area where they strongly feel that computerization is possible in that area but due to some and other reasons the training was not given on that. Such type of experiences create the best inputs for modifying the existing training programs.

Analysis –

	Yes	No	Not applicable
Any advice felt useful but not received?	Nil	12	3

No body has found any area during their work or no body has experienced that there is still something left out from what we were taught as a part of computer training. No body got stuck up at any point while doing official work with computers due to lack of knowledge. This is a satisfactory picture. All 80% of the office staff have experienced that the computer training given to them was adequate.

Still 20% of the colleges from sample selected were not found in position to opine on this due to not getting any computer training.

13. If yes, please specify in brief.

Concept –

Researcher has tried to identify whether there is any type of lacuna found by the office staff who has under gone the computer training. The intention behind this is to find out the areas in the administrative work where the there is sufficient scope for computerization but are still to be given a thought for re engineering the existing work procedures and administrative systems adopted. That will build a data base for designing the computer training modules for administrative staff working in the colleges in future.

Analysis -

As 80% of the sample who has undergone a computer training is fully satisfied about the same, they have not found any advice which they felt useful but was not given to them.

20% of the sample is again not in position to opine as any training was not given to them.

14. Do you hope that if computers are introduced in office they will cause positive changes in office?

Concept –

There is a world wide observed fact that there is always resistance to change. Due to this “change management” always becomes a challenging task. If it is not done properly any change which is brought for good results never gives exactly the desired results.

“Computerization” has already many famous misconceptions about it and many people especially the non teaching / administrative staff working in colleges running under graduate courses have fear in their minds. This may be because of the feeling in their minds that whether they will be able to grasp this new technology or not. Also very senior staff in the offices may feel that we have very short span to work till our retirement then why we should go for this new technology. And all such type of mindsets may prove to be hurdles in computerizing the college offices because mental involvement of the staff is possible if and only if they are convinced about the use of computers during their duties. The proper motivation is necessary for this. So if the office staff is convinced that computerization of their routine administrative work will result in improvement in their individual performance and it will definitely enhance their career and also there is no cause for fear of failure then and then only they will be completely involved in the computerization process. They must be made confident that this is easy to learn and will bring definitely very good changes in their work places by means of upgraded work-culture and working environment.

Analysis –

	Positive changes will occur	No changes will occur
Hopefulness about positive changes after computerization	15	Nil

It is clear that no body has found to be of the opinion that computerization will not bring positive changes in their respective work places.

80% of the staff members who have undergone the computer training are obviously confident that computerization will bring positive changes.

It is further interesting to note that 20% of the class who have not undergone any formal computer training also strongly feel that computerization of administration will result in bringing positive changes in the administration. This fact clearly indicates that today they don't have any inferiority complex in their minds about the use of computer usage in the administration.

15. *If computers are available presently was the office-staff consulted before purchasing the computers?*

Concept –

It is important to know that whether the staff members who are going to work with the computers were consulted before going for the purchase. It may not be the case that all the administrative staff will be computer literate enough to contribute in deciding the policy about purchasing the computers for administrative use. But still whether the office staff was consulted before purchasing the computers in the office, or not, carries a great significance as far as management of computerization is concerned. If the computers are brought directly in the office and office staff comes to know about it only after their physical arrival at their work place, it may be felt that some thing new and difficult technology is imposed on them and they are forced to use it. There is possibility of creation of barrier between college management and working staff and this situation is certainly not favourable for getting success in improving the service efficiency using the computerization as a tool.

On the other hand if they are consulted before going for purchase it creates feeling in their minds that we are taken in to confidence and no enforcing is there. This is very much necessary if we expect the staff to support for computerization and try to improve their student related services with the best of their abilities.

Analysis –

	Staff was consulted	Staff was not consulted
Consultation with staff before computer purchase	47	53

In case of **43%** of the sample surveyed it was found that office staff was taken in to consideration before purchasing computers for use in office.

57% of the office staff was not consulted before purchasing the computers and it was revealed from the authorities that it was not felt necessary due to lack of enough knowledge about computers before actual use so as to be consulted before the purchase.

16. If yes was there full freedom to users about making choice of the computers?

Concept –

It is an attempt to find out where the office staff was consulted before making the purchase of computers, whether they were consulted during making a choice about the hardware specifications, model etc. This is done because it is believed that if they are consulted or a thought is given to their opinion it helps to remove the computer-phobia in their mind and that even from the minds of others if present. It is a technique of participative management and it proves to be successful.

Analysis -

	Freedom offered	Freedom was not offered	Not applicable
Freedom to staff about computer choice	6	1	8

It is observed that **40%** of those who were consulted before the computer purchase were given a freedom to make a choice of computers. Only **7%** class is there which was consulted but was not offered a freedom to suggest or make a choice about computers. This indicates that majority of college managements fully believe in the importance of the opinion of staff who is supposed to actually work with computers.

53% of the entire sample are not in position to have this opinion as they were not consulted before the purchase of computers.

17. Do you carry any fear in your minds about reduction in manpower after computerization?

Concept –

There is a well-known misunderstanding about the computerization that it results in increasing unemployment. If this fear is in the minds of the staff members it may prove to be major obstacle in proceeding for complete computerization. But it is observed to be a mass opinion spread all over. Some times it is also observed that it is not true in many cases. The personnel working in educational administration has realized the importance in learning new technologies. Only those who can offer best services to the students and that too as per their needs will survive in future. This is the law of nature. As a part of strengthening the administrative systems to cope up with changing demands of the market, every body has realized that computerization of student services is the most appropriate way of improving over all service efficiency of the institute.

Analysis –

	Fear is in mind	No fear
Fear of manpower reduction amongst staff	Nil	15

The situation is quite hope full because **100%** of the office staff working in colleges which were surveyed is free from the fear that computerization results in unemployment or reduction in

manpower. So it can be stated that entire administrative staff in under graduate education is well prepared to upgrade their service efficiency using computers without any complex in their minds.

18. In what area you are using the computers presently, as a part of work?

Concept –

It is an attempt to obtain the details about areas in which the computers are presently used in the college administration. The complete capacity of computers can be utilized if and only if they are used in all possible areas and especially in the areas where there are human limitations, volume is large and repetition is there.. The basic reason of this finding is to find whether the computers are intelligently used in the existing offices of under graduate educational institutes. If the areas are known where the computers are used presently used and where their use is possible in future then the most effective inputs can be given to administrative staff so as to improve the service efficiency of administration and thereby that if the undergraduate education. This survey will result in very useful database because it will give the information about the areas where the computerization is possible and till the concerned work is done manually or partially with computers.

Analysis –

<i>Area of computer usage</i>	<i>No. of colleges using computers in particular area</i>
Text processing	15
Data collection	13
Data storage	12
<i>Data entry</i>	11
Data analysis	8
Graphical display of data	2
Sending & receiving mail to the colleges / University	6
Exchange of data with the colleagues reading academic literature	3
Searching online database	7

1) **100%** of the office staff members from the sample selected found to be using computers for word processing. Computers are not merely typewriters but word processing is the best area from where the process of computerization can be started without any starting problems. To use computer for word processing is known as best way to remove computer phobia if any in the mind. The survey indicates that every body uses computer for typing purpose. This may be because, MS WORD is the user friendly, easy to use and versatile software to work with. Even a computer illiterate person can start just working with it by taking necessary support of “On line Help” utility provided in MS OFFICE package.

2) **87%** of the office staff members from the sample selected found to be using computers for data collection. The “memory” is the strength of computers as it overcomes the problem of limitations of memory of human being.

But still 13% of the staff is not in position to use computers for data collection due to some and other reasons.

3) **80%** of the office staff is using computers for storage of data. Data storage is prime utility of computers because it results in reducing the paper work and documentation.

Still 20% of the sample are not in position to use computers for data storage purpose.

4) **74%** staff members use computers for data entry. Actually data entry is very routine type of activity now-a-days. So this percentage appears to very low than that which is normally expected. The reasons may be like lack of required software to facilitate data entry. 26% of the staff may be facing problems related with appropriate software.

5) Data analysis is the area where the intelligence of computer can be used in real sense. It requires the software support at the back end. **53%** of the office staff is using computers for data analysis. The percentage should be increased in future because it reduces the burden on human brain.

6) Graphical display of data is one more interesting application of computers because graphical display is always more effective than narrative explanation. But only **14%** are using this ability of computers. This improves the readability and quality of any document.

7) Computers can be best used for electronic type of communication i.e. e-mails. It is the most popular medium of communication today. It overcomes all types of limitations related with distant and time. It has been proved as an economic type of communication. But only **40%** of the office staff surveyed use the computers for sending the mails to outside agencies. This percentage can be increased in future by proper motivation and training.

8) If the database is created and maintained at the backend and appropriate software is developed for front end then student related services can be easily handled across the counters. Students can be offered variety of services across the single window counter through a single transaction. **47%** of the office staff uses computers for handling online database. This percentage is not satisfactory. Reason may be lack of concerned software to create, maintain and update the database.

19. What type of computer you use?

Concept –

Computers can prove to be more effective for administrative services for students in under graduate education if they are used in the network. It facilitates the sharing of expensive hardware thereby resulting in economy. Normally the college office includes people handling different activities and they are distributed separately amongst the office staff, for ex. examination work, admission work fees acceptance and refunds, eligibility work, training and placement etc. So it is very much possible that if some student comes to office for certain work and the concerned staff member is not available or is on leave, any other will not be in position to easily entertain that student and solve his request. This is because to service any student's

request needs some information with the office staff and this information is maintained individually. Networking facility allows that this information is shared by all the staff members. This type of system is adopted in railway reservation system or airline reservation system where we get desired booking on any window irrespective of the destination. Today many system software are available to facilitate network environment to work. These software are easy to install and use also.

Analysis –

	Stand alone	Networked
Type of computers used	6	9

40% of the office staff work with computers which are connected to each other via a computer network. This percentage definitely not bad but at the same time it is not quite satisfactory also. Advantages of networking should be explained more and more so as to increase the use of computer networks.

20. What is the method you adopt to maintain information of the students?

Concept –

To enable the college administration to work in network environment and offer the students, the single window type of services it is the basic requirement that the students' database must be created, maintained and updated using computers. This database should be made available to all the operational and administrative staff to facilitate speedy processing of students' queries and it is one of the ways to upgrade the student services. If the records are kept in different forms then it takes time to put them on computers. Many of the traditional and ancient types of keeping records have redundancy of information which may be avoided if the records are computerized. Further computerized records in terms of online database can easily be created, updated and searched.

Analysis –

Method of keeping students information	No. of colleges
Files	8
Ledgers	--
Combination of all these	6
Computerized database	1

53% of the offices use files, **40%** use the mixture of files ledgers, lists etc. Only **7%** use the computerized type of database. This percentage is very low and offices where student information is not maintained in form of computerized database may be viewed to lag in service efficiency.

21. Are computers utilized to carry out / administer the admission process?

Concept –

Admission process is the first and most important process where the student comes in contact with the college especially the college administration. As the student is viewed as customer of the education system the admission process should be made as comfortable as possible and least hectic for student. As the rules and regulations are to be followed and there are various

competent authorities involved in the process some minimum complexity is present obviously. But if the rules and regulations, criteria of eligibility, amount of fees and other relevant details are known and frozen then this process can be very well computerized saving the valuable time of college administration and also that of the student. If this could be done it will be a fantastic example of improving student-services by way of computerization. Computerization facilitates to complete admission process even complicated, in minimum steps. It requires a lot of work at the back end as a part of preparing college administration for carrying out the admission process. This must be done scrupulously to avoid technical, administrative and legal complications likely to arise in future. Depending on the extent of use of computers in admission process we can classify two categories one where admission process is partially computerized and other where admission process is completely computerized that is it is carried out by "ON LINE" method.

Analysis –

	Computers are used	Computers not used	Admissions online
Usage of computers in admission process	7	6	2

47% of the colleges were found to be using computers during the admission process. In these cases even though computers are used admissions are not given on line. But at least it is interpreted that these administrations are aware of abilities of computers while carrying out various stages in admission process.

40% of the colleges were found to be doing their entire admissions manually. This may be due to lack of software and hardware facilities available to them. Now a days admission software can also be made available from software developers by giving them requirements.

13% of the colleges were found to carry out the admissions totally by on line method. Here admission is given across a computer window and fees is accepted there itself. Also the receipt of fees and admission letter is handed over to the student in a single transaction. Student need not requires to turn to the office again to the office for any work at least regarding admissions.

22. *What activities / services in your office are computerized, partially computerized or done fully by manual process? (Please tick in proper column)*

Sr.No.	Activity	Computerized	Partially computerized	Totally manual method
1.	Admission form	8	1	6
2.	Fee acceptance & receipt	9		6
3.	Bonafide Certificate	9	1	5
4.	Transcript Certificate	6	1	8
5.	Railway/bus concession form		3	12
6.	Hall tickets(admit cards)	7	1	7
7.	Returning deposit/caution	7		8

	money			
8.	Appointment order of staff		4	11
9.	Leave application form for staff	1	1	13
10.	Leave application form for student	3		12
11.	Database of present/past students	8		7
12.	Fee register	9		6
13.	Eligibility register	7	1	7
14.	Exam. performance register	7	1	7
15.	Students' personal information register	8	3	4

Concept –

The administrative office of the college requires to maintain various types of records and that too with a large volume. Further these records need to be updated as and when required. After some limit it becomes humanly impossible to do this work manually and maintaining highest level of accuracy. Any minor error in this work may cause harm to the entire career of the student. Henceforth the computerization of all these variety of types of student records should be maintained in electronic form i.e. on computers. It helps for improving the quality and accuracy of information services needed by the students.

Further the college administration requires to give various forms, certificates to the student and how efficiently the office can provide these to students is indicative of the service efficiency. If these forms and certificates are computerized then its quality, appearance and durability increases.

The researcher has visited the offices of all the colleges in the sample and studied their working systems.

Analysis –

It was observed that as far as various types of records are concerned approximate percentage of colleges keeping records in computerized form is 50% (please see first column of the table given above).

Percentage of colleges whose record keeping task and various forms / certificates are partially computerized varies from 7% to 21%.

But it is observed that more than 50% in some cases above 80% prefer to maintain these records and give various certificates by manual method only. They may go for computerization of the same in near future.

23. Do you maintain employees' database on computer?**Concept –**

The administrative office of any under graduate college is normally divided in three groups namely students' section, establishment section and accounts section. Establishment section

handles the total administration of teaching, non-teaching and support staff. There is enough scope in establishment for computerization as it involves creating and maintaining the leave records, service records (service books) of the employees, personal files. As these records are official and legal evidence of the service of an individual employee it must be seriously handled otherwise it may invite the conflicts or legal disputes. As like the student, the staff member of the college is an equally important user of information system of administration.

Analysis –

	Maintained	Not maintained	In process
Employee database on computers	6	7	2

40% colleges have kept the database of their employees on computers. As far as availability of various “easy to use” database software now a days, this percentage should be increased.

47% of the colleges even today prefer to maintain it manually looking in to the importance of these records and they do it to be on safer side. It has some legal aspects also.

13% of the colleges are working on it and are on the way to have complete database of their employees on computers in very near future.

24. What is the method of maintaining the leave record of the staff?

Concept –

Leave record is an important record in the establishment section of any college office. As seen earlier, word processing is the easiest way to start working with computers as it removes computer phobia if any in the minds of working staff. Similarly “leaves of college employees” is the best activity to start with in case of computerizing establishment section. The reasons are clear. There are fixed rules to sanction various types of leaves. The criteria for deciding number of leaves admissible to every body in the college is fixed. So the decision making process while sanctioning or rejecting somebody’s leave is very much “structured” in nature. So in the language of software engineering it can be said that such decisions are always easily “programmable” and hence can be computerized quickly. The ways in which the leave records are kept and maintained in the colleges were studied.

Analysis –

	Filling system	Database	Card system
Leave record method	9	3	3

60% of the offices surveyed were found to be using file system as it was the most traditional system to work with. Individual files are maintained for each employee to preserve the leave application of that employee.

20% of the offices were following the card system method where entry is made on card and decision of competent authority along with balance of leaves is mentioned on every entry. For

every new entry the balance of leaves is updated and recorded on a card. The card system is comparatively more proper than file system to go for computerization of leave handling system.

20% colleges have maintained the leave-database on computers and the processes of applying for leave and sanctioning the leave, informing the decision to the applicant are computerized.

25. Do you feel that work efficiency of the office has been improved after using computers in routine work?

Concept –

Any technology is adopted for the betterment of human being. So any technology launched at the work place must result in more comfort to the working people than that was in absence of technology.

It may be commonly accepted that computerization results in better quality and comfort of administrative work. Also, the staff members get ready to use the new technology if and only if they are sure that its use will upgrade their individual service efficiency and ultimately will be beneficial to their career growth. The technology which doesn't help at individual level is slightly difficult to get acceptance of people and it is obvious also. A feedback of the office staff who has already started working with computers was taken about their views the change in efficiency after computerization.

Analysis –

	Improved	Not Improved	Slightly improved
Whether efficiency improved after computerization	14	Nil	1

94% of the office staff surveyed had experienced that work efficiency both at individual and sectional level has been improved after using computers in the offices. **6%** have experienced that definitely there is change in quality of services but it has not been upgraded substantially at present but is expected to be in near future.

The most remarkable point is that nobody experienced that efficiency has not been affected even after the computerization of routine administration in the office.

26. After computerization have you noticed any change in administrative ladders of organizational structure?

Concept –

Computerization results in many types of changes in the organization. In every organization there is an administrative hierarchy involving authorities at various levels / cadres. The responsibilities and powers of every cadre are well defined. Many times some proposal which needs the approval of particular authority then the same has to be passed through the prescribed authorities under him. Every authority needs certain information to take the decision on any issue. In the language of Management Information System (MIS) it is called as Decision Support System. To process and to give any decisions / administrative orders every authority

refers or demands some information / documents / official files etc. from its lower authority. This always results in delay normally called as administrative or procedural delay.

Computerization can facilitate availability of the entire information required for any purpose in form of shared database via a computer network. This ultimately benefits the total administration by way of not only quick but also the accurate decisions. This is easily possible because computerization allows the administration to reduce the number of ladders in the hierarchy. The authority at any position can easily access any colleague through a network. And obtain necessary feedbacks. Due to this connectivity computerization also results in reducing number of official meetings and thereby the expenditure on it.

The administrative reforms mentioned above result in changes in overall organizational structure after the computerization is implemented in any administrative set up.

Analysis –

	Changes observed	Changes not observed
Changes in organizational structure	8	7

53% of the office-staff members experienced that there are changes observed as well as experienced in the organizational structure of their office after the computerization.

While **47%** of the administrative staff was found not to have any experience of organizational change even computerization is done. This may be because even at some places partially computerized systems are followed instead of total computerization

27. *After computerization have you noticed any change in inter personal relationships?*

Concept –

As seen earlier, computerization results in many types of changes. Organizational structure and personal relationship are very much inter related concepts. Personal relationship has prime importance in organizational performance of an educational institute. The inter personal conflicts and differences of opinions indirectly affect the service efficiency of any educational institute. Computerization results in reduction of duplications in work and also the laborious type of work like preparation of various types of certificates, receipts of payments towards fees, preparing hall tickets etc. This naturally saves the time and energy of staff which can be utilized for some better official purpose. As the duplication is avoided and work procedures are clarified, ambiguity if any about work distribution is removed. It helps to reduce conflicts and promotes harmony amongst the staff members.

Due to networking facility, the work distribution becomes flexible and student can be offered any service on any window if there are different windows for different services. It helps to improve interpersonal relationship.

Analysis –

	Changes observed	Changes not observed
Changes in inter personal relationships	5	10

34% of the staff members observed that there is change in personal relationship after the computerization of the office. This percentage may be low than that is expected but it is a good sign that the process of changing organizational structure and interpersonal relationship has been started.

66% of the staff didn't observe any sort of change in interpersonal relationship amongst the staff even after computerization.

28. Do you feel that in future also the changes will take place in the administrative structure of the office due to the computerization going on presently?

Concept –

What the personnel in the college offices expect from the computerization in future? Do they feel that there will be positive changes in future due to computerization? These are very important questions.

An attempt has been made to know about the hopefulness of the working people in college administration. If the staff carries negative attitude in the mind they will not believe that there will be changes in administrative structure of college in future. If they believe then only they can contribute to promote the service efficiency of the college.

Analysis –

	Changes expected	Changes not expected
Prediction about changes in future	Nil	15

The present situation is very much positive as all of the staff members (**100%**) feel that there will be changes in administrative structure of college in future due to computerization. The offices where computerization has not been geared up due to any reasons also feel that there will be changes in future.

29. Are there any facilities that you feel necessary but are not available on computers in the office?

Concept –

It is assumed now a days that administrative staff working in undergraduate colleges is no more **totally** ignorant about the various facilities that can be availed by computerization. While preparing plan for complete computerization of the institute, the major role was played by computer faculty of the college before few years. But today the picture has been changed. The non-teaching and administrative staff also, today, have their own ideas, views and expectations about the computerization. The knowledge about computers and their use in the regular administrative work and the effective benefits of the same. So the research also tried to focus on whether there are any facilities related with computers which the staff feels necessary but due to some reason they couldn't be made available.

Analysis –

	All necessary facilities available	All necessary facilities not available
Facilities felt needed but not available	15	Nil

As seen earlier the entire class of office staff (**100%**) surveyed was found to be fully satisfied with the computer facilities in their offices. This scenario indicates that one can expect total computerization in undergraduate education in future. The office staff was found to thoughtful enough to think about and work for the computerization. There fore this opinion is very valuable in research point of view.

30. If yes, please explain in brief about them. Not applicable - 15**Concept –**

The researcher has tried to find out the information about the lacunas as per views of the staff members about the computerization in the offices so far completed. As a part of this it was necessary to know that whether there are any computer facilities which are useful for administration in view of the staff but could not be made available due to some reasons. If the specific information could have been received from them then that would be helpful for deciding computerization in future.

Analysis –

100% of the staff members surveyed were satisfied with computer facilities in their offices. So whatever was there in their imagination was available to the. So any suggestion or requirement for additional computer facilities was out of question.

6.1.2 STUDENTS - (Q. No. 31 to 38)**31. What are the variety of reasons for which you require to approach the office of the college? (Please tick amongst the list of probable reasons)**

- a) Obtaining information about time table - 9
- b) Obtaining identity card - 15
- c) Obtaining admit card - 13
- d) Filling the examination form - 13
- e) Deposition of fees - 14
- f) Getting the result - 10
- g) Filling verification/revaluation form - 9
- h) Obtaining some certificate (for ex. Leaving certificate) - 11
- i) Traveling concession forms - 8
- j) Obtaining information about University rules, ordinances etc.- 9
- k) Refund of deposits (for ex. caution money) - 12

- l) Training & placement - 7
m) Library related matters - 6

Concept –

As a part of research the survey also included to study the flow of students to college office for various purposes. If the priorities are to be decided while computerizing the different activities in office we have to look in to the frequency of variety of transactions taking place on various counters or tables in the college office. To improve the service efficiency the activity where the students benefited are largest should be selected first for automation.

Analysis –

In **64%** offices the students rush to the office for obtaining information about timetable. In **100%** colleges students come to the office for getting identity card. In **86%** offices students come to the offices for admit cards. In **86%** offices students come to the offices for filling the examination forms. The percentage of offices where students come to the offices for deposition of fees is more, i.e. **93%**. In **64%** offices students come to the office for getting the result. In **71%** offices students come to the office for getting some certificate. In **78%** offices students come for refund of deposits. In **43%** offices students come for library related matters. In **50%** office students come for something related with training and placement wherever applicable.

31. What are the tentative periods required to get these done?

WORK	Few hrs.	A day	A month	> A month
1. Obtaining information about time table	10			
2. Obtaining identity card	14			
3. Obtaining admit card	13			
4. Filling the examination form	11			
5. Deposition of fees	15			
6. Getting the result	9			
7. Filling the verification / revaluation form	9			
8. Obtaining some certificates (for ex. Leaving certificate)	10			
9. Getting/signing travel concession forms	8			
10. Obtaining information about rules, ordinances etc.	8			
11. Obtaining the various deposits (for ex. Caution money)	12			
12. Training and placement	6			
13. Library related matters	6			

Concept –

The students need to approach the office for various purposes. Normally in every office there are the window type counters for various services required by the students for example obtaining certain certificate, deposition of fees, enquiries for various information about rules, ordinances, important dates, getting refunds / caution money etc. To maintain the academic and

administrative discipline of any educational institute it should be ensured that the student requires minimum time for getting all these services. If the education is an “industry”, then obviously the student is the customer that should be kept satisfied and comfortable as far as all the students related services. So the feedback from students about various services carries a prime importance because it will give the idea about whether there is any activity which takes the valuable time of students by requiring them to come to office again and again for the same work. This idea will be a key to go for any specific activity to be computerized.

Analysis –

The overall situation about these services and the way in which they are rendered to the students is satisfactory. Almost all the types of work for which students rush to office are being got done within few hours. Certain types of services especially issue of various certificates requires prescribed administrative procedures requiring signatures of some competent authorities to be obtained for the same. Such services naturally involve certain amount of administrative delay which can be further minimized using computerization. So there is definitely a scope for going to complete computerization.

The percentage of college offices where almost all the services are given within a few hours range from **43% to 93%**. Only **7%** of the colleges are there where some services require a period of a day to finish with.

33. What is your observation about the office of your college in view of computerization?

Concept –

The importance of the student as a “customer” of an educational system has already been seen. The previous feedback taken was talking about rating the services in terms of time required for these services. Every student carries some image about the college where he studies. So naturally student has some image in his mind about the administrative office of the college and this image is based upon the over all experience he or she has got from the office related with timings, communication with the staff and especially the **facilities in the office**. This image is spread all over the campus and also in the society. So what students feel about any thing in the college is the most important. So merely going for computerization is not sufficient. Whether the students feel that their office is really computerized or not is important.

Analysis –

	Not computerized	Partially computerized	Fully computerized
Students feedback about college office	2	7	6

The students from **13%** colleges feel that the offices of their colleges are not computerized at all. This may be because of the various services in the offices are still carried out by totally manual method.

The students from **47%** colleges feel that their offices are partially computerized. These are the offices that have started using computers in their administration. This class can be expected to be in complete computerized phase in future.

The students from **40%** colleges feel that their offices are fully computerized. This percentage is not too much discouraging.

34. Is there any reduction in time required in getting work done related to various reasons listed in Q.2 after computerization?

Concept –

The computerization should not be merely done for the sake of computerization or just to improve the aesthetic value of the office. The use of information technology should ultimately benefit the student community directly or indirectly. So simply by bringing computers in the offices and using them in routine administration will not help to improve the service efficiency. So after adopting new computerized work procedures it should also be checked that whether the student is feeling to be in more comfortable situation or not. That will decide whether computerization has really help to upgrade the quality of student services. This survey will also help to locate the areas where the computerization is done but the result are slightly deviated from the expected standards. It is normally expected that the procedures which are either fully or partially computerized should take lesser time than the case when they were carried out by totally manual methods.

Analysis –

	Time reduced	No reduction in time	Not applicable
Reduction observed in service-time after computerization	11	1	3

In **73%** colleges students experienced that there is reduction in time required for particular work in the office after introducing computers.

In **7%** colleges students did not experience any change or reduction in time required for particular work after the computerization.

In **20%** colleges students were not in position to have this experience as the office was not computerized.

35. What is your observation about the library of your college in view of computerization?

Concept –

Library is the most important service out of various services given by the college. The overall opinion of the students about the library may serve as an input for development in future. The automation of library should not only bring computers in the library but also give a feel to the users that the library is computerized. This is possible only when they experience repeatedly that tasks like searching particular book / issue of books etc. are completed in lesser time than that in past that is before the computerization. Students should consume minimum time in searching and getting the books and should spend more time in reading them. This is possible if library is really automated in view of students.

Analysis –

	Not computerized	Partially computerized	Fully computerized
Students feedback about college library	3	8	4

In **20%** of the colleges students feel that their library is fully computerized. This percentage is definitely appreciable.

In **53%** colleges the students feel that their library is partially computerized. These colleges can go for complete automated library in near future.

However a thought should be given to the fact that still in **27%** colleges students find their libraries not computerized at all.

36. If it is computerized, are you getting the issue of books & other related services faster than in the period before the computerization?

Concept –

The colleges where libraries are fully or partially computerized, it is very much important to know about the experience of the students using those services. So whether the computerization of libraries really resulted in quicker services like searching for any particular book, issue or return of books, is very important question to be answered in view of service efficiency. If the answer is no then entire process will need to be reengineered. If yes then the steps should be taken to attain more and more higher level of service quality.

Analysis –

	Became faster	As it is	Not applicable
Change in library services after computerization	8	3	4

In the libraries of **53%** colleges students have experienced the positive change in terms of time saved in various library services. This is a good percentage.

In the libraries of **20%** colleges the students didn't experience any change in the time required for particular service in library. In **27%** colleges, students were not in position to opine about the library services as the computerization has not taken place.

In both these cases the library system needs to be reengineered for computerization. Where the computerization has taken place to some extent, the lacunas should be found corrected.

37. Whether the database of books-catalog in made available on line for searching?

Concept –

The most common service in the library is to search the desired book. If seen carefully just to obtain the particular book from the library involves several steps. The user should easily come to know whether the book is available in the library or not. If yes, what is its location i.e. row number, rack number, accession number, number of copies whether the book is for issue or for reference etc. If not the what is the tentative date by which that book will be returned by the

previous user etc. In a normal system the catalogs of books are kept in form of small rectangular cards holding the details and these cards are arranged author wise and title wise. This is the most commonly adopted system but as the age of faster and faster services has been arrived this old process was experienced to be time consuming. If the database is maintained on line and the necessary software is provided for searching the book by entering either the author's name or title then it really saves the time and gives a feel to the user that library is automated and now the services are fast.

Analysis –

	Available	Not available	In progress
On line searching facility in library	5	9	1

In **33%** colleges, the database of books is maintained and made available for students for on line searching of books. In **60%** colleges this on line searching facility of books couldn't be made available to the students may be because of non availability of database. In **7%** colleges the libraries were found to be already acted upon this and the job of making on line searching facility was in process.

38. Which of the following certificates are available in a computerized form? (Please tick)

Concept –

The students require to come to the office many times for obtaining certain certificate. The normally found experience is they come at eleventh hour and demand certain certificate as an emergency. The student gets a feeling of computerization of administration if and only if he or she gets their mark sheets, bonafide certificates, leaving certificates, fee receipts in computerized form and that too in minimum time. So after knowing the views about computerization from the angle of staff it is equally important to know about the feelings in the minds of the students about the same.

Analysis –

Activity	No. of colleges where it is computerized
Time table	2
Admit card	4
Bonafide certificate	6
Leaving certificate	5
Admission letter	4
Mark sheets of internal examinations	4
Receipt of fees	9
No dues certificate	3
None	4
In process	1

In **13%** colleges students get computerized time table. In **26%** colleges students get computerized admit cards. In **40%** colleges students get computerized bonafide certificate. In **33%** colleges students get computerized leaving certificate. In **26%** colleges students get computerized admission letter. In **60%** colleges the fee receipts are computerized. In 14% colleges no dues certificate is computerized. In **26%** colleges no certificate is given in computerized form. In **6%** colleges the process of giving computerized certificates is in process.

6.1.3 PRINCIPALS - (Q. No. 39 to 73)

39. Do you feel that computerization of administrative office is must in near future to withstand in the competition in education field?

Concept –

The views of the Head of the institute i.e. the principal influence the entire computerization process. The primary requirement of successful computerization is the positive attitude and whole-hearted support from the principal of the college. He is the person who is capable of creating the environment suitable for computerization and lead the computerization activity. If the principal is convinced about the advantages of computerization then only he can percolate the idea to the subordinate staff. If he is computer-oriented person then only he can effectively motivate the staff members to involve in computerizing the routine procedures. The attitude of the top-level person is the pivotal factor deciding the direction towards success. This is an attempt to find the opinion of the authority empowered of deciding the policy, about the computerization. Whether they feel that computerization is necessary in administration in future to withstand the competition.

Analysis –

	Felt mandatory	Felt not mandatory
Whether computerization felt mandatory	15	Nil

It may be categorically mentioned that the principals of all the colleges surveyed i.e. 100% of the Principals were found to be quite sure about the necessity of computerization of their institutional administration in near future. Further all were having very much positive attitude towards computerization. Not a single principal was found to be doubtful about the necessity of computerization.

40. Have you fixed any policy regarding the use of computers in present or near future?

Concept –

Computerization is a process which should be taken very seriously and handled methodically. It is commonly observed that people procure the computers and just start working with it easily but such usage remains limited to certain extent like word processing, data entry etc. Such usage never assures the advantage to the customers i.e. “Students” in the education. To use the computers in routine work for some purpose is quite different from real computerization. The computerization is a systematic process and has standardized procedures to start it in any organization. This all speaks about the need of systematic and prior planning in an educational institute before going for computerization.

So to ensure the desired results, computerization should be viewed seriously enough and the colleges should frame some policy regarding computerization of their administration and then only it is supported from all the levels in the administration i.e. from top management to the operational level staff.

Analysis –

	Policy framed	Policy not framed

Policy for computerization	11	4
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74% of the colleges surveyed were found to have a fixed policy about computerization of their institutional administration and one can say that this percentage is not bad but needs to be increased in near future.

26% colleges are not having any policy as such about the computerization of the administration. This may be because of lack of initiative or technical support etc.

41. Please give the following details.

Concept –

The Head of the institute is the right person to opine about the percentage of computer literacy in their administration. Many time it is possible that people have learnt computers but still they are not exactly suitable to cope up with the needs of computerization in view of the principal. If the head of the institute is confident about the computer knowledge of his or her administrative staff them and then only they can be put to work with computers and to participate the computerization process in real sense. The head must get a feel from the working methods of the staff about their computer awareness.

Analysis –

	100%	50%	<50%
Percentage of computer literacy	12	2	1

80% colleges were found where the 100% staff members were computer literate in view of Principal. **14%** colleges were found where the 50% staff members were computer literate in view of Principal.

Only **7%** colleges were found where Principal opined that percentage of computer literacy was less than 50%. This **7%** should be reduced to zero in future by means of extensive training.

42. Have you sat down & planned for computerization or just got on started using computers?

Concept –

As seen earlier computerization should be handled methodically. Now a days it possible to procure and use the computers easily because of plenty of computer vendors and on line help facility respectively. In such cases the computers can not be used efficiently as a resource. In can not give the effective up lift in service efficiency. It may be mentioned again that to use the computers in routine work for some purpose is quite different from real computerization. The computerization is the process that has standardized steps to start it in any organization. So the conclusion is systematic and prior planning in an educational institute is badly needed before going for computerization.

So to ensure the desired results, computerization should be viewed seriously enough and the colleges should frame some policy regarding computerization of their administration and then only it is supported from all the levels in the administration i.e. from top management to the operational level staff. Computerization results in positive changes in service efficiency if and only if it is planned well in advance.

Analysis –

	Planned	Not planned
Planning for computerization	8	7

53% colleges were found to have prior planning of computerization however 47% colleges were found who didn't go for any planning as such but started using computers in the offices wherever possible. Training is still necessary on the importance of computerization as a process and importance of planned computerization.

43. In your annual budget, is there a separate provision for computerization of administration of your college?

Concept –

This research includes various attempts made to gather the views of heads of institutions about the computerization of their administration. To purchase the computers and just to start working with them is not a bad idea but indicates about casual approach which doesn't succeed all the times. Research has tried to find out whether enough weightage is given for computerization while framing the policy of the college. Out of several resources, "finance" is the key resource that plays a major role in making any policy successful. The expenses for computers including software and hardware development are many times observed to be adjusted from other similar budget heads. Many times adoption of new technology faces budgetary problems. The institution that is serious and keen to get desired results from computers i.e. ability to offer services of better quality to the students must make separate and sufficient financial provision in their annual budget to make enough expenditure on computerization.

Analysis –

	Provision made	Provision not made
Provision for computerization in budget	10	5

67% colleges out of those surveyed were found to have separate provisions for computerization in annual financial budget. 33% of the colleges were not having separate financial provision for computerization in annual budget.

44. Did you experience any fear in the minds of the staff members about reduction in manpower after computerization?

Concept –

There is very famous myth about computerization that "computerization results in reduction in manpower and increases unemployment". This is since those days when Late Hon. Rajeev Gandhi, then Prime Minister of India introduced computers in our country and promoted the Information Technology. The philosophy behind this was the country can survive in the competition in the 21st century only by adopting the use of Information Technology (popularly abbreviated as I.T.) in the routine administration because many other countries had already gone ahead in using IT. It is inherent tendency of human being that always resists to change. Therefore it is always experienced in bureaucracy that there is resistance to newer and newer methods of work. Of course this scene is definitely changing day by day because now every body is

realizing that this generation has to struggle for existence with the help of improving the service efficiency using information technology. This research study has tried to take a stock of situation about what is there in the minds of office staff as experienced and observed by the Principals.

Analysis –

	Observed	Not observed	Resistance to change
Fear amongst staff about manpower reduction	1	13	1

88% colleges are there where there is no any fear in the minds of staff members working in offices about reduction in manpower after computerization. Obviously this is a satisfactory percentage.

However a special attention should be given to the situation that still there are **6%** colleges where the Head observes that there is fear in the minds of staff. **6%** colleges are there where Head observes and experiences the resistance to change while going for computerization.

45. Whether the quantity of manpower is reduced after computerization?

Concept –

Research survey has focused to obtain factual information about the experience of the Principals about the changes in several aspects that are brought after computerization in college office. It is expected that the number of persons required to do a particular job will be possibly done with the help of less number of people. This doesn't mean that there is reduction in manpower. On the contrary the saved manpower and man-hours can be utilized for some other creative and development type of work. Computerization doesn't result in reduction in manpower but it creates increased need for quality manpower that can give more logical and efficient services as per demands of competition in the market. So does the computerization save the manpower? What is the actual experience of the persons heading various colleges selected in sample of research?

Analysis –

	Experienced	Not experienced
Reduction in manpower after computerization	1	14

The principals of **6%** colleges have experienced that there is reduction in manpower after computerization and they have utilized the same for other innovative work.

The Principals of **94%** colleges have experienced that actually there is no reduction in manpower after going for computerization. This readings tell that people at large need not worry about the so called threat of unemployment, rather they need to devote completely to work in the age of automation.

46. Whether any specific measures were taken by you to start the computerization in administration of your college?

Concept –

As seen earlier computerization requires a specially formed policy regarding its implementation. Computerization started very casually doesn't go to waste but the positive impact on service efficiency can not be assured within a stipulated period. To study the impact of computerization on service efficiency, it is required to know, out of the colleges in selected sample, how many have gone for computerization strategically and how many have started just by procuring them i.e. without any concrete policy of its utilization. Also the effects in both the cases, where computerization is done methodically and where it is just started with its use in possible area, need to be observed. This will speak about the genuineness in framing a specific and thoughtful policy for implementing Information Technology in college administration. This information can be had from Principals of the colleges who are the key persons in framing the policy. It has been proved that computerization gives an assured effect in student related services in terms of improved quality.

Analysis –

	Taken	Not taken
Special measures for computerization	7	8

There are **47%** colleges who went for computerization following prescribed norms. They took specific measures for starting computerization in college administration. It can be said that there are 42% colleges who have realized importance of having a well-defined policy for computerization.

53% colleges are still there who didn't plan any thing for computerization but just started working with it.

47. If yes, please specify them in brief.

Concept –

As seen earlier computerization is not an activity that can be easily made successful without any planning. There are standard norms related with software engineering and system Analysis to start the development of any computer system. It was observed that some of the colleges have gone for computerization of their administration very methodically. Such colleges can prove to be models for the others to follow. It is observed that many colleges have realized the importance and necessity of taking specific efforts and measures prior to actual work. The information about these efforts can prove to be very useful for those where these measures couldn't be taken due to some and other reasons.

Analysis –

	Planning	Training	Motivation	Requirement analysis
Measures taken	5	4	3	1

33% of the colleges were found who have done proper “planning” to computerize their administration. **26%** colleges preferred to impart computer training to the staff supposed to work with computers as a part of preparation. **20%** colleges chose “motivation” as a preparatory step and this is the most important way of preparing staff for computer culture. All other ways followed without proper motivation are unreliable measures to start computerization. There were **6%** colleges found that have undertaken “requirement analysis” as a part of preparing the college administration for complete computerization.

49% colleges were not in position to share the information about the measures taken may be because of lacking in methodical approach.

48. What is the percentage of success about the measures taken?**Concept –**

Whenever any measures are taken to start computerization in the office of the college, those measures must be evaluated on the basis of expected results. The head of the institute i.e. Principal of the college is the first authority to assess the measures taken. It is not expected that 100% success is to be achieved in a very first attempt but the percentage of success must go on increasing as staff members work more and more with computers and more measures are taken to make it successful.

Analysis –

	25%	50%	100%	Not applicable
Success in measures for computerization	Nil	7	5	3

It may be noted that no college is in the category where the success percentage is 25% or less than that. So it can be concluded that every where the computerization has given at least few good results in terms of improved services to students. In **47%** colleges the percentage of success is 50%. In **33%** colleges the percentage of success is 100% and it is simply wonderful as they can serve as guidelines to the others remaining. However still there are **20%** colleges that are not in position to opine on this because of absence of computerization.

49. If the process of computerization has already been started in your administrative office, have you noticed any changes in the working environment?**Concept –**

It is very important to note and record the changes in administrative offices where computerization has already started. As a part of this percentage of success was obtained from the Principals first, and its further part is to know whether the Principals experience any change in working environment after introducing computerization. It is not sufficient that changes should merely occur but the top administrator should feel those changes and experience a comfort in his own routine work. In almost all sectors like Insurance, Banking etc. it is observed that computerization changes the working environment in a positive sense. The term “working environment” includes the physical environment as well as the harmony amongst the staff

members with improved interpersonal relationship. Naturally such an environment helps to improve the service efficiency of administrative staff at their individual level and ultimately it upgrades the service efficiency of an institution as a whole. So computerization can give better services if and only if it results in positive changes in the working environment.

Analysis –

	Changes observed	No changes
Any changes in work environment if computerization started	13	2

Observations are quite encouraging. **88%** colleges are there where the Principals have not only observed but also experienced the changes in working environment.

However there are still **12%** colleges where the changes have not occurred substantially enough so as to be experienced by Principals in terms of smoothness in information flow, improved services to students etc. Here the reasons of changes not being observed even after the computerization should be found out and corrective measures should be taken.

50. If yes, how these changes are?

Concept –

There are some colleges where changes are occurred in administration after computerizing it. The next step is to study these changes. The mere requirement of bringing changes is not enough. After computerization, the administration should change in positive manner. The changes should be sensed by staff, students, and administrators in terms of improved working environment, improved services and quicker flow of information respectively. The areas if any where the changes are not occurred in an expected way can be identified and reorganized properly in view of computerization. So the opinion of the Principals of the colleges where changes occurred about whether these changes are good or bad or neither carries prime importance in order to improve the service efficiency.

Analysis –

	Good	Bad	Neither	Not applicable
Nature of changes	13	Nil	Nil	2

There are **88%** colleges who experienced some changes in their administration after computerization. All of these 86% colleges along with their Heads experienced positive changes after computerizing their office procedures. So it can be concluded that wherever changes have occurred, they are positive changes. There are **12%** colleges still remaining where Principals are not in position to opine as changes are not substantial enough to form an opinion.

51. Is there any effect observed regarding the distribution of work due to usage of computers?

Concept –

Computerization brings flexibility in work distribution. Now-a-days in many places we observe single window counters for various services. One can approach any window for any type of work. There are no more separate window counters allocated for separate services. That type of

structure brings rigidity in administration. Computerization helps to minimize the person oriented administration and promotes system-oriented administration. In such a system every person becomes versatile in his or her work i.e. he or she can do any other work that is allocated to his colleague easily. Computerization results in eliminating watertight compartments in different tasks allocated to different staff members in administration. This offers more freedom to administrator of the college to keep available manpower rotating in various jobs that trains everybody for every task, ultimately improving the service efficiency.

Analysis –

	Effect took place	No effect
Effect / changes on work distribution	7	8

In 47% colleges, Principals observed the positive effects on work distribution in office. These are the colleges that are on the way of attaining 100% success in automation.

In 53% colleges there is no considerable change or effect on work distribution. They need to be reviewed and modified accordingly to bring more flexibility in work distribution.

52. If yes, whether these changes are good, bad or neither in view of improving the quality of work, speed of rendering the services etc.?

Concept –

The changes brought after computerization should be assessed in view of time required for rendering particular service to the students. If it takes same time for particular work even after computerization, then it is sure that something has gone wrong. The process needs some modifications so as to minimize service time. The Principal of the college should get feeling of improvement in quality of work. Just like the student is external user the Principal is an internal user of the administration needing some information from office administration system. The computerization of office should facilitate the decision support system to the Principal. If administration is computerized in this view, the Principal can be able to take quick and accurate decisions which ultimately helps to improve the service efficiency. All the direct and indirect users, internal as well as external users should experience the positive change in quality of services.

Analysis –

	Good	Bad	Neither	Not applicable
Nature of changes on work distribution	8	Nil	Nil	7

53% colleges are there who have experienced the changes in terms of reduction in time required for rendering particular services to students.

47% colleges are there who have not substantially experienced the change in terms of improved quality and faster services. From this and many of previously analyzed facts one can say that

wherever computerization has taken place, at least some good changes are either observed or experienced.

53. If the process of computerization has not started in your office what are the reasons of the same in your opinion?

Concept –

Research includes the study of effects in work where computerization has taken place. Research further goes in studying the reasons about why computerization is not taking place or not taking proper speed in some colleges. This study will give an information base to take corrective actions to lead the entire administration to complete automation. Some of the possibilities are explained here. Staff members are willing but they don't get proper directions about how to proceed. Staff may not be convinced about properly and their minds may not be tuned to computer culture and made aware about the advantages of computerization at individual and organizational level. There may be lack of motivation. In some places they may have financial problems in spite of good guidance and motivation. Some colleges are new and were observed to have inadequate space but on the way to solve this problem in near future.

The most obvious hurdle in computerization is the resistance of minds to adopt the change. And after all, all these colleges were consulted to know whether there are any other reasons other than those discussed.

Analysis –

Reason of absence of computerization	No. of applicable colleges
Lack of guidance	Nil
Lack of motivation	Nil
Lack of funds	Nil
Lack of space	Nil
Lack of positive attitude to adopt the change	1
Unable to specify	Nil
Not applicable	14

93% colleges were found where any of the reasons listed above was not observed by the Principal. In short all have gone with proper guidance, motivation and sufficient funds.

Only 7% Principals feel that still there is slight resistance in the minds of some staff members to adopt these newer work methods.

54. Are there any particular factors that are holding back the computerization in the offices of colleges?

a. Y – 1 b. N – 14

Concept –

There is also possibility of having some particular factors other than those listed by researcher and are proving to be hurdles in the process of computerization. This is the way by which such reasons will come in picture and may be corrected. Further it will help to point out the weaker areas that are overlooked at the time of prior preparation for computerization.

Analysis –

	Such factors present	No such factors
Whether any specific factors holding back the computerization	1	14

Some colleges (7%) were found where Principals feel that there are some factors that are holding back the process of computerization in the offices. It includes the reasons like lack of motivation in the minds of the staff members and this factor has proved to be problematic for computerization.

It is noticed that Principals of the 93% colleges in the sample opined that there are not any factors holding back the computerization other than those listed. This means that where the process has not expedited, there the reasons are known and are being attended to eliminate.

55. If yes please specify or tick on the probable reasons listed below.**Concept –**

The exact opinion of the Principals was tried to obtain so as to concentrate in proper direction for the improvement. For example in financial problems are holding computerization back then the thinking of administration can be directed towards the ways to make the sufficient funds available by some way for computerization. If the staff members are not mentally prepared then they can be motivated properly. The list of probable reasons was submitted to the Principals for their choice of opinion. This finding will provide a standard list of probable problems that can be later referred by any college willing to computerize its administration newly.

Analysis –

Obstacles in computerization	Number of colleges
Lack of interest amongst staff	Nil
Lack of motivation	1
Lack of training	Nil
Lack of enough funds	Nil
Lack of Management's support	Nil
Resistance to change	
Lack of enough time	Nil
Other (please specify)	Nil
Not applicable	14

There are 7% colleges where Principals feel that office staff is still not mentally prepared to adopt the use of Information Technology. This may be because of resistance to change and it is quite natural. These Principals felt the lack of motivation amongst the staff members to adopt the computerization.

There are 93% colleges where principals didn't experience any particular factor that is holding back the computerization. There fore it can be said that in almost all colleges there were no major problems found that prohibit the computerization of administration.

56. What measures you suggest and take to overcome these? (Please tick)**Concept –**

If it is observed that there are certain factors that are proving to be the obstacles in expediting the computerization of administration, the next step to be taken is to find out the reasons and then to think of the remedies. The study of the variety of views about the measures taken or to be taken by several Principals of the colleges in our sample then it can help to create a set of probable solutions to the common problems in computerization, especially the problems related with HR (i.e. human resource). The primary solution is the Principals should successfully convince the staff about the necessity of computerization and explain the how inevitable it is in the forthcoming days of competition in education. Next, the required training in the areas like motivation, technical abilities, communication skills, change management can be given so as to prepare their minds for the computerization. Misunderstandings if any in their minds should be systematically removed. The scheme of incentives can also be launched for those who gear up quickly for computerization. Enforcing them for new methods of work is the last but not least preferred way to do it but may fail to get whole hearted co operation of staff in computerization.

Analysis –

Measure to overcome obstacles	Number of colleges
Convincing the staff	1
Organizing training for staff	Nil
Giving incentives to learners	Nil
Enforcing	Nil
Not applicable	14

There are 7% colleges where Principals feel that “convincing the staff properly is the most practical and successful way to overcome the problems.

Where as the question of adopting some ways to solve such problems was not applicable to 93% colleges as they didn't face any problems which is quite encouraging situation.

57. Have you appointed any separate person exclusively to start & lead the computerization?**Concept –**

As seen earlier it is reiterated that computerization is not an activity that can be taken very casually and will be made successful. In other words it needs a well-defined and concrete policy to get the positive results. Many times due to some and other reasons it is possible that computerization can be started and tried to keep continued with available resources. This is somewhat wrong procedure because computerization needs special efforts, infrastructure, and manpower also. Whether the computerization is managed with available manpower, or any internal person is deputed for work or a separate person is spared for the same, indicates the extent of systematic approach particular college has taken to go for total automation.

Analysis –

	Appointed	Not appointed	Detailed internal person	Every body participates
Appointment of separate person	4	9	1	1

In **26%** colleges there is a separate person appointed for computerization of their administration. This percentage is definitely less but we can say that at least 21% colleges have understood and appointed a separate person realizing the need of separate manpower. In **60%** colleges the separate manpower couldn't be spared for doing computerization. In **7%** colleges they have detained one internal person for looking in to computerization in administration. In **7%** colleges they have developed such a system that every body participates in this activity and there fore they didn't feel necessity of appointing a separate person or deputing internal person separately.

58. If yes, what is the nature of his/her appointment?**Concept –**

Whether the person is appointed for computerization, nature of his appointment, these and many other parameters speak about the care taken while framing policy about computerization of administration. In many organizations there are two types of employees namely permanent and temporary. Commonly the temporary employees are appointed for specialized purposes like technical work. To appoint a permanent employee is a procedural task and may need a long period. Due to many administrative and procedural problems, now-a-days, temporary or ad-hoc basis staff is preferred because of minimum overheads. But it may affect the consistency of the automation project. Computerization is a long-term process and it needs a dedicated and stable staff to achieve the success. Whether the separate person is appointed or not, the nature of appointment speaks about the approach taken while looking at computerization. Permanent staff naturally stays with the college for longer time whereas temporary staff may keep changing. This may affect the consistency in improving the service-quality.

Analysis –

	Permanant	Temporary / ad hoc basis	Contract basis	Not applicable
Nature of appointment of computerization –I/C	4	Nil	Nil	11

There are **26%** colleges where Principal has appointed a permanent person for computerizing the administration. But there are **74%** colleges who have not appointed totally separate person to look after and coordinate the activity of automating the college-administration. This indirectly affects the quality of services for students

59. This person is working with your college for previous:**Concept –**

The various aspects of manpower involved in computerization process has direct impact on the output and that ultimately affects the service efficiency. If the person appointed to lead the

computerization is not with the institute for consistently longer period then the chances of getting expected results are bit minimized. Many times due to labour turn over the person keeps changing and every time a new person takes the charge, he tries to implement his own ideas. Further he may not aware of the previous developments with minute details that are necessary to know for successful completion of the project. So a vigilant management will appoint a person exclusively for computerization on a long-term basis to progress smoothly.

Analysis –

	< 1 year	> 1 year	Not applicable
Stay of computerization I/C with college	Nil	5	10

No college was found where the person is working exclusively in computerization for a period less than one year. So wherever the separate person was there to look after computerization, he was with the college for a period of more than one year. So manpower with minimum requirement is stable. Such colleges are **33%**. Whereas **67%** colleges are still not having a separate manpower for computerization.

60. Please tick on appropriate statement.

Concept –

It is widely accepted that to adopt newer methods of work like use of Information Technology requires proper motivation. Once this principle is accepted, the next question is how to motivate the people. There are standard techniques of motivation. Some sort of benefits at individual level should be offered to the employees. Naturally there should be some temptation to attract the people to work with computers. Now whether the working with computers should be viewed as a different and special work other than the normal duties the staff is expected to perform is a sensitive and administrative issue. But the answer of this question is changing over the period of time. There was a period when computers were new and then to work with computers was viewed as very special and highly technical job needing a special knowledge. Today, definitely this is not a picture. The use of computers is introduced not only in colleges but in schools also. This indicates how a computer has become a part of our life. Whenever the staff is entrusted with extra or special work different than that of the routine, the traditional method is to offer incentives. What are the views of the Principals about this issue? Whether working with computers should be viewed as specialized job or as a part of the duty?

Analysis –

	Incentives for computer handling be given	Working with computers be part of duties
Management's attitude towards computer usage	Nil	15

In real sense we can say that today it is the age of computer literacy. No Principal carries the view of giving incentive to office staff for working with computers. **100%** Principals of the colleges surveyed feel that to use the computers must be taken as a part of the duty to survive in the competition.

61. If “a” in above is true, have you formulated any system of giving incentives/rewards?**Concept –**

Whether the Principals feel that the incentives should be given in some or other form to the staff members show the interest in working with computers? This question should really be given a thought if we expect the people to adopt the computerization. Research includes the findings about whether there are any Principals who feel like that, if the answer is yes then whether they just feel that incentives should be given or they have gone ahead in formulating some scheme. When some college desires to start the computerization of administration it can study the schemes previously in force and design its own. Whether the college has designed scheme for incentives reflects many aspects about the policy of computerization. To assess impact of computerization on service efficiency of a college, its policy related with computerization needs to be studied in many angles. This is one of them.

Analysis –

	Scheme devised	No such scheme	Not applicable
Any scheme for incentives	<i>Nil</i>	Nil	15

A special incentive scheme is not formulated by any college as their Heads i.e. Principals strongly feel that working with computers will not be afforded to be viewed as specialized and highly technical job in future and there is no question of giving any type of incentives for the same to staff.

62. If yes, please give the details.**Concept –**

This is the way by which this research-study has tried to gather the information about incentive schemes in practice for the staff members who come forward to work with computers on their own. By the introduction of incentive schemes an environment of healthy competition can be brought. It helps to improve the individual performance of the staff members. In industry this method is traditionally followed. Now education is included in “industry”. So the change management, shifting to new technology should be done by a professional way so as to assure the expected uplift in the quality of services.

Analysis –

As seen earlier no college was found of the opinion of giving incentives for working with computers as it was viewed by everybody as a quite normal work. It shows that the percentage of computer awareness has been increased substantially and administration is fully aware of the fact that if we have to survive in the increasing competition in educational field there is no alternative other than treating the work with computer as a routine work. Also it was found that Principals are keen to test the knowledge of computers while recruiting new people in their administration.

63. If any separate person is not appointed, any internal person is fixed to handle this task?**Concept –**

In almost all colleges surveyed, it was observed that computerization of administration has been initiated everywhere. Off course the extent of their progress is different from college to college but there are very rare (almost none) colleges computerization was not at all initiated. But out of the entire class of the colleges where computerization of administration was initiated, only some colleges have appointed a separate person for the same. This tells that there are some colleges where the process of computerization has initiated but no separately dedicated person is there to look after the same. Then the question that obviously arises is how these colleges are running the show? How have they managed to carry on the computerization with available manpower or found some other alternative? This survey generates a valuable information regarding manpower status for the computerization of administration in under graduate education. Whether the colleges have entrusted the responsibility to any internal person?

Analysis –

	Internal person fixed	Internal person not fixed	Not applicable
Deputing internal person for computerization	7	3	5

47% colleges have detailed an internal staff member to be responsible for computerization.

20% colleges couldn't depute any internal person for looking after computerization due to variety of reasons. These colleges need to strengthen their technical manpower dedicated in administration. **33%** colleges are the colleges where computerization has not taken place substantially and there fore still it is not required to have a separate person for the same.

64. What is the nature of his responsibility?**Concept –**

This research survey has tried to find out about whether the colleges have spared the separate person for computerization. Again the method of manpower-recruitment speaks about the policy of particular college. The colleges who have appointed a separate person or spared any internal person exclusively for computerization can be said to be realized about the necessity and importance of methodic approach for computerizing their offices. Sparing totally a separate person indicates about a sincere approach and gives desired results. To spare a person is quite necessary because of labour turnover in computer field. Manpower-stability is the key factor in getting success in computerizing the administration. If any person already working in college is found eligible to lead the computerization, in spite of possessing the required abilities he can not give proper justice to the computerization because of many constraints like time available etc.

Analysis –

	Only computerization	Additional responsibility	Not applicable
Nature of responsibility of internal person	5	5	5

There are only **34%** colleges who have detailed an internal person and entrusted him exclusively the responsibility of computerization. These colleges can be said to be really cautious in automating their entire administration.

There are **33%** colleges who have fixed a staff member already working in the college and allotted an additional responsibility of computerization to him. But there are **33%** colleges still not having a separate person at coordination level to look after the process of computerization. This situation needs to be changed because automating the college administration is something beyond merely working with computers. Naturally it requires a separately dedicated manpower.

65. Did you face any problems in retaining the expert manpower in this field?**Concept –**

Earlier it has been mentioned that there is labour turn over in field of computers. Many colleges may be facing the problems regarding procuring good manpower in computers. These problems need to be addressed on priority basis as they have indirect link with service efficiency of college. In industry, special efforts are taken to retain good manpower as it is viewed as an investment for future. Any technology like Information Technology can not be brought in use without manpower of best quality even if all other requirements are available like computers, infrastructure etc. The manpower with highly technical skills is normally attracted to the industry than to the educational field because of many obvious reasons like best pay-packages, incentives etc. Now the education sector is passing through the age of revolutionary changes. Educational institute / college now will be treated as an industry. Henceforth an educational institute may require to generate the necessary funds on its own. Looking in to all these reforms, our under graduate colleges will need to bring all the facilities mentioned above as in industry so as to give a professional touch to the services rendered to the students who are the ultimate customers of the system.

Analysis –

	Problems are faced	No problems
Problems in retaining expert manpower	2	13

It was found that **13%** colleges face problems for maintaining the required manpower for computerization. However it is appreciable fact that **87%** colleges are there who do not face any problems in recruiting and retaining the skilled manpower in computers.

The class of 14% colleges need to enhance the facilities they offer to technical staff viewing it as an investment for best services to students.

66. If yes are you taking any specific measures to overcome them?**Concept –**

The colleges that are facing problems in retaining manpower should take the measures to overcome such problems. The factual information should be gathered about where the problems are observed, are they kept unattended for some period or the actions are taken to find out the solutions. This information will give an idea about the percentage of colleges that are keen in improving their services. The colleges finding problems should immediately think for their solutions. They should study and analyze the information about strategies followed by the colleges who don't face similar problems. The policies of the colleges where no problems are faced regarding manpower in Information Technology will help as solutions to the others colleges. So it is studies first that whether the specific measures are taken or not.

Analysis –

	Measures taken	No measures taken	Not applicable
Any specific measures to overcome problems	2	Nil	13

There are **13%** colleges who have already acted on taking required measures to ensure that college get good staff for computerization and it stays with the college for the longer period enough to improve the services to internal and external users (i.e. students) of the system. These colleges are trying to reduce the labour turnover.

There are **87%** colleges found who don't face any problem about manpower and they didn't require to take some special measures for the same.

67. If no, what methods did you adopt to retain the experts?**Concept –**

If the computerization needs to be successful in real sense i.e. beneficial to the students, it must be handled by the expert manpower. It has been elaborated earlier that there is labour turnover and hence the problems in retaining the expert manpower required for computerization of college-administration. The standard incentive schemes that are in practice in industry may not be feasible to bring in education as they are but similar schemes can be developed for the non teaching and administrative staff members of the college. Incentives doesn't necessarily mean the monetary benefits to the employees. The better work environment, freedom of work, liberty to implement innovative ideas, opportunities for growth are also equally important incentives as like financial benefits. Unless and until colleges' managements and principals realize the importance of taking special efforts so that the skilled manpower in Information Technology stay with the college for a substantially longer period, the computerization will not positively affect the service efficiency of the college.

Analysis –

	Freedom & good atmosphere	Good pay package	Not applicable
Methods adopted to retain experts	5	Nil	10

In **33%** colleges the Principals prefer to offer freedom of work to the employees. They try their best to provide the employees with the best working environment and the harmony amongst the staff members. They take care about appreciation of new and innovative ideas and are rewarded also. Many times due to certain constraints it may not be possible to offer financial incentives.

In **67%** colleges it was known that as they didn't face the problems related with technical manpower the issue of taking measures to retain the same was out of question.

68. If you demand for some information, to assisting administrative staff, is it made available immediately to serve your purpose?

Concept –

The Principals and other administrative officers in the college may need variety of information for various purposes. It is mentioned earlier that the computerization must facilitate availability of decision support system for administrative officers in the college and especially, initially for the principal. Many decisions pertaining to framing certain policy requires some data. The data may be in form of figures, previous policy documents, office circulars, government resolutions, rules, regulations and resolutions made by several authorities like Government, University, University Grants Commission etc. Decisions taken at high level are indirectly related with and affect the infrastructure, funds and ultimately the way in which the student-related services are rendered. A quick support of information availability enables the Principals to take quick and accurate decisions that are finally beneficial to the students in terms of faster services to their requests / queries.

Analysis –

	Immediate	Delayed
Availability of information when demanded	15	Nil

In **100%** of the colleges the Principals were found quite satisfactory about information services available to them from assisting administration. This is the most favorable picture in view of computerization. The reason of this is the systems can be computerized successfully if and only if the information management is efficient. There can't be effective computerization if the administration has to deal with mismanaged information.

No Principal expressed about the time span required for their administration to provide the information demanded as and when required.

69. Whether the web site of the college is designed & made available on Internet?

Concept –

The fascinating development in the field of electronic communication can be rightly utilized for improving service efficiency of any organization. The competition observed in the field of

education was never seen as severe as it is observed today. To sustain this competition, an undergraduate education needs to adopt revolutionary changes in its administrative systems. The flow of students, henceforth, will be attracted only to those colleges that are able to give quality-education and quicker services. This research is focused on the administration and student-related-services. The administration and its services are now required to be highly student-friendly i.e. formulated by keeping “student” at the center. The comfort to the students is given top most priority. The customer is ruling factor in every field today and education can’t be exception to this principle. Today’s student should not require to stand in queues for the services like purchase of application form, verification of application form, payment of fees etc. Internet is the technology that has brought entire world together. The college can put its website on Internet. It should give the overall information of college, various courses conducted, facilities for filling application form by “ON LINE” method (i.e. through internet). Various links can be made available on website. So whether the college has its own website or not is an important question. Majority of student-related-services can be managed with the help of Internet.

Analysis –

	Available	Not available	In progress
Website of college	9	Nil	6

60% colleges have their website put on Internet. This percentage must rapidly increase. However **40%** colleges, presently don’t have their websites but are in progress to make it available on Internet. It should be noted that no college was found that has not touched this aspect at all.

70. Which were the initial reasons behind purchase of computers?

(Please tick on one or various reasons whichever are applicable)

Concept –

It has already been explained that just to bring the computers in offices doesn’t amount to computerization. Many times computers are brought only because of the reasons like funds are available, budgetary provision is to be exhausted etc. This is certainly not a bad practice but there should be a thoughtful intention behind the purchase of computers. Every where there can not be the same or similar reasons behind the purchase of computers. The analytical study of these reasons is an important survey. The intentions behind bringing computers speak about the probability of getting success in improving service efficiency. In majority of places now-a-days, computers are brought to follow trends of others and to improve aesthetic value of the office. Many times they are purchased because of ready availability, economic prices and attractive schemes. But the service efficiency and impact of computerization on the same depends upon utilization of special abilities of computers rather than using it just for word processing. So it is presumed that a thoughtful purchase of computers is normally followed by further steps in planned computerization. Let us see the variety in reasons that were initially behind the purchase of computers.

Analysis –

Initial reasons for computerization	Number of colleges
Increased work load	2
Just interest	1
To improve efficiency of office staff	6
To go for computerization step by step	6

In **13%** of colleges computers were brought because of increased work-load. Here these colleges might have realized that voluminous data can be efficiently and comfortably handled with computers. In **7%** of colleges computers were brought just out of interest.

In **40%** of colleges computers were brought to improve an efficiency of office-staff. These colleges intend to improve student-services since beginning with computers.

In **40%** of colleges, they planned to computerize their administration step by step and in this view they purchased computers.

71. Whether an impact is observed after computerization in terms of job roles?**Concept –**

We have already seen that computerization brings the flexibility in work distribution. Normally in any organization the “job-roles” of an individual employee are normally fixed as far as possible. This is done to remove ambiguity in work distribution and the accountability of staff members. If the job-roles are not clearly defined then no person can be particularly held responsible for particular work. The concepts of “job-roles” and “work distribution” are closely interrelated. If the computerization brings flexibility in work-distribution then it must flexibility in “job-roles” to be defined amongst various staff members. The flexible job-roles always cause a positive impact on service efficiency of any educational institution. The flexibility in job-roles promotes to create a system oriented administration than a person oriented administration. Absence of any person will not affect the service ability of the administrative office of the college.

Analysis –

	Impact observed	No impact
Impact of computerization on job-roles	12	3

In **80%** colleges a substantial impact was observed in terms of job roles. Off course this impact was positive as the rigidity in their administration was totally removed after computerization.

In **20%** colleges computerization might not have taken an enough speed so as to experience any positive impact on job-roles. But, there are hopes to observe and experience it in near future.

72. Do you feel that work efficiency of the office has been improved after using computers in routine work?**Concept –**

The overall experience and observation of the principal as a head of college carries a prime importance as he is not only the Principal but also one of the users of the administration as a

system. There fore the Principal must experience a smoother information flow, availability of an easily accessible decision support system, quicker assistance of any information that is urgently required after computerization. The services mentioned above that are frequently require by any Principal are the indicators of improved service efficiency. If these positive changes are not observed then it is confirmed that there is a necessity of modifications

Analysis –

	Efficiency improved	Efficiency unchanged
Change efficiency after computerization	15	Nil

The Principal of every college that were surveyed, i.e. **100%** of the Principals opine that there is work-efficiency of their office has been improved after computerizing the routine administration and services. So at least it can be concluded that computers have not brought any un acceptable reform at any college.

73. What is the source of this opinion?

Concept –

In earlier point it is explained that the over all opinion of the Principal about the service efficiency of college-administration as a whole, after computerization carries prime importance. Formation of any opinion has a specific background. The opinion is effect of variety of inputs like own observations. But to have a complete opinion, only observations are not necessary. Every Principal may have his own ways to form an opinion and may have his own criteria for assessment of the administration. So after gathering the views / opinions of principals, next step is to know about background of formation of their opinion. The sources of their opinion were studied. The own observation is the most common and easy source of the opinion. The staff members do interact with each other in an informal way. So in such interactions they naturally express their honest opinion with enough freedom. Every principal receives such informal feedbacks and has informal conversations with the staff. The feedbacks received in such discussions are very important. This is another example of input for formation of an opinion. The last and most scientific method of forming an opinion is “qualified evaluation” of the working system before and after the computerization followed by their comparison.

Analysis –

	Qualified evaluation	Informal feedbacks	Own observations
Source of opinion about efficiency-change	3	11	8

53% of Principals have formed their opinion on the basis of their own observations. **73%** of Principals have an informal feedbacks from the staff members and other stake holders of the system.

13% Principals have carried out qualified evaluation for the same. All this indicates that there are Principals who have used more than one way to form their opinion about improvement in service efficiency.

6.1.4 COMPUTER CENTRE I/C – (Q. No. 74 to 95)**74. Please opine about the present investment in your computer setup.****Concept –**

Every college is supposed to have a centralized computer center looking after the computerization and information technology support to the administration and coordinating the activities like campus-networking etc. The computerization of administration is expected to be led by the In charge of this computer center. The governing and assessing authorities like University Grants Commission (UGC), National Assessment and Accreditation Council (NAAC), National Board of Accreditation (NBA) are now-a-days insisting on having such a centralized computer center considered here. The staff member heading the computer center is viewed as a key person while computerizing the administrative office of the college. His views should be given importance while framing any policy about the administration. So it is an attempt to find out the prima-facie feed back from the heads of computer center about the computer facilities available to them. This feed back has a direct impact on service efficiency of any college as good service efficiency can come in existence if and only if all the facilities are provided as per requirements of “Computer Centre Incharge”. This person may hold different posts from college to college like System Analyst, Programmer Analyst, EDP (Electronic Data Processing) In charge etc.

Analysis –

	Insufficient	Sufficient	> Sufficient
Present investment in computers	2	12	1

There are **13%** colleges where computer facilities are insufficient that that are required to improve the service efficiency to a substantial extent.

There are **80%** colleges where computer facilities are adequate. An interesting point to note is there are **7%** colleges where computer facilities are more than the sufficient.

75. If “a”, whether any measures are being taken to make it sufficient?**Concept –**

It is already seen that in 14% colleges the computer facilities made available to computer center in charge are in sufficient. Now it is assumed that colleges that are keen to improve the quality of student-related-services will immediately think of making these facilities ‘sufficient’. So whether the measures are being taken to fulfill the requirements of computerization or not will indirectly explain about the service efficiency and the impact of computerization on the same.

Analysis –

	Measures are taken	Measures are not taken	Not applicable
Measure to make it sufficient	2	Nil	13

Even though there are **13%** colleges where computer facilities are inadequate, the scenario is quite satisfactory as the measures are being taken in all these 14% colleges to complete the requirements of computerization.

For **87%** colleges no measures were necessary as their computer facilities were already at sufficient or more than sufficient level.

76. Whether LAN (Local Area Network) is installed?

Concept –

Computer network is the most commonly used technology in almost all organizations today. It facilitates sharing of central database and the expensive hardware also. The best example of utilization of networking technology for convenience of customers is railway reservation system. The main database of vacant and booked seats for all destinations is maintained centrally and shared by all window computers. One can get booking of any destination on any counter. In a college office there is activity wise distribution of work in the unit that handles all the work related with students and this unit is commonly called as “students section”. There are separate counters for the activities like filling an application forms, getting those forms verified and signed, obtaining various types of certificates, payment of fees etc. These activities are allotted to different staff members. If any particular person is absent then any other person cannot give those services in absence of original person. Computer networking infrastructure like Local area Network (LAN) helps to eliminate the need of activity-wise distribution of work.. Therefore it is elaborated earlier that computerization causes positive impact on work distribution. The “master database” of students can be created, updated from time to time and maintained centrally on server. It can be made available on all computers at window counters through a network.

Analysis –

	Available	Not available
Local Area N/w	12	3

In **80%** of colleges LAN is installed. i.e. colleges having network facility are more than those who do not have it. **20%** colleges still do not have networking facility in their campus. Therefore there are some colleges who have started computerization but still do not have LAN in the campus. They need extensive training on concept, usage and advantages of computer networks.

77. If yes, your computer center connected with all other departments / units in the college through the network?

Concept –

The set up including number of computers connected by means of computer network is very common now a days. The intelligent and easily installable and usable network software along with supporting hardware is readily available in the market. It is explained earlier that the capabilities of computers should be utilized fully that are much more beyond word processing. The same analogy applies to the networking facility. Just to connect the computers via a network cable doesn't give any considerable impact on services to students. The advantages of computer networks are much more beyond just to communicate between the two or more

terminals. The networking facility must bring entire campus of an educational institution together logically. The serviceability of administrative office naturally depends on whether the academic and administrative sections on the campus are connected to each other through a computer network or not. There are many reasons for this. To entertain any particular service needed by student, office may require to refer variety of information depending on particular request and at each and every time all the information needed may not be available with office and may be available in a scattered nature with several departments. So services needing such information bases can be efficiently given only by maintaining a central data base on the server and sharing that database with all the computer terminals where student approaches for particular work.

Analysis –

	Established	Not established
Connectivity between computer center & Deptts.	6	9

In **40%** colleges the various academic and administrative sections (such as establishment, accounts, students section, training and placement etc) are connected to each other via computer network. However in **60%** colleges this connectivity is not yet established. This means that out of the colleges that have network, only few have connected the various units on their campus by network.

78. Whether the Internet, E-mail facilities are available?

Concept –

Today's age is age of communication technology. It is stated earlier that the progress in electronic communication technology has brought the world more nearer than it was in past. So a service oriented administration must have the basic facilities of communication like e-mail, Internet etc. The college can give several services through Internet and many routine type of communications can be efficiently handled through e-mails. It saves time and money also. Further it is considered as the most reliable mode of communication today. Many colleges are establishing cyber cafes in order to provide Internet surfing facility to their students. They need not leave the campus for any sort of facility or service. E-mail facility can also used for internal communications like sending circulars, notices of meetings etc. which indirectly helps to promote the overall efficiency of the college. So the availability of these most basic type of communication facilities is surveyed here.

Analysis –

	Available	Not available
Internet & E-mail facility	15	Nil

100% of the colleges surveyed have Internet and e-mail facilities available for administrative use. It means all the colleges have understood the importance of these basic facilities.

79. If yes, do you use them while communicating with external agencies (i.e. colleges, University etc.) during official work?

Concept –

The study is concentrated not only on analysis of computer facilities available but also its utilization in daily administrative work related with student-services. In earlier point we have seen that 100% of the colleges selected in the sample have Internet and e-mail facilities. Just existence of facilities doesn't assure good services. Many times, especially in case if Information Technology is concerned the installations of various technologies are done enthusiastically but they are observed to be in under utilized condition. This may be because of lack of proper training about the power of Information Technology, confidence about the technology etc. Any technology, if is not rightly utilized for benefit to the stakeholder, can be said to be fruitless. Financial and other investment in technology must be encashed in terms of comfort and convenience to the customer, i.e. "student" in case of education. So, whether the colleges use Internet and e-mail facilities while making an official communication with several external agencies like University Grants Commission, Universities, Government, Directorate of Technical education. These authorities demand variety of information / statistics from time to time and on urgent basis. Such demands can be entertained without any administrative delay if the database is stored centrally, report generation software is available, and off course e-mail facility is there.

Analysis –

	Done	Not done	Done sometimes
Use of e-mail in communication with outside agencies	6	3	6

40% of the colleges make a regular use of electronic media for official communication with outside agencies. **20%** of the colleges still do not use e-mails for official purpose.

40% of the colleges use Internet and e-mails "sometimes" for official communication.

80. Whether the separate library of computer related books, manuals is maintained locally at computer center?

Concept –

This is regarding how well equipped the computer center of colleges is. The computer center of college is the supporting unit to the departments of the college. It provides the technical and other support needed by various departments along with administrative office. It is the backbone of campus computerization. To provide all necessary services to various units of the college, it should be perfect in terms of hardware, software facilities and other technical manuals, literature etc. One of the responsibilities of this computer center is to impart training to the office staff about the computerization. It should maintain central MIS (Management Information System) for the college. To handle all these activities, computer center should have important books on information Technology, user manuals of branded software and hardware equipments, technical journals on I.T., course material for staff-training in form of hard copies, floppies and CDs.

Analysis –

	<i>Developed</i>	<i>Not developed</i>
Separate library in computer centre	7	8

In **47%** of colleges, out of those having computer center have maintained a technical library centrally. **53%** colleges have the computer center but they make use of main library only. They don't have a separate library maintained in computer center. These colleges should strengthen their central computing facilities.

81. What method is adopted for maintaining the hardware?**Concept –**

The arrangement made by college to take care of computers and its peripherals need to be studied carefully. Any break down in the hardware machinery may cause inconvenience not only to students but also the staff members. The working staff members can not be expected to be knowing everything in hardware-troubleshooting. They may be trained for preventive maintenance and general care to be taken while working with computers. The failures of peripherals like printers are common and directly stuck up the services given across window type of counters for students. Wherever there is public interaction at large, for example students, there should be a troubleshooting system in working condition for twenty-four hours to avoid sudden inconvenience to students.

Analysis –

	<i>Separate H/W engineer appointed</i>	<i>Annual maintenance contract outside</i>
H/W maintenance policy	1	14

Only **7%** colleges were found where a separate hardware engineer is appointed to look after the hardware of entire college campus. This is an ideal situation.

A normal practice is to give annual maintenance contract to external agency to take care of the hardware. **93%** of the colleges have followed this way.

82. What types of printers are used in office?**Concept –**

It is the next part of the survey of the hardware facilities in the college offices as it is presumed that the hardware and software facilities indirectly indicate about approach of the college management while looking at computerization as a tool for upgrading service efficiency. The technologies in printing went on developing from dot matrix type of printers to desk jet, ink jet and now laser jet printers, colour printers etc. Today, the most user friendly printers offering wide range of fonts and minimum manual intervention are available in the market in an economical prices. So the type of printers used in the offices also affect the quality of services given to the student. For example a certificate like bonafide certificate printed on a laser jet printer will definitely have a better presentation-value than the same with dot matrix printer. Further issue of certificate can be done in lesser time with laser jet printer than the same with

any other type of printer. Many such examples can be given where quality of and time for printing play an important role in services' quality.

Analysis –

Type of printers used	No. of colleges
Dot matrix	8
Ink jet	7
Laser jet	12
Color laser jet	3
All	2

In **53%** colleges, dot matrix printers are used. In **47%** colleges ink jet printers are used. In **80%** colleges laser jet printers are used. In **20%** colleges colour-laser jet printers are used. However there are **13%** colleges that have all these types of printers available in their offices.

83. Do you send your staff for training programs / seminars to keep them updated and conversant with current developments in the field of technology?

Concept –

The non-teaching staff members working in the office should be continuously kept in touch with the recent trends in Information Technology. The systems those are developed today may become obsolete tomorrow due to advances in technology. In order to avoid the lethargy and mental fatigue amongst the staff members they need the exposure to out side world. As a change they must be given some new experiences through which they can have an opportunity to learn something new. The expenditure on sending the staff for seminars and training programs is an investment for future as their knowledge is updated which ultimately helps to improve their serviceability. It is again re-iterated that computerization needs a concrete policy including training as an activity to be handled methodically. College should make separate provision in annual budget for sending the staff for technical seminars. Today it has become necessary to strengthen the administrative wing of every college and a special attention is required to be paid towards inputs to non-teaching staff as they are the actual service providers to the students.

Analysis –

	Sent	Not sent
Sending staff for I.T. training / seminars etc.	9	6

In **60%** of colleges administrative staff is regularly sent to attend various seminars, training programs, conferences etc. to keep them in pace with recent trends in Information Technology.

In **40%** of the colleges this practice is not followed due to variety of reasons.

84. Do you receive the service demands regarding computer – related services / solutions to operational problems in routine working with computers?

Concept –

It is explained earlier that computer center considered here is viewed as a central unit of college that guides the other departments / sections for computerization. It provides I.T. services to other departments as per their requirements. In this type of set up, various departments are

supposed to forward their demands about computerizing certain activities / processes in their departments that are presently carried out manually. Then the computer center is expected to study their demands, analyze the requirements and keep its record. Like this, every department should forward their I.T. needs to the center. The computer center should maintain and study these records of service-demands. It should decide the priorities of processes to be computerized in consultation with the competent authorities like Principal / Management etc. After fixing the priorities the center should start computerizing the processes one after another. So let us see, wherever the computer center is established with this concept, in how many colleges, the center receives demands of computerization from other departments. It will also give an idea about the colleges where departments are also keen in automating the departmental work..

Analysis –

	Received	Not received
Service demands from other deptts.	5	10

In **33%** colleges, computer center receives the “I.T. service-demands” explained above whereas in **67%** colleges this type of communication between centralized computer center and various departments / sections is still not observed.

85. If yes, whether these demands are verbal or in writing?

Concept –

A systematic machinery of computerizing administrative processes in the office and other departments should keep on making documentation of the demands mentioned in earlier point. If the departments are keen on keeping record of their requests for I.T. support, they should forward the same in “writing” to the centralized computer unit. It is possible that many times verbal demands are taken casually than those in writing. So every body in the college must be serious enough about getting the services computerized. This includes both service-requesters and service providers.

Analysis –

	Verbal	Written	Both	Not applicable
Way of putting demand	5	2	2	10

In **33%** colleges the demands are sent to computer center verbally. In **13%** colleges they are sent in writing. In **13%** colleges both methods are in practice.

In **67%** of colleges this concept couldn't be made applicable because of overall volume of work being too small to require this type of an arrangement.

86. Which type of demands, are normally attended on priority basis?

Concept –

	Verbal	Written	Both	Not applicable
Demands preferred to attend	1	3	2	10

What is the general policy of the colleges to entertain the service-requests for computerizing the routine processes in various departments? An information about the colleges where the demands are taken in writing, verbally or both is already taken. Now whether the computer center entertains only the written demands on priority basis or also the verbal demands are entertained on priority basis. Off course this question arises in case of a college having very wide campus and large number of department where there is showering of I.T.-service demands on computer center. Number of demands is large enough to require the computer center to decide the policy of priorities.

Analysis -

In **20%** colleges only written demands are taken in to account. This is because administration feels that any department should be responsible for the request they have made to computer center.

In **13%** colleges both types of demands are entertained the frequency and quantum both being too small.

In **67%** colleges this question doesn't arise because of many reasons like too little frequency of demands, less number of departments etc.

87. Do you maintain a catalog of "demands for computerizing the routine activities", department / section wise?

Concept –

Ideally it is assumed that computer center is a central unit that keep on receiving the demands from other departments for getting their departmental / sectional activities computerized. This computer center i.e. its Incharge is authorized to analyze these demands and scrutinize them so as to take up the computerization of them. A very standard system should maintain the catalogue of these demands as and when they are received from particular department and should reply to the department concerned. It should also guide the departments about how to study the present systems and reorganize them to raise the demand for computerization.

Analysis

	Maintained	Not maintained
Catalog of "demands of computerization of routine activities	2	13

Only 7% colleges are following the method of maintaining the catalogue of the demands explained above. In the large class of **93%** colleges, their computer center doesn't maintain such type of records / lists. The reasons are clear. The total volume of computerization may be too small to maintain such catalogue. Due to rare frequency, this method of "catalogue" may not be felt necessary. But the system where this record has been maintained the administration is automated in view of complete computerization of campus. It keeps synchronism in computerizing various departments of a single college.

88. Have you prepared the timetable for computerizing the entire administration of the college, department wise, and submitted to the management?

Concept –

Computerization of college administration is a planned activity. So in order to get the expected uplift in student-services there must be proper planning before going for computerization. Planning reduces probability of failure. The colleges that are having a long term and concrete plan to computerize its administrative office, step by step can offer better and better comfort to the students and that is the basic aim of computerizing the administration. The “computer center In charge”, in consultation with the higher authorities, should study the computerization-needs of every department. The requirement analysis of each department be carried out. On the basis of this the college may prepare a systematic timetable of computerizing various departments and administrative units of the college. Such a timetable helps to minimize the deviations from the working methods that are fixed in view of computerization.

Analysis -

	Prepared	Not prepared
Time table for computerization	9	6

In **60%** of the colleges, computer center has sat down and prepared this timetable. Presently they are executing the activities as decided in the timetable. In **40%** of colleges this timetable could not be prepared. They may not have activities sufficient in number so as to need a timetable for it.

89. Have you developed a separate system for handling such demands?

Concept –

Wherever the frequency of “I.T.- Service - demands” are regular, a college should establish a separate machinery to handle these demands. Otherwise there is always a fear of remaining those demands only on paper and not in practice. This investigation is made to study whether computerization exceeds the limits of paper work or not. The demands of various sections in the administration cannot be attended on ad hoc basis. It doesn’t result in any noticeable change in services. So it is presumed that there should be a separate machinery to handle the same.

Analysis

	Developed	Not developed
Developing a system to handle demands	3	12

In **20%** colleges there is a separate machinery to attend the service-requests explained above. In **80%** of the colleges this system is not in the practice may be for similar reasons that are explained in previous point, i.e. too little frequency of receiving the requests for computerization. But these colleges will need to have a separate system for computerizing their units in future.

90. Have you spared the separate manpower within your unit only to address the needs of other departments in your organization?

Concept –

The computer center is supposed to have adequate staff to address the needs of various departments. Computer center staff includes hardware engineers, programmers, system analyst, database administrators, network engineers etc. These are the posts that are expected to be in practice in a full-fledged computer center. This manpower enables to complete the computerization without taking help of any out side agency. The reputed educational institutes like I.I.T.s (Indian Institute of Technology), R.E.C.s (Regional Engineering Colleges), I.I.Sc. (Indian Institute of Science) have such type of computer centers centrally looking after computing facilities of entire campus. The personnel in such computer units are well equipped as explained above. They can dedicate the separate manpower to the needs of internal units because of sufficient manpower. They can depute a separate person working at coordinating level amongst all the departments and computer center. So computer center is expected to spare a separate person just to address the needs of other departments.

Analysis –

	Spared	Not spared
Sparing separate manpower to coordinate with departments	5	10

In **33%** colleges, there is a dedicated staff in computer centers only to take care of computerization-needs of other section. But in **67%** colleges such an arrangement can not be done due to some and other reasons that will be seen later.

91. If no, what are the reasons?

Concept –

It is genuinely accepted that there must be a separate person within the computer center to attend the needs of various departments in the college. If this facility is there then only there can be effective up gradation of the services rendered to the students otherwise the plans remain only on paper. But it is quite possible that many times to spare a separate computer person only for departmental needs may not be possible. So wherever this is observed, it is tried to find out the reasons of inability of the college to spare separate manpower. It will also indicate about whether colleges have realized the importance of dedicating an enough manpower to substantially improve the student-services' quality.

Analysis –

	Insufficient manpower	Not needed substantially	Not applicable
Reasons of inability to spare separate person	1	9	5

In **7%** colleges this has not been done for a very obvious reason that manpower is inadequate. In **60%** colleges it was felt that to spare a separate manpower will under utilize the same, as the

frequency of service-requests was too small. In **33%** colleges it was found that a separate person was appointed for computerization work of various departments.

92. If yes, do they visit various departments periodically or only when certain problem / service demand is reported?

Concept –

This factor arises for those who have spared a separate person within the computer centre to address the needs about I.T.-services of other departments. If the separate person is available then both the departments and that person are supposed to keep close and continuous interaction with each other to speed up the process of computerizing the administration. If the coordinator from computer center keep on visiting the departments on rotation basis then he is continuously in touch with the needs and working problems in departmental administration. The service efficiency of an administration where computer center visits departments periodically is obviously somewhat better than the places where computer centre's person visits only when problem is reported.

Analysis –

	<i>Periodic visits</i>	Visits when problem reported	Not applicable
Follow up with departments	3	2	10

In **20%** of colleges computer center visits the various departments periodically to solve their problems and guide them in computerization. In **13%** colleges the computer center visits to any particular department only when certain problem is reported. This may be because of considerably less frequency of arising a problem. In **67%** of colleges this aspect was out of question as they outsource their service needs i.e. they have entrusted the job of computerization support to an out side agency. This is also a traditional procedure but gets success if the agency has made a proper "Requirement Study" for the college administration.

93. Have you developed any software packages for any individual department(s) for their internal use in daily work?

Concept –

The colleges now a days are having number of computers and standard software packages irrespective of the courses they are running. This means that computer infrastructure has no more been a need only of professional colleges. Looking in to all this it is presumed that colleges should be capable of self-dependent at least partially, regarding their I.T.-needs. The college will certainly not afford to call an outside person for every small problem arose. It has also been stated earlier that almost all colleges have faculty knowing computers now a days. We have also seen that an ideal computer center should have programmers, analysts, networking-experts etc. So such computer centers can study the administrative procedures and develop small software packages to use in routine work. It saves the cost of outsourcing the development work.

Analysis –

	Developed	Not developed
Application S/W for departmental use	3	12

In **20%** colleges this type of “in house software development” takes place for internal use. In **80%** colleges this in house development is not taking place. The reasons may be lack of adequate software and hardware facilities, absence of expert manpower in programming etc.

94. Which method do you recommend for computerizing the administration of the college?**Concept –**

As the computer center is expected to be capable of developing the application software for various departments / sections of the college, the factual information was gathered regarding how many are there who really develop packages independently and how many are there who prefer to outsource the development-work outside. Both alternatives i.e. in house development and entrusting to outside agency have pros and cons. But in house development is the need of future. The computer center staff naturally knows the administrative system of the college better than the outside agency. An outside agency has a professional skill and gives results provided they study the college administration system properly. Other way is computer center staff can be upgraded to acquire technical and professional skills by imparting suitable training to them.

Analysis –

	In house	Outside agency	Both as per needs
S/w development policy for administration	8	6	1

In **53%** colleges in house development is preferred and implemented also. In **40%** colleges the software development for college administration is entrusted on outside agency.

In **7%** colleges both alternatives are followed as per the nature of work and other circumstances.

95. Do you conduct regular meetings with other departments?**Concept –**

The computer center considered here is supposed to keep close and continuous liaison with the departments to understand and study their needs for computerization. The basic working system of college should include the regular meetings between the technical staff and the constituent departments of the college. The administration where this interaction is close and regular they can provide more efficient services to the students. To create a central pool of information in form of shared “master database of students”, such meetings are quite necessary.

Analysis –

	Conducted	Not conducted
Regular meetings with departments	13	2

In **87%** of colleges the regular meetings between the computer center and departments / administrative units are conducted. In **13%** of colleges there is no tradition of such meetings as it was not felt necessary and too little frequency of needing the services in some colleges.

6.1.5 ACCOUNTS SECTION - (Q. No. 96 to 107)

96. Are you aware of the importance of computers in smoothening accounts' work?

Concept –

It has been tried to find out whether the personnel working in accounts section of the colleges is actually aware of importance of computers in their daily work. The staff in accounts section will wholeheartedly involve in the process of computerization only when they are rightly convinced and are made aware about the capabilities of computers in smoothening the accounts work. In many places, even today the traditional procedures are followed in handling the accounts work, keeping various types of records etc. As the finance is the vital issue, the mindset of people may not be much inclined to switchover to the newer methods especially like computerized accounts procedures. But people now a days need training first to get convinced about how computerization can eliminate laborious part of routine work and it can surely relieve them from playing with number of calculations frequently. Further it can relieve them from the burden of remembering many things / numerical information etc. This is the biggest advantage of computerizing accounts systems to improve the service efficiency of staff both at individual level and on students' front. Today to know the strength of computers in routine work is part of general knowledge. So let us see whether this general knowledge is spread every where in undergraduate colleges or not.

Analysis –

	Aware	Not aware
Awareness about importance of computers in A/C work	15	Nil

Yes. Every body working in accounts department of colleges is fully aware of the need and importance of computers in accounts. In **100%** colleges staff was found fully informative about role of Information Technology in their daily work.

97. Have you received a formal training on “Computerized Financial Accounting”?

Concept –

An importance of training is well known in every field. Training is one most important input needed to be given to staff members in educational administration to boost their service efficiency. In the field of accounts, computerized financial accounting (C.F.A.) is becoming very popular day by day and it has no more remained very strange to common staff working in college office. Accounts being very crucial part of administration, need special training of staff on computerization of accounts procedures in daily work. It is obvious that people may prefer to believe and follow the manual procedure for safety purpose. Accounts section handles an important and many times confidential data. So the purpose of training is not only to use computers in accounts but also to convince the staff about the reliability of computer software. Now a days the application software packages on computerized financial accounting and the

short term courses on CFA are easily available. That is why it is genuinely felt that every college should go for such training.

Analysis –

	Training imparted	Training not imparted
Formal training on Computerized Financial Accounting	12	3

In **80%** colleges, their accounts staff has received a formal and extensive training on computerized financial accounting. In **20%** colleges, any such training has not been conducted. The reasons are lack of initiative, unawareness of readily availability of CFA training etc.

98. If yes, who imparted that training?

Concept –

It is critically studied that whether the college has taken methodical approach or just a casual approach while computerizing the college administration. The approach or attitude of the college matters much in rating the service efficiency. The college should make enough expenditure on training viewing it as an investment in future. The better services always help to increase the demand of college amongst the students. So the training should not be given just for the sake of name but it should be taken as most important tool to improve the service efficiency.

So whether the training was given by professional agency or not speaks about the sincerity of college Management about the training. College can arrange an in house training provided that it is capable of professionally arranging the same as far as faculty, quality of course material is concerned. An agency whose profession itself is training, can study the requirements and can design a perfect training program to fulfill the needs of particular college.

Analysis –

	Computer Dept. of college	Outside training agency	Not applicable
Source of training	4	8	3

54% colleges imparted training by calling outside agency after telling them the requirements. **26%** colleges managed training with help of their own faculty. This is good method and will be needed frequently in future.

20% colleges are there, where accounts staff still didn't get training on CFA.

99. Do you work on computers for official purpose?

Concept –

Just by observing the computers in the offices it cannot be concluded that it is computerized. Further, merely by finding that staff members use computers daily, it cannot be ascertained that computerization is done in the office. There are various reasons to this. Now a days, at many places. Computers are popularly miss-used as toys i.e. just for typing any matter, typing letters, playing games, excessive and unnecessary surfing on Internet, chatting through network and keeping lines unnecessarily busy etc. So only, the utilization of computers in the offices / accounts sections is no enough to arrive at any conclusion. An important point is whether they

are used in course of their official duties and responsibilities. This speaks about extent of computerization in administrative and accounts work of the college.

Analysis –

	Computers are used	Computers are not used
Usage of computers for official work	14	1

93% colleges are there where the accounts staff use computers for their daily official work. But still there are **7%** colleges where computers are available but the staff members working in accounts section do not use them while performing their official duties. This scenario must be changed in near future, computerization of administrative, especially accounts work being an inevitable thing in future to sustain the competition.

100. If yes, what type of software you use?

Concept –

To work with computers in daily accounts work needs software that encompasses the accounts procedures. Now a days there are several types of software are available in the market for computerizing the accounts work. In addition to this there are plenty of software developers that are prepared to design a software by studying particular system i.e. on tailor-made basis. The standard ready made software is always better because it is developed by a professional vendor. But sometimes it is possible that particular feature that is necessary for certain accounts system and the same is not covered in the package in use. In such cases the tailor made software is more proper. Also whether the college has provided a software that is designed by professionally and technically expert developers, explains about keen ness of college to look at computerization as a tool to improve the service efficiency in student-services. Also this information will help the research to know about the percentage of colleges where in house development for accounts-software takes place.

Analysis –

	Readymade software	Software developed in house	Not applicable
Type of software being used	13	1	1

In **86%** colleges, accounts staff use software developed by an outside agency. In **7%** colleges they use software that is developed by their own faculty. In **7%** colleges still accounts staff is not provided with any software for daily use.

101. Do you use computers for on line data processing? (For example, fees acceptance & giving receipt)

Concept –

The computers can be best used for on line data processing to improve the various services to students by reducing the service-time. On line data processing is very common in almost all the fields where large amount of public comes in contact with the service-provider. The example of railway reservation system is explained earlier. Many such examples may be given. The service

efficiency of college largely depends on whether accounts section uses computers for handling on line transactions in admissions, receiving fees, refunding deposits etc.

Analysis –

	<i>Computers used</i>	<i>Computers not used</i>
Usage of computers for online data processing	8	7

In **53%** colleges computers are used for “on line” transactions in accounts. So at least 50% colleges are there who realize importance of role of computers in student-services. But in **47%** colleges computerization has been taken place but till today they are not in position to put student services on computers by on line method.

102. Whether your pay roll system is computerized?

Concept –

The research is focused on impact of computerization on service efficiency in undergraduate education. The concept of service efficiency that is expected here concerns both with the services to external and internal customers. The students are the external customers whereas the Principal, Heads of the Departments, all the employees are the internal customers. So the computerized administration system is not only supposed to provide with efficient services to students only but also to the internal users of the system. The smoothness in getting the services to these internal users has an indirect impact on services to students. The services to internal customers lie in the areas like establishment, finance and accounts, information systems etc. The pay system is very common and most important system as it deals with the most sensitive issue amongst the employees. The computerized pay-roll gives many hassle-free services to the employees and with minimum burden on staff working in pay section.

Analysis –

	<i>Computerized</i>	<i>Not computerized</i>
Pay roll system	13	2

In the accounts sections of **87%** colleges pay roll system is computerized. The software for this is readily available in the market today at an affordable cost. This may be the reason behind this good percentage. Those softwares are very user friendly and easy to use even for a lay man in computers.

In **13%** colleges, still their accounts section could not computerize their pay roll system.

103. Do you provide computerized pay slips to staff?

Concept –

Out of the total colleges where the pay roll system is computerized it was tried to find out how many are giving computerized out puts to their users. Here, it is again mentioned that just using the computers for particular work does not mean that the activity is computerized in real sense. It cannot be said unless and until the concerned user gets the advantage of it. If it is claimed that pay system is computerized then every normal out put should be served in computerized form to the person availing that particular service. The research study does not end merely by observing that whether the computers are used in the accounts but it goes in details about the form in

which the internal user gets that particular service. So it is important to see out of the colleges where pay system is computerized, how many are providing computerized pay-slips to their staff members.

Analysis –

	<i>Issued</i>	<i>Not issued</i>
Computerized pay slips to staff	9	6

Only **60%** of the colleges, where pay roll system is computerized, are presently giving the computerized pay slips to the staff members. Whereas still there are **40%** colleges where even after computerizing pay roll system, computerized pay-slips are could not be provided.

104. If not what are the reasons for inability of providing computerized pay slips? (Please tick whichever is applicable.

Concept –

Now it is concentrated on where the pay roll system is computerized but the computerized pay slips could not be provided due to some and other reasons. Computerization must result in providing computerized out put to the user. So this lacuna can be eliminated only by studying the various reasons of not generating computerized pay slips to the employees. Collective study of the reasons at various colleges will help to find the common solutions to these and many such problems in serving computerized outputs to the users concerned. After identifying the variety of problems the further actions for overcoming them will be easy.

Analysis –

Causes of inability to provide computerized pay slips	No. of colleges
Lack of software	2
Lack of suitable hardware	Nil
Both	3
Other. (Please specify)	Nil
In process	1
Not applicable	9

In **13%** colleges, computerized pay slips are not being provided because of lack of proper software. In **20%** colleges they could not be provided because of lack of both suitable software and hardware. In **7%** colleges the process of providing computerized pay slips is in progress. In **60%** colleges the said slips could not be given as their pay system is not computerized at all.

105. Whether the standard commercial packages for accounts purpose are available in your section?

Concept –

Almost all the processes that take place in accounts section of any college are stereophonic in nature. Therefore they are easily programmable. In almost all the offices now a days their accounts procedures are standardized. They handle work related with pay roll, provident fund, income tax, purchases, annual budget, audit, fees, loans to staff, handling various types of funds

/ grants etc. These activities are present in almost all college offices with slight variations. So many software developers have entered in this field. They design a standard software package that comprises all general and commonly required accounts procedures needed for an educational institute. To purchase a standard commercial package from outside and to develop software in house as per our own needs, both are best alternatives. As accounts procedures are standardized and mainly deal with handling numerical data, it is easy to develop software. Today it is very common to have a readymade software package for accounts as it is available in quite affordable price and is very user-friendly. To have a licensed copy of standard software package indicates about awareness of importance of computers in daily accounts work and also about awareness of ready availability of the same. The most popularly used software is "Tally". So a survey has been taken about where the standard commercial packages are available and where they are available, which are they.

Analysis –

	Available	Not available
Standard commercial packages	13 (Tally software)	2

83% colleges have standard software package for accounts work. In **17%** colleges, still they are not available. All the colleges where package is available, it is "Tally", a very popular software as mentioned earlier.

106. If yes, please give their names.

a. Tally – 13

b. Not applicable - 2

107. Which activities from the following are computerized in your office? (Please tick in the proper column.)

Sr. No.	Activity	Computerized	Partially computerized	Manual
1.	Annual Budget	8	1	6
2.	Balance sheet	7	2	6
3.	Annual report/magazine	4	3	6
4.	Purchase orders	7	3	5
5.	Comparative statements	7	2	6
6.	Audit	6	1	8
	Please specify if any other activity is present			

Concept –

Accounts section of any college includes some standard processes and they are common everywhere. That is why standard commercial packages are available in number for accounts systems. This research has considered all types of internal and external users of the college administration. They require various types of outputs from time to time. The top management of college may need annual budget where as an auditor may need the balance sheet. Any external

vendor that provides the college some services or goods may need an official purchase order to supply it. Annual report and magazine are two examples of reports / booklets that are periodically published and include variety of statistical information related with finance and accounts. The Principal or Head of Department may need a comparative statement of various parties that have submitted the quotations for supply of certain goods / services to college, for making a policy decision about to whom the order should be given.

Analysis –

- 1) The table shown above indicates that in approximately **50%** colleges, annual financial budget, purchase orders, comparative statements are computerized.
- 2) At very few places, i.e. round about at **21%** colleges annual reports and magazines are computerized. I.e. at maximum places these activities are handled by manual method.
- 3) In approximately **50%** colleges the processes mentioned in sr. no. 1 are carried out manually / by partial computerization.

It seems that awareness for complete computerization of accounts sections is necessary in near future.

6.1.6 LIBRARY – (Q. No. 108 to 121)

108. Are computers available in the library?

Concept –

It cannot be assumed that all the libraries in the colleges today are aware of computer usage. Also, in spite of ready availability of computers in affordable prices, it cannot be assumed that computers are there in every library in undergraduate colleges because assumptions will not give factual picture. Before thinking about computerization in libraries let us take a stock of situation about in how many libraries computers are made available exclusively for use in library. This basic question should be answered first before thinking for automation. One of the objectives of this research study is to gather the factual information at grass root level about the computerization and its effect on services in several areas.

Analysis –

	Available	Not available
Computers in the library	14	1

The situation is quite satisfactory. In **93%** colleges the computers are available in the library and they are reserved only for use in library. But still there are **7%** colleges where there are no computers at all for the libraries. Though the percentage of this is too small, it is not much acceptable situation as library is the most important unit of every college. The students frequently visit library and if the services at library are not efficient their valuable time reserved for academics will be consumed in just obtaining the books. From service point of view the library is most consumed service by students and staff and hence must be completely automated on urgent basis.

109. If yes, tick on the applicable alternative about their number.

Concept –

The total number of computers is the first indicator of ability of any library to provide online services to its users. Off course the optimum number of computers in particular library depends on number of total students / staff members using the library facility, total number of books / magazines / journals etc. But it is clear that there should be enough number of computers in every library so as to consume minimum time of users in the process of availing the services. The number speaks about whether the library is capable of establishing a network set up for on line services, whether library information can be kept shared through out the entire campus, whether the college is serious enough in providing good I.T. infrastructure in library and ultimately in improving the services from library to the students. Library is the heart of any educational institute. So the computerization process must choose “library” as top priority for automation as that is the place where largest number of interactions with students take place and that too on every day.

Analysis –

	< 5	5 to 10	> 10	Not applicable
No. of computers in library	9	4	1	1

In libraries of **60%** colleges there are computers with less than five in number. In libraries of **26%** colleges, this number lies between five to ten. In **7%** colleges this number is more than ten. Whereas still there are **7%** colleges where there are no computers in their library at all.

110. Whether the stock register of books is available on computers?

Concept –

The stock register is the record where all the details about particular good are maintained. The stock register of books may be viewed as the central data base of library-administration. The variety of information may be required by Principal or Accounts Department, from time to time, for various purpose. The information like total investment, number of books / periodicals / journals etc. can be easily availed from stock register. It can be quickly served to the demanding authority if it is maintained on computers. The stock register maintained manually has number of disadvantages. It is difficult to update it from time to time. A stock register maintained on computers can be updated for any number of times with minimum hassles. This encourages the keenness in keeping it totally updated at any point of time.

Analysis –

	Computerized	Maintained manually
Stock register of books	8	7

In libraries of **53%** colleges, stock register of books is maintained on computers. At the same time there are **47%** colleges that could not do this task.

111. Whether the author wise & title wise index of books is available on computers?**Concept –**

When any student or faculty member comes to library for getting particular book, the two keys are available for searching the book namely “title of the book” and “author of the book”. Many times it is obviously possible that reader is not knowing the exact title but knows the name of the author and vice versa. Further it is quite possible that reader doesn’t know the complete and exact name of an author but remembers name or surname. The same thing may happen in case of title. Reader may not know complete title as many titles are lengthy to remember and hence knows it partially or knows some words in the title or subject concerned with title etc. In all these situations the index maintained both title wise and author wise is the only solution to facilitate quickly locating the desired book for the reader. These two indexes are basic records maintained in every library as per traditional library procedures but they can be more efficiently maintained with additional facilities that help the reader in searching a book.

Analysis –

	Computerized	Maintained manually
Author wise & title wise index of books	6	9

In the libraries of **40%** colleges the title wise index and author wise index are maintained on computers and are made available for readers for on line searching of the books. Whereas in **60%** colleges, libraries still do not provide this simplest facility for readers. They should be made aware of these very simple ways to improve the service efficiency for students.

112. Whether the department wise libraries are maintained in various departments?**Concept –**

An educational institute that is spread over a large campus has various departments at distant locations. In the Universities and the big colleges this is observed commonly. In such campuses, there is a separate and large building of library located in silent atmosphere. This library is viewed as central library in big colleges. There are many books or journals that belong to specific subject or branch and hence required for particular department only. In such cases the central library can be slightly decentralized. A small library of books relating to specific subjects taught in the department can be prepared and maintained in the department itself. This library can be linked with main library through a network. The books that are commonly required by the readers at large may only be kept in central library to save the time of the readers including students and staff. The library structure described above is a tool for faster library services.

Analysis –

	Maintained in various departments	Not maintained
Department wise libraries	6	9

In the libraries of **40%** colleges the separate libraries are maintained in various departments in connection with their main library. But in **60%** colleges this scene is not observed.

113. Whether the status of availability of particular book can be known from computer?**Concept –**

Let us see the practical problems faced by the reader when he comes to the library for getting particular book. First he may go through the author wise index or title wise index according to his knowledge about the desired book. There he comes to know about whether the book is for issue or only for reference, how many copies are available, what is accession number etc. Then he approaches to the counter and demand for the status of the book, whether available or not. The working staff in library may help in finding the book. It is commonly experienced in almost all the libraries that after searching for long time it is revealed that the copy of that book is not available at that instance. If the same is known immediately when a person demands for particular book then the time in searching is saved. This happens on other side also. The book is found after a long and time- consuming search. This is definitely not an example of “good” library services. If entire education system is to be “Student-centered” then the convenience and comfort of the student should be the main focus. This problem can be overcome by computerizing the “status” of the book. The information regarding the number of copies, how many are issued, how many are available for issue at a given time can be stored on computer kept at service-window and can be maintained at every transaction. This saves time of students as well as staff members in library.

Analysis –

	Possible to find using computers	To be done with manually maintained records
Search for availability of particular book	4	11

In **26%** colleges, the libraries have provided the facility of getting the status-information of any book on computer but in **74%** colleges, still libraries are not in position to implement this. The reasons of this be found out and corrective actions be taken so as to upgrade the services at library.

114. Whether the location of particular book can be known from computer?**Concept –**

In the process of improving the service efficiency the higher and higher levels should be achieved with the right use of technology. Before this, it is seen that what is importance of knowing status of availability of particular book immediately when student approaches to library. It is also explained earlier that how it can be achieved. The next level of efficiency is to provide a reader with the location of book he is searching for. If the status and location are known the process totally becomes hassle free. The identification numbers / codes can be allotted to the cupboards / racks and also to the rows within it. The same may be entered in to the computers in the database of books. Whenever the identification number of particular book is entered, the computer should flash the status and location of the desired book. The software packages to implement this are available in the market today as library procedures are also almost standardized every where as like those in accounts. Let us see how many have gone to this level of service efficiency.

Analysis –

	Possible to find using computers	To be done with manually maintained records
Search for location of particular book	4	11

In **26%** colleges, their libraries have succeeded in implementing the system of flashing the location of demanded book but still

74% colleges are not in position to equip their libraries with these facilities.

115. Whether the tentative date of becoming particular book available is displayed on computer?

Concept –

This is again an example of higher level of user-friendly services from the library. After knowing about the status and location, reader can get the desired book immediately. But what will happen in case the copy of book is not available at the time when somebody demands it? This situation should also be taken in to account while designing the software for library services. Let us see what happens practically. When it is confirmed that book is not available, the transaction is not still complete. The person asks about when it will be available for issue. This is the most obvious question and very rarely answered correctly as per general observations but the ability to answer this question speaks about how full proof the system is. If the date of issue is entered at the time of issue only and if the admissible period of using the book by one transaction and last date for return is fed to the computers, this service can be easily given. Computer will add the admissible number of days to the date of issue and flash the resulting date as the date of availability of the book that is demanded but not available at that time. Let us see at how many places this is achieved.

Analysis –

	Displayable on computers	Can not be displayed
Date of becoming required book available	3	12

In the libraries of **20%** colleges, the system is capable of showing the date of particular book becoming available if the same is not available when demanded by somebody. But **80%** colleges have not done this type of an arrangement in their libraries.

116. Whether the price list of all the books is available on computer?

Concept –

It has already been mentioned that computerization must facilitate quick and accurate decision making for administrators in education. This needs the decision support system that is developed as a result of methodical computerization of educational administration. Library is part and parcel of the college administration. Now a days , the age being age of competition and quality consciousness, various governing authorities like AICTE, UGC, University, Government etc keep on demanding various information about the infra structural facilities in the college that obviously includes the library. The total number of books covering various

subjects, journals, magazines, other relevant technical literature etc. is the data frequently needed while submitting this information from time to time. One can immediately give the figures about total investment in library, investment in particular department, investment in journals, total expenditure of annual subscription of various periodicals etc if the prices of the books are entered in to the computer. Ultimately it helps for efficient services towards various top authorities to whom the college is answerable.

Analysis –

	<i>Computerized</i>	Manually maintained	Computerization in progress
Price list of all the books	8	6	1

In **53%** colleges, library has maintained all the prices of books on computers. In **40%** colleges libraries have not followed this procedure but in **7%** colleges it is in progress.

117. Whether department wise total investment in books is recorded & maintained on computer?

Concept –

This is another example of the data required by various authorities that are listed previously. All such information may look like not having any concern with the service efficiency of the college but it has indirect impact on decision-making policies of college that may affect the serviceability. If the department wise investment is readily available on computers at a single mouse-click then it saves lot of valuable time of the staff that may be utilized for some other constructive purpose to boost the quality of student-oriented work being done in the office. Today in many places these records are maintained manually and information is prepared by passing hurdles of lengthy calculations by consuming a large amount of time for it. This can be eliminated by computerizing this data and up dating it promptly.

Analysis –

	<i>Computerized</i>	Manually maintained	Computerization in progress
Department wise investment in books	6	8	1

In **40%** colleges the department wise investment can be immediately retrieved from computers. In **53%** colleges this feature is not observed in libraries whereas in **7%** colleges its implementation is in progress.

118. Whether any branded software is made available in your library?

Concept –

Library procedures are standardized as in accounts. The types of services to students in almost all the libraries are same in nature. So they may be aid to be stereophonic activities. The readymade library software packages are available in the market like “SLIM”, “SOUL” etc. These software packages provide wide range of inbuilt facilities to implement various functions,

generate various types of reports as described in the previous paragraphs etc. One can search a book by knowing very little information about the same like just a word in the title, subject, something about the contents etc. It can generate the transaction reports at the end of day and many other reports that can serve best as decision support information system for the authorities. So having a branded software package in library is indicative of seriousness of the college about maintaining the quality of library services.

Analysis –

	<i>Available</i>	Not available
Branded library software	9	6

In **60%** colleges the branded software is available for library staff to manage the daily services. In the libraries of **40%** colleges still the branded software package is not in use. These colleges must go for software soon in future and automate the library services.

119. Do you send the letters to the members not returning the books in time?

Concept –

The members of the library are responsible for returning the books in prescribed time but still it is also necessary that library should send the intimations to the members if the book is not found returned on or before due date. This itself is one of the services rendered by library. Before going for computerization it is required to see whether particular process is available presently, i.e. in manual system. If particular service is not available then the procedure for the same should first be established manually. Then that service can be put on computers. So a full proof library system must ensure that letters of reminders are sent to the members who did not return the book in time. Let us see the percentage of colleges where this procedure is followed.

Analysis –

	<i>Sent</i>	Not sent
Letters to members not returning books in time	6	9

In the libraries of **40%** colleges the system of sending the reminding letters to members is followed. But in the libraries of **60%** colleges this feature is not available. They will require to start doing it manually for some period and then to transfer the same on computerized method in future,

120. If yes, whether these letters are prepared manually or are computerized?

Concept –

A research-study has gone in further details within the class of colleges where the letters are sent to members not returning books in time. It is studied how this is done in case where the letters are sent. The colleges who send the letters even manually are slightly ahead than those who don't send these letters at all. The colleges where this is done are nearer to total computerization of library. The service efficiency can be easily predicted from whether the letters are sent or not, if they are sent, whether they are sent manually or generated by computers through a library software etc. The salient features of a standard library software may include the facility of entering date of issue. It will calculate due date of return and after that it

will automatically generate the reminder-letter to that member. Let us see how many send the letters manually and how many colleges do it by computers.

Analysis –

	Manually	Computerized	Not applicable
Method of generating letters to defaulters	5	1	9

Out of colleges where libraries send the letters, **33%** colleges send them manually. Only **7%** send them by generating through software. But still **60%** colleges are away from this system, as they do not send such letters to members.

121. Whether the concept of “digital library” is introduced yet?

Concept –

The library being an important area of academic services of the college, it needs to be computerized on priority basis. To offer faster and quality services use of information technology is to be necessarily done. The concept of digital library is now a days becoming important as it minimises the need to preserve the printed copies of large books. Also it offers a faster access to the required book by the user.

Analysis –

	Introduced	Not yet introduced	In progress
Concept of digital library	1	13	1

In 88% colleges it is not introduced yet and this is a large percentage. Only 6% have practically implemented it whereas in 6% colleges it is under progress

6.2 HYPOTHESES TESTING:

Being an “Exploratory Study”, hypotheses testing in case of this subject has been treated differently. In case of Causal and Experimental Study, the data is well defined and hypotheses are well defined and problem-specific. So the quantitative techniques / statistical tests can be applied. However in Exploratory Studies, no formal hypotheses are present. Working hypotheses are formulated just to give proper direction to study and to define a scope for the research. These working hypotheses are indicative in nature. The collected data doesn’t allow itself for easy and precise quantification.

Computerization improves quality of services in academic sector:

There are variety of users of education system. In a broad sense entire society is user of education system. But student is the most important user of our education system. Now-a-days concepts related with education are going through revolutionary changes. Higher education is coming under service sector. In the light of WTO and GATS, education in future will be viewed as service industry. It gives rise to concept of “customer / consumer of service” etc. So cautiousness about quality of services is created in all the fields. Higher Education cannot afford to be an exception to this. The customer, i.e. student has many choices before him to avail the educational services as per his or her desire. Students will naturally attract towards the best

service-provider in the market. To improve the quality, the use of technology is inevitable. This is the age of Information Technology. So the computerization can be the best tool to enhance and improve the student-related services in higher education. Especially today's under graduate education needs to be improved by means of administrative services to the students to sustain the competition. To professionalize the traditional undergraduate education (BA, B Com, B Sc etc.), computerization of college administration is must.

- During the study it was found that, computerization process has been taken seriously by the Managements that are running undergraduate colleges.
- The staff members working in offices are confident about the bringing positive changes in the offices of colleges to enable to offer better and better services to students.
- The staff is honestly feeling that service efficiency has been upgraded after starting computerization and at some places it is proved by way of observations of the assessing authorities and by carrying out a qualified evaluation.
- The changes in organizational structure that are necessary to improve service efficiency are observed and experienced by staff.
- Students of majority of colleges have experienced a feeling of their office been completely automated.
- The services required by students as a part of daily routine are available in lesser amount of time than earlier i.e. when manual systems were in use.
- There is substantial percentage of institutions where Heads of the Institutions have experienced the improvement in quality of work after implementing the computerization.
- A good working environment is an important factor in view of service efficiency and almost all the colleges experienced positive changes in working environment after computerization.
- The colleges that computerized their student services also experienced positive changes in work distribution that plays an important role in deciding service efficiency. Computerization offers more flexible distribution of work.
- We have considered "Principal" not only as the head of an institution but also as one of the internal users of MIS of college administration. All the principals were found satisfactory about information services received by them after computerization.
- More than half of the colleges that were surveyed designed their web sites as a part of computerization. This improved the process of communication between college and students.
- The major aim behind the implementation of computerization in the colleges was to improve the service efficiency of the staff and ultimately that of the college as a whole. The systematic efforts with clear objective has led the colleges to success in improving the efficiency.
- By means of all possible and practically feasible ways of assessing the services, it was established that computerization improves service efficiency.

- In many colleges it was observed that they have centralized computer centers to look after the I.T. needs of the constituent units of the colleges. They have established machinery in which the computer center will receive demands of computerizing the routine activities. This speaks about the systematic approach towards computerization. Computer center is always kept in touch with new technology by giving exposure to staff by means of training / seminars etc.
- Accounts section is one of the important service units where students frequently require to approach for various activities. Almost all the colleges have adopted computerization in accounts. In more than half of the colleges that were surveyed it was found that computers are used to handle the on line transactions with students. The “on line” type of services naturally improves service efficiency of staff and service-quality at students’ end. On line services can be implemented more efficiently if tackled with computers. The internal users like staff members also receive efficient and sophisticated services for ex. pay roll services / computerized pay slips, salary certificates etc. The routine activities of accounts like purchase orders, comparative statements, balance sheets, audit, annual budget are carried out more efficiently and accurately with computerization.
- The library is one more unit that is viewed as “service unit”. The students get the services like issue of books in lesser amount of time than during the period when computerization was not started. Many libraries facilitate on line issuing and returning of books. This eliminates the tedious traditional procedures like filling cards / slips, obtaining signature of authorities etc. Computerization has made it possible to display the tentative date of availability of book (if the demanded book is not available at particular time), the physical location of books etc. This eliminated physical searching of books amongst the racks, cupboards etc.

The explanation given above leads to the conclusion that computerization results in improving the service efficiency of staff and ultimately that of college hence the hypothesis stands proved.

College administration, now a days has been aware of importance of using computers in office but still not actively entered in computerizing their work procedures:

Awareness about importance of computerization of educational administration in view of service efficiency is necessary factor for improving student-services but not sufficient one because to effectively improve the services to the satisfaction of students, computerization should be practically implemented.

- No college was found where there were no computers at all and this is first and primary indication about awareness. Further staff was found happy with the computer facilities made available to them. Almost all the staff members have received extensive computer training and is completely satisfied with the same. There is no fear in their minds about possibility of reduction in manpower due to computerization which is a common myth.
- Text processing is the only area where 100% of the colleges utilize computers. There are several other areas identified and observations were made about utilization of computers. It was revealed that utilization of computers was less in all other areas than that of text processing. It indicates absence of complete computerization. Computers should not be used

just for typing work but all the abilities should be exhaustively used to facilitate comfort to the student. The on line usage of computers was not observed in many colleges. Only few colleges implemented the on line method.

- The study was made to study the system of college administration activity wise. There was not a single activity that was found computerized by every college studied. Only certain activities are totally computerized by certain colleges or it can be said that there are very few colleges that have computerized all the activities. In some colleges, many activities like issuing different certificates, admissions, refund of fees, staff-leave processing, maintaining students database were found partially computerized or manually handled.
- The observations of students about their college's office in view of computerization carries utmost importance. The impression that "office is fully computerized" was observed in case of less than half of colleges surveyed. This indicates the fact that entire class of undergraduate college administration is yet not actively entered in total computerization of student services.
- The service period for various activities that bring students to administrative office is expected to decrease after computerization but it is not the case with all the colleges.
- A complete computerization should ensure that all the outputs are automatically generated and served to the student in computerized form. In a study, it was found that only some certificates are given in computerized form and not all. The concept of "computerized output" is not implemented in real sense. Many outputs were observed to be just "computer printed" and not computerized, i.e. automatically generated by software. In such case computerization cannot be said to facilitate total automation of student-services. Still there are some colleges where all the certificates are issued in manually written form.
- Majority of colleges have framed a fixed policy for computerizing their administration in totality. Having a specially framed policy indicates awareness about importance of keeping methodical approach towards computerization. The next indicator is good percentage of computer-literate staff in the colleges and imparting training to almost all the staff members.
- No fear was observed in minds of staff members about possibility of reduction in manpower. Of course there are few exceptions to this.
- Percentage of colleges that claim to have 100% success in computerizing their administration are approximately less than half out of entire group studied.
- Still there are some factors that are observed in negligible extent in some colleges. The obstacles like lack of proper motivation and positive attitude are slowing down the speed of process to reach towards "complete computerization".
- To work with computers is no more viewed as highly technical job and is considered as routine activity. But still there is substantial number of colleges whose website is not available in accessible form even if today the basic need of any organization is to have its own website.

- Networking and e-mail facilities are available every where but the enough utilization of the same is not done in routine work of the college administration. Even today some colleges are facing the problems of in adequate computer facilities. But such colleges are very less in number.
- The awareness about computers is not totally reflected in practical utilization because still there are some colleges that don't use communication tools like e-mail during routine work. This indicates lack of active computerization. This is the scene even if the required facilities are available in all the colleges. The college campus where there is extensive use of computers and network must have a separate person appointed to look after the hardware. However the number of colleges that have done this are negligible in percentage. There are colleges who have succeeded in developing an application-software pertaining to needs of departments. This self sufficient ness is required in upgrading service efficiency. In almost all the colleges regular meetings are conducted with various departments to discuss the issues related with computerization.
- In accounts section, almost all colleges use computers in daily work and required training is given to all with very few exceptions. They have licensed copy of branded software to handle the standard accounts procedures. In spite of all these, the percentage of colleges that use computers to handle on line transactions is not 100%. Approximately half of the total colleges were found to be implementing on line systems using computers. Even though the payroll system is computerized almost every where, the computerized pay-slips are provided to staff in very limited number of colleges.
- The accounts sections of colleges were studied by identifying different areas in which there is scope for computerization. Colleges that have totally computerized every process in accounts are not observed with satisfactory number.
- The similar situation is found in libraries. All the libraries have computers but very few are giving on line issuing services to students. Further, only limited number of colleges have maintained database of books for on line searching of desired book.

Looking in to the points discussed above, the hypothesis stands proved.

Many applications that are claimed to be computerized are still carried out manually or with partially computerized methods:

It is already stated that computerization is not implemented in real sense at many places. It must lead to generation of output reports without much manual intervention, to fulfill the needs of the students and internal users of the system. This can be achieved only with a full proof software designed to run a specific application. Every document that is printed on computer cannot be assured to be truly "computerized". From the students' angle, computerization should facilitate quick delivery of services like issue of certificates, refunds etc. as mentioned in the list in questionnaire. Quality services include not only quick delivery but out put should have good aesthetic value and accuracy.

- It is interesting to note that there are few colleges where almost all the processes involve use of computers but still they are not totally automated. They still need considerable manual intervention. These services fall under “partially computerized” category.
- There is substantial number of colleges where the services are given totally by manual methods even today for example, leave processing of staff / student could be totally computerized by very few colleges.
- Many colleges computerized the system of fee acceptance and receipts, that being easiest transaction. Many colleges electronically maintain fee register. But similar application like bonafide certificate, leaving certificate, appointment order of staff could not be computerized by many colleges.
- There are few colleges that are unable to generate computerized outputs due to absence of appropriate application software.
- In accounts sections’ study, it was found that there are many colleges that are handling routine accounts processes purely by manual methods even if they are considered to be very easy to take up on computers. There are colleges that are running the accounts processes by partially computerized methods. In spite of ready availability of standard accounts software packages, “a complete computerization” of accounts was not observed in all the colleges.
- Exactly similar situation was found in libraries. All the colleges have computers in libraries. Branded library software like SLIM+ is available in the market. But still the student-services are carried out either by manual method or by partially computerized method. For example, letters to remind the members who do not return books in stipulated time are sent in very few libraries. And out of colleges where they are sent, very few of them generate the letters by a computer program.

Looking in to explanation in the paragraphs above, the hypothesis is proved.

Office – staff in the colleges is curious in getting computer training and use computers in routine work but at the same time they carry fear of failure and possibility of manpower reduction in minds due to lack of confidence :

To achieve success in computerization of college administration, the support of Management is an important factor. But at the same time the interest and initiative from staff side is equally important aspect for getting success in terms of improved services. Unfortunately even today there are some misunderstandings about Information Technology. One is it results in reduction in manpower and unemployment. These misconceptions being widely spread since quite a long period, indirectly affect the process of obtaining whole hearted support to computerizing the administrative office. Other is, to work with computers is highly technical work and requires very good intellectual potential. Information technology is very difficult to learn.

Both of these are purely misunderstandings and not 100% facts. So now-a-days the attraction towards I.T. is increasing. The awareness about globalization of higher education is also spreading all over the country. As a part of this, the staff members have started accepting that there is no alternative to adoption of I.T. in routine work to withstand the competition of coming age.

- It is already mentioned in explanation of other hypotheses that in almost all the colleges computer training is imparted but still there are colleges in little extent where this training could not take place. There may be variety of reasons behind this. One of them is lack of initiative. It is to be thought about why the required initiative was not taken. It is nothing but unawareness about advantages of computers and fear of failure about computerized work procedures.
- The next interesting fact to note that, in some colleges the office-staff took keen interest in process of procuring the computers. Further, in some cases, they played an important role in deciding the configuration, other technical specifications etc. This is a recent development because before couple of years, non-teaching staff was not that much aware about computerization and its utilization. The facts analyzed above clearly indicate the curiosity and interest in the minds of staff about bringing computers at their work-places.
- It was studied that whether the common misunderstanding that computerization results in possibility of reduction in manpower, is still there in their minds. It is interesting to note that in all the colleges surveyed, every staff member was completely free from any such fear or misconception. There was not even a single person who expressed about such fear in his mind. This is indication of computer awareness and complete elimination of computer phobia.
- The administrative staff is not only curious but also hopeful about bringing positive changes in the quality of student-services after computerization. This positive approach helps to smoothen the hurdle of “resistance to change”.
- But the principals of few colleges have experienced the fear in minds of their staff about possibility of reduction in manpower. Further, Principals of some colleges have also experienced resistance to change amongst the staff. Off course these colleges are very few in number but this fact should be viewed seriously. Further, the Principals have opined that these facts are slowing down the speed of computerizing their administration. Principals also observed that staff is lagging in proper motivation.
- The reasons behind starting computerization are naturally different in various colleges. But there are at least few colleges that started the process of computerization because of interest shown amongst administrative staff. There are other reasons like increased work load, improvement in efficiency etc. The interesting fact to note is, there are at least few colleges where this activity was started just “out of interest”.
- Almost all the staff members working in accounts section have taken initiative and obtained the sufficient training on computerized financial accounting. This again shows the interest in the minds of personnel in accounts.

From the entire explanation given above, it reveals that still there are some colleges where training could not take place and its reason is poor response from staff as viewed by principals.

In the interactions with the staff it was crystal clear that no body was carrying fear in mind about the failure in adopting the computerized systems in routine work.

Looking in to all these factors, the hypothesis stands disproved.

In spite of 100% support from Management, till today, “Total Computerization” is not observed in undergraduate colleges:

The research was focused on various aspects of computerization of administration in colleges. One of the objectives was to find out the reasons where the total computerization has not started yet. This information will help to locate the problems in transforming manual or partially computerized systems to totally computerized systems. The Management of colleges has realized the importance of computerization and naturally extends all possible support for computerizing the administration and student-services. But the administrative and financial support from Management is not the only criteria needed to achieve the desirable results. So it can be said that Management’s support is necessary but not sufficient condition to improve the service efficiency through computerization.

- There are the colleges in majority where Management has imparted the training to staff by appointing a professional agency from out side. This indicates the supportive approach and seriousness about the training. The next important fact to note is, all the employees are extremely happy about training given to them. Nobody from them found something that was necessary but not taught to them.
- No staff member was found who felt that certain computer facility was required but not provided to him or her. This again speaks about keenness of Management to provide all possible inputs for computerization.
- The important role of Management lies in dedicating one separate person for computerization. The Management should invest enough in human resource required for successful computerization. The Management is also one of the users of Information System of college-administration. In this view, the Management should support the automation process by extending support by means of keeping special manpower for this purpose. There are at least few colleges that have appointed exclusively separate person to lead the computerization of their administration. This shows the awareness about the necessity of separate person. The colleges that could not appoint separate person have deputed one internal staff member for the same. I.e. It can be said that the Management of every college has understood the manpower requirement for computerization and for upgrading the student-services.
- The management of today’s college believes not only in assuring adequate manpower but also in providing the required training. So it was seen in almost every college (with very few exceptions) that staff members have received extensive training to work in computerized systems. Management is also keen in overcoming the problems arising while retaining the expert manpower in Information Technology. Management in some colleges has developed special administrative systems to tackle the demands from various departments regarding computerizing departmental administration that is part of college-administration.
- Some colleges have established digital library with financial and technical support from their respective Managements.

100% computerization ensures the utilization of all the strengths of computers to smoothen the routine work and improve the services. Many times the technology is underutilized and

expected results are not observed. This may happen out of ignorance for which training is the only solution. Almost all the colleges have this support from management and staff has received the required training.

- The text processing is the only area where the office staff from all the colleges uses the computers. This cannot be said to be “complete computerization”. It is merely typewriting and not computerization in real sense. Any such work area other than word processing was not observed where 100% colleges utilize the computers. For example, only 14% colleges use computers for graphical display of data.
- The research-study has identified various processes / activities in college-office and analysis was made regarding the extent of computerization in those processes. Not even a single service like certificates, receipts etc. was found to be totally computerized in every college. Certain service or process was found to be computerized in some colleges whereas the same was carried out by manual method or partially computerized method in the other colleges. This shows that there is no 100% computerization in undergraduate education.
- There are large number of colleges where the impression in minds of the students about the administrative office of their college is “not computerized”. Computerized systems are supported to give a feel of faster services to the student who is viewed as center of the entire system of education.
- In spite of Internet facility being available every where in colleges very few colleges have uploaded the information about their past students (ALUMINI) on the Internet.
- In accounts section also not even a single process was found to be computerized in ALL the colleges.. For example, the purchase orders are computerized in some colleges and are processed manually in some other college/s.
- In libraries, simple services like on line issuing of books, on line searching, communication with users are not computerized by majority of colleges. Digital library is established in very few colleges even if it is accepted all over the world.

Looking in to the points explained above the hypothesis stands proved.

Inadequate training results in wrong or partial results in spite of good infra structural facilities of computers:

There are various factors that contribute in attaining 100% desired results after computerization. The technology must be supported by proper human resource. Today it is being age of globalization, the computer facilities are good every where. These facilities can be brought in colleges at very reasonable prices. So even some of newly opened colleges have established a full-fledged computer center. To make effective utilization of the computers, staff members working with it are required to be well trained about the concepts and practices of computerized systems. If this doesn't happen, the facilities remain underutilized and the investment made doesn't prove to be fruitful.

- There was not even a single college found where computers were not available at all. At every place computers were found in sufficient number. Further, they are available to staff

for 24 hours for use. Almost all the staff members are extremely happy about computer facilities made available to them.

- In spite of ready availability of training resources, still there are some colleges where computer training has not taken place even if their computer facilities are quite good. The same situation is observed in case of training on computerized financial accounting.
- Networking is necessary requirement to upgrade the services for students. Majority of colleges have installed computer network in their campus. In spite of all these facilities, the service quality at students' end still can not be assured to be the best. Why this situation is observed? Where are the loop- holes that are causing wrong or partial results? The answers to these questions are important to take corrective measures to assure 100% desired results.
- Internet and e-mail facilities are available in all the colleges. But their proper and extensive utilization was not found in all the colleges. The only reason behind this may be lack of proper training because all other possible reasons are verified, for ex. fear in minds etc. and not found in any college. As the staff members were found quite interested in working in computerized environment without any sort of complex in mind, "the lack of training" seems to be the only hurdle causing underutilization of information technology.
- The facilities of literature and documentation of computerization are also quite satisfactory in the colleges. Technical literature is also one of the important facilities to encourage and facilitate the working with computers.
- Almost all the colleges have provided a branded software package for administration and accounts.
- In all the libraries, the computers were found in sufficient number. From all above explanation it is clear that infra structural facilities are quite good in all the colleges. So it can be said in no case that process of computerizing student services is holding back because of infra structural facilities. All the analysis described above lead to the conclusion that computer facilities in the colleges are sufficient in view of upgrading service efficiency by way of computerizing the administration.

Inadequate training results in wrong / partial results:

- It has already been explained that computers are used just for word processing in the offices of majority of colleges. This shows unawareness about capabilities of computers and ways to utilize them. This unawareness is nothing but outcome of inadequate training or not having computer training at all.
- Out of various student-services, very few services are totally computerized and that too by very few colleges. This should not be the expected result of computerization. The computerization must result in "total automation" as the objective is to improve the service efficiency towards the students.
- There are routine processes and services in college administration that are simple in nature and to computerize them is technically very simple. But such services are also not computerized in majority of colleges (for ex. leave processing, fee-receipts etc.). All other

factors like management's support, computer facilities, manpower are available but still the result observed is not "100% computerization of student-services" only because of insufficient training or no training at all. Some services are partially computerized even if facilities needed for computerizing them totally are available. For example, in libraries the database of books is available on computers but online searching facility could be made available to students at very few colleges. This can be viewed as the best example of partial or incomplete computerization. Service efficiency of staff and thereby that of the college and the service-quality experienced by students cannot assured to be the best without proper and sufficient training in spite of fulfilling all other requirements.

Looking in to the points explained in the above-mentioned paragraphs, the hypothesis stands proved.

CHAPTER 7

RESEARCH AT A GLANCE

7.1 Background - A new angle for looking towards education

Education is the most important service which should be provided to the society by maintaining proper quality. No doubt the quality of teaching plays an important role in deciding the level of an educational institution but at the same time it cannot be ignored that “ADMINISTRATION” of the college or institution plays an equally important role in deciding the quality of educational services that are offered to the students who are viewed as the centre of today’s education, especially higher education. The backbone of education system is college administration. Administration in the colleges is the major channel through which the students, faculty, and management interact with each other as a part of daily routine.. The Information Technology is the way to upgrade the quality of the service. Limitations of old systems that are manually operated may prove to be obstacles in process of withstanding in the age of competition in the field of higher education. Many problems related with laborious and unavoidable work concerned with data processing and decision making may be overcome by completely computerizing them.

Research topic focuses on a detailed study of computerization at college level and covers the substantial number of colleges in and around Pune.

Several books and papers are written on introducing the computers in commercial organizations but very little work has been done on computerization of college level administration. So it is felt that this study will contribute in the existing knowledge and information in this area.

University Affiliated Colleges:

In India a common structure of undergraduate education involves number of colleges running under the affiliation to the parent University. There are around 7,000 affiliated colleges in the country. UNDERGRADUATE EDUCATION CONTRIBUTES APPROXIMATELY 88% OUT OF ENTIRE EDUCATION SYSTEM IN INDIA. So the area of undergraduate colleges affiliated to University of Pune were chosen for conducting the said research. The problem of quality of services rendered and education offered by institutions rendering under graduate education are mainly the problems of University affiliated colleges.

Today’s age is age of Information Technology and Computerization. The Indian Universities and colleges / institutions should be capable to withstand in the competition with Foreign Universities.

7.2 Role of computerization in improving service efficiency:

- ◆ To accelerate the decision making process for better planning and administration by eliminating the barriers of time and space in communication.
- ◆ To avoid the duplicity and to improve the standards of education research and development by providing common forum of discussion to the members of University and academic community.
- ◆ To provide the better exposure of information technology to the society.

- ◆ To decentralize the University system by insuring the free flow of information to all at anytime anywhere.
- ◆ To offer the education at doorstep and for reducing the crowd of students from University campus and in turn to balance the growth rate of the universities with growth rate of population.
- ◆ To make University system more objective, accountable and result oriented.
- ◆ To develop better coordination amongst University members and also to make University system more transparent.
- ◆ To reduce cost and volume of documentation.
- ◆ To ensure the best possible use of all available resources.
- ◆ To help to improve the efficiency in rendering educational services to student community and society

7.3 Peculiarities of Education as a “Service”:

IMPORTANCE

Education is the most important service which should be provided to the society by maintaining proper quality. The soul of education system is college administration. Administration in the colleges is the prominent link between students, faculty, and management. The computers, today have proven to be the best tools for improving the communication in this link.

Research topic focuses on a detailed study of computerization at college level and covers the substantial number of colleges in and around Pune.

Several books and papers are written on introducing the computers in commercial organizations like banks, insurance corporations, hotels, hospitals, transportation agencies etc. But it very little work has been done on computerization of college level administration. So it is felt that this study will contribute in the existing knowledge and information in this area.

PECULIARITIES:

- ◆ Education can not be seen or touched and is often difficult to evaluate
- ◆ Precise standardization is difficult
- ◆ Education as a service can not be patented
- ◆ Production and consumption are simultaneous activities
- ◆ No inventories can be built up

7.4 Importance of this Research:

Teaching faculty imparts education but non teaching / administrative staff plays a major role in the process of offering various services to students. This staff is interface between student and the college.

The research will help to provide the valuable information to the

This research has resulted in creation of a data base about the extent of computerization at institutional level.

The research has also created an important information for University about the computer infra structures and the ways in which they may be best used to improve communication between colleges and University.

The research has also focussed on obtaining the students' feed back about their satisfaction, suggestions about the services available at college level and impact of computerization on the efficiency of the same.

7.5 Objectives of research:

- ◆ Obtaining the factual information about computer awareness at college level administration.
- ◆ Where the offices are fully or partially computerized or claimed to be, studying the effect of the same on student related services.
- ◆ Finding firm conclusions / suggestions which can help the undergraduate education sector in future in automating the colleges and their administrative functioning.
- ◆ Finding whether the colleges are integrating all their work on a computer.
- ◆ Locating and analyzing the hurdles in introducing and expanding the computerization in academic sector, particularly to find out the obstacles in implementing complete computerization at college level administration.

7.6 Research Methodology:

Selection of sample –

The population is the undergraduate colleges in and around Pune city. Every college starting from the oldest college to newly opened college is almost same in structure and way of functioning as the norms regarding these factors are decided by the University, State Government and other competent authorities concerned, and they are applicable to each and every college. So the sample was found to be quite homogeneous.

Looking in to this fact a random sample of 15 colleges out of 98 was selected for research. It is customary to provide for sample size around 10% of the population. In this case it comes out to be **15.3%**.

Primary Data:

Primary data was collected by following ways.

- ◆ Actually visiting and observing the functioning the administrative offices of the colleges.
- ◆ Consulting the college staff at various levels.
- ◆ Conducting the surveys.
- ◆ Preparing the questionnaires and schedules and getting them filled by the concerned people.
- ◆ Interviewing the college staff of various categories.

This data was collected during the period – September 2003 to November 2004.

Secondary Data:

The secondary data was collected from following sources.

- ◆ Various records in colleges. (Policies, Students' Registers, rules and regulations etc.)
- ◆ UGC journals / Magazines.
- ◆ Newspapers.
- ◆ University Circulars, Ordinances etc.
- ◆ Other relevant historic documents related to this subject.
- ◆ Internet

After an extensive survey of literature it was found that the concept of service efficiency being relatively new in the field of undergraduate educational administration as compared with other fields, the issue of computerization and service efficiency was not addressed enough in books and journals. So maximum literature was found on web sites related with the research-topic.

Scope of Research:

The research will be conducted by surveying all the colleges in and around Pune. It will cover all the variety ranging from well-developed colleges to colleges under development and also the newly opened colleges. The research is mainly aimed at the critical study of extent of computerization achieved by the colleges mainly in the following applications.

- ◆ Provision of large data bank of information.
- ◆ Aid to Time Table preparation.
- ◆ Carry out lengthy and complex calculations.
- ◆ To provide assistance to teaching and learning process.
- ◆ To provide students' profile to concerned.
- ◆ Performance / Attendance feed back to the guardians periodically.
- ◆ Providing the information required by University and other outside agencies as and when required.
- ◆ Changes brought by computers at individual level as well as at institutional level.
- ◆ Success in achieving integration of all official work on a computer.

The research will be conducted by surveying all the colleges in and around Pune. It will cover all the variety ranging from well developed colleges to colleges under development and also the newly opened colleges belonging to professional as well as non professional category. The computers can be used in teaching process (CBT i.e. computer based teaching) in many ways and these are in practice at many places. CBT is a separate area of study. This research is mainly aimed at the critical study of extent of computerization achieved by the colleges mainly in administration involving the following applications regarding various services rendered to the students and other concerned users of "information system" of college administration.

7.7 Types of research-studies & the nature of research undertaken:

There are three categories of research studies (26).

4. Exploratory study (search for understanding)
5. Descriptive study (search for generalization)
6. Experimental study (search for replication)

Exploratory Studies –

This type is applicable where there is lack of clear idea of the problems that will be met during the study. Through exploration concepts are developed more clearly, priorities are established, and research design is improved. This type of research is done where previous research is not available, the concept is new, and it is required to create a knowledge base about the subject. Exploratory study creates inputs for descriptive studies. Exploratory research is a research for understanding.

This research is done for transformation from “general” to “specific”. Exploration saves time and money. In exploratory studies more formal studies may be cancelled. In this research idea of research is new and so vague that researcher required doing the exploration to learn something about the research problem. No formal hypotheses are needed for exploratory studies. Exploratory Research heavily relies on “qualitative techniques” than on “quantitative techniques” because of absence of problem-specific hypotheses.

The purpose of exploratory research (37) study may be:

- ◆ To generate new ideas or
- ◆ To increase researcher’s familiarity with the problem or
- ◆ To make precise formulation of the problem or
- ◆ To gather information for clarifying concepts

Descriptive Studies –

These are more formalized studies and are structured by clearly stated hypotheses. It is more specific than exploratory study. For descriptive study, the prime requirement is that problem must be describable and not arguable. Second is the data should be amenable to an accurate, objective and quantitative assemblage. The previous research is available in this type of studies. They may have specific investigative questions. Descriptive study can be demanding of research skills as causal study. Degree of clarity is more in descriptive studies than that in exploratory research study. The research undertaken does not fall in this category because nature of data is qualitative than the quantitative, the problem not being crystal-clear due to absence of extensive previous research.

Causal Study –

To establish the cause & effect relationship is the aim of causal research. This type of research is more specific than descriptive research study. A degree of clarity about the subject is higher in causal research than that in descriptive research study. In causal (also called as analytical study), the nature of data is totally quantitative and suitable for applying statistical techniques.

The analytical study's design approximates the model of an experimental design (39) as every aspect of the study is clear in this study.

WHY THIS IS AN EXPLORATORY RESEARCH?

From the description of various types of research-studies given above it is clear that this research clearly belongs to "Exploratory" type of study. Whether the computerization exactly results in to up gradation of service efficiency was not clear at the beginning. This is because it is common trend to keep computers at work places even just to increase the aesthetic value of the office and not for its extensive use in routine work. Hence the exploratory type of research was badly needed in this matter. So instead of very formal hypotheses, some working hypotheses were formulated. Further "Qualitative techniques" were adopted for analyzing the data both primary and secondary. Truly speaking "exploratory study" does not aim at testing hypotheses. It just attempts "to see what is there rather than to predict the relationships that will be founded" (38)

7.8 Hypotheses:

As this research is of "Exploratory" type, following working hypotheses were formed to carry out the research. (Detail explanation given in "types of research" in "Research Methodology" chapter)

- ◆ Computerization improves the quality of service in academic sector.
- ◆ College level administration, now-a-days has been aware of the importance of using the computers in offices but still not actively entered in computerizing their work procedures.
- ◆ Many applications which are claimed to be computerized are still partially carried out manually.
- ◆ College administration staff is curious in getting computer training and use them in routine work but at the same time they carry fear of failure in their mind due to lack of confidence.
- ◆ Computerization in academic institutes should be led from top to get the success.
- ◆ In spite of 100 % support from management, till today total computerization is not observed in undergraduate colleges.
- ◆ Inadequate training results in wrong or partial results in spite of good infra structural facilities regarding computer centers.

7.9 Hypotheses Testing:

Being an "Exploratory Study", hypotheses testing in case of this subject has been treated differently. In case of Causal and Experimental Study, the data is well defined and hypotheses are well defined and problem-specific. So the quantitative techniques / statistical tests can be applied. However in Exploratory Studies, no formal hypotheses are present (26). Working hypotheses are formulated just to give proper direction to study and to define a scope for the research. These working hypotheses are indicative in nature. They are tested qualitatively. The collected data doesn't allow itself for easy and precise quantification.

Computerization improves quality of services in academic sector:

There are variety of users of education system. In a broad sense entire society is user of education system. But student is the most important user of our education system. Now-a-days concepts related with education are going through revolutionary changes. Higher education is coming under service sector. In the light of WTO and GATS, education in future will be viewed as service industry. It gives rise to concept of “customer / consumer of service” etc. So cautiousness about quality of services is created in all the fields. Higher Education cannot afford to be an exception to this. The customer, i.e. student has many choices before him to avail the educational services as per his or her desire. Students will naturally attract towards the best service-provider in the market. To improve the quality, the use of technology is inevitable. This is the age of Information Technology. So the computerization can be the best tool to enhance and improve the student-related services in higher education. Especially today’s under graduate education needs to be improved by means of administrative services to the students to sustain the competition. To professionalize the traditional undergraduate education (BA, B Com, B Sc etc.), computerization of college administration is must.

- During the study it was found that, computerization process has been taken seriously by the Managements that are running undergraduate colleges.
- The staff members working in offices are confident about the bringing positive changes in the offices of colleges to enable to offer better and better services to students.
- The staff is honestly feeling that service efficiency has been upgraded after starting computerization and at some places it is proved by way of observations of the assessing authorities and by carrying out a qualified evaluation.
- The changes in organizational structure that are necessary to improve service efficiency are observed and experienced by staff.
- Students of majority of colleges have experienced a feeling of their office been completely automated.
- The services required by students as a part of daily routine are available in lesser amount of time than earlier i.e. when manual systems were in use.
- There is substantial percentage of institutions where Heads of the Institutions have experienced the improvement in quality of work after implementing the computerization.
- A good working environment is an important factor in view of service efficiency and almost all the colleges experienced positive changes in working environment after computerization.
- The colleges that computerized their student services also experienced positive changes in work distribution that plays an important role in deciding service efficiency. Computerization offers more flexible distribution of work.
- We have considered “Principal” not only as the head of an institution but also as one of the internal users of MIS of college administration. All the principals were found satisfactory about information services received by them after computerization.

- More than half of the colleges that were surveyed designed their web sites as a part of computerization. This improved the process of communication between college and students.
- The major aim behind the implementation of computerization in the colleges was to improve the service efficiency of the staff and ultimately that of the college as a whole. The systematic efforts with clear objective has led the colleges to success in improving the efficiency.
- By means of all possible and practically feasible ways of assessing the services, it was established that computerization improves service efficiency.
- In many colleges it was observed that they have centralized computer centers to look after the I.T. needs of the constituent units of the colleges. They have established machinery in which the computer center will receive demands of computerizing the routine activities. This speaks about the systematic approach towards computerization. Computer center is always kept in touch with new technology by giving exposure to staff by means of training / seminars etc.
- Accounts section is one of the important service units where students frequently require to approach for various activities. Almost all the colleges have adopted computerization in accounts. In more than half of the colleges that were surveyed it was found that computers are used to handle the on line transactions with students. The “on line” type of services naturally improves service efficiency of staff and service-quality at students’ end. On line services can be implemented more efficiently if tackled with computers. The internal users like staff members also receive efficient and sophisticated services for ex. pay roll services / computerized pay slips, salary certificates etc. The routine activities of accounts like purchase orders, comparative statements, balance sheets, audit, annual budget are carried out more efficiently and accurately with computerization.
- The library is one more unit that is viewed as “service unit”. The students get the services like issue of books in lesser amount of time than during the period when computerization was not started. Many libraries facilitate on line issuing and returning of books. This eliminates the tedious traditional procedures like filling cards / slips, obtaining signature of authorities etc. Computerization has made it possible to display the tentative date of availability of book (if the demanded book is not available at particular time), the physical location of books etc. This eliminated physical searching of books amongst the racks, cupboards etc.

The explanation given above leads to the conclusion that computerization results in improving the service efficiency of staff and ultimately that of college as a whole.

Hence the hypothesis stands validated.

College administration, now a days has been aware of importance of using computers in office but still not actively entered in computerizing their work procedures:

Awareness about importance of computerization of educational administration in view of service efficiency is necessary factor for improving student-services but not sufficient one

because to effectively improve the services to the satisfaction of students, computerization should be practically implemented.

- No college was found where there were no computers at all and this is first and primary indication about awareness. Further staff was found happy with the computer facilities made available to them. Almost all the staff members have received extensive computer training and is completely satisfied with the same. There is no fear in their minds about possibility of reduction in manpower due to computerization which is a common myth.
- Text processing is the only area where 100% of the colleges utilize computers. There are several other areas identified and observations were made about utilization of computers. It was revealed that utilization of computers was less in all other areas than that of text processing. It indicates absence of complete computerization. Computers should not be used just for typing work but all the abilities should be exhaustively used to facilitate comfort to the student. The on line usage of computers was not observed in many colleges. Only few colleges implemented the on line method.
- The study was made to study the system of college administration activity wise. There was not a single activity that was found computerized by every college studied. Only certain activities are totally computerized by certain colleges or it can be said that there are very few colleges that have computerized all the activities. In some colleges, many activities like issuing different certificates, admissions, refund of fees, staff-leave processing, maintaining students database were found partially computerized or manually handled.
- The observations of students about their college's office in view of computerization carries utmost importance. The impression that "office is fully computerized" was observed in case of less than half of colleges surveyed. This indicates the fact that entire class of undergraduate college administration is yet not actively entered in total computerization of student services.
- The service period for various activities that bring students to administrative office is expected to decrease after computerization but it is not the case with all the colleges.
- A complete computerization should ensure that all the outputs are automatically generated and served to the student in computerized form. In a study, it was found that only some certificates are given in computerized form and not all. The concept of "computerized output" is not implemented in real sense. Many outputs were observed to be just "computer printed" and not computerized, i.e. automatically generated by software. In such case computerization cannot be said to facilitate total automation of student-services. Still there are some colleges where all the certificates are issued in manually written form.
- Majority of colleges have framed a fixed policy for computerizing their administration in totality. Having a specially framed policy indicates awareness about importance of keeping methodical approach towards computerization. The next indicator is good percentage of computer-literate staff in the colleges and imparting training to almost all the staff members.
- No fear was observed in minds of staff members about possibility of reduction in manpower. Of course there are few exceptions to this.

- Percentage of colleges that claim to have 100% success in computerizing their administration are approximately less than half out of entire group studied.
- Still there are some factors that are observed in negligible extent in some colleges. The obstacles like lack of proper motivation and positive attitude are slowing down the speed of process to reach towards “complete computerization”.
- To work with computers is no more viewed as highly technical job and is considered as routine activity. But still there is substantial number of colleges whose website is not available in accessible form even if today the basic need of any organization is to have its own website.
- Networking and e-mail facilities are available every where but the enough utilization of the same is not done in routine work of the college administration. Even today some colleges are facing the problems of in adequate computer facilities. But such colleges are very less in number.
- The awareness about computers is not totally reflected in practical utilization because still there are some colleges that don’t use communication tools like e-mail during routine work. This indicates lack of active computerization. This is the scene even if the required facilities are available in all the colleges. The college campus where there is extensive use of computers and network must have a separate person appointed to look after the hardware. However the number of colleges that have done this are negligible in percentage. There are colleges who have succeeded in developing an application-software pertaining to needs of departments. This self sufficient ness is required in upgrading service efficiency. In almost all the colleges regular meetings are conducted with various departments to discuss the issues related with computerization.
- In accounts section, almost all colleges use computers in daily work and required training is given to all with very few exceptions. They have licensed copy of branded software to handle the standard accounts procedures. In spite of all these, the percentage of colleges that use computers to handle on line transactions is not 100%. Approximately half of the total colleges were found to be implementing on line systems using computers. Even though the payroll system is computerized almost every where, the computerized pay-slips are provided to staff in very limited number of colleges.
- The accounts sections of colleges were studied by identifying different areas in which there is scope for computerization. Colleges that have totally computerized every process in accounts are not observed with satisfactory number.
- The similar situation is found in libraries. All the libraries have computers but very few are giving on line issuing services to students. Further, only limited number of colleges have maintained database of books for on line searching of desired book.

Hence the hypothesis stands validated.

Many applications that are claimed to be computerized are still carried out manually or with partially computerized methods:

It is already stated that computerization is not implemented in real sense at many places. It must lead to generation of output reports without much manual intervention, to fulfill the needs of the students and internal users of the system. This can be achieved only with a full proof software designed to run a specific application. Every document that is printed on computer cannot be assured to be truly “computerized”. From the students’ angle, computerization should facilitate quick delivery of services like issue of certificates, refunds etc. as mentioned in the list in questionnaire. Quality services include not only quick delivery but out put should have good aesthetic value and accuracy.

- It is interesting to note that there are few colleges where almost all the processes involve use of computers but still they are not totally automated. They still need considerable manual intervention. These services fall under “partially computerized” category.
- There is substantial number of colleges where the services are given totally by manual methods even today for example, leave processing of staff / student could be totally computerized by very few colleges.
- Many colleges computerized the system of fee acceptance and receipts, that being easiest transaction. Many colleges electronically maintain fee register. But similar application like bonafide certificate, leaving certificate, appointment order of staff could not be computerized by many colleges.
- There are few colleges that are unable to generate computerized outputs due to absence of appropriate application software.
- In accounts sections’ study, it was found that there are many colleges that are handling routine accounts processes purely by manual methods even if they are considered to be very easy to take up on computers. There are colleges that are running the accounts processes by partially computerized methods. In spite of ready availability of standard accounts software packages, “a complete computerization” of accounts was not observed in all the colleges.
- Exactly similar situation was found in libraries. All the colleges have computers in libraries. Branded library software like SLIM+ is available in the market. But still the student-services are carried out either by manual method or by partially computerized method. For example, letters to remind the members who do not return books in stipulated time are sent in very few libraries. And out of colleges where they are sent, very few of them generate the letters by a computer program.

Hence, the hypothesis stands validated.

Office – staff in the colleges is curious in getting computer training and use computers in routine work but at the same time they carry fear of failure and possibility of manpower reduction in minds due to lack of confidence :

To achieve success in computerization of college administration, the support of Management is an important factor. But at the same time the interest and initiative from staff side is equally important aspect for getting success in terms of improved services. Unfortunately even today

there are some misunderstandings about Information Technology. One is it results in reduction in manpower and unemployment. These misconceptions being widely spread since quite a long period, indirectly affect the process of obtaining whole hearted support to computerizing the administrative office. Other is, to work with computers is highly technical work and requires very good intellectual potential. Information technology is very difficult to learn.

Both of these are purely misunderstandings and not 100% facts. So now-a-days the attraction towards I.T. is increasing. The awareness about globalization of higher education is also spreading all over the country. As a part of this, the staff members have started accepting that there is no alternative to adoption of I.T. in routine work to withstand the competition of coming age.

- It is already mentioned in explanation of other hypotheses that in almost all the colleges computer training is imparted but still there are colleges in little extent where this training could not take place. There may be variety of reasons behind this. One of them is lack of initiative. It is to be thought about why the required initiative was not taken. It is nothing but unawareness about advantages of computers and fear of failure about computerized work procedures.
- The next interesting fact to note that, in some colleges the office-staff took keen interest in process of procuring the computers. Further, in some cases, they played an important role in deciding the configuration, other technical specifications etc. This is a recent development because before couple of years, non-teaching staff was not that much aware about computerization and its utilization. The facts analyzed above clearly indicate the curiosity and interest in the minds of staff about bringing computers at their work-places.
- It was studied that whether the common misunderstanding that computerization results in possibility of reduction in manpower, is still there in their minds. It is interesting to note that in all the colleges surveyed, every staff member was completely free from any such fear or misconception. There was not even a single person who expressed about such fear in his mind. This is indication of computer awareness and complete elimination of computer phobia.
- The administrative staff is not only curious but also hopeful about bringing positive changes in the quality of student-services after computerization. This positive approach helps to smoothen the hurdle of “resistance to change”.
- But the principals of few colleges have experienced the fear in minds of their staff about possibility of reduction in manpower. Further, Principals of some colleges have also experienced resistance to change amongst the staff. Off course these colleges are very few in number but this fact should be viewed seriously. Further, the Principals have opined that these facts are slowing down the speed of computerizing their administration. Principals also observed that staff is lagging in proper motivation.
- The reasons behind starting computerization are naturally different in various colleges. But there are at least few colleges that started the process of computerization because of interest shown amongst administrative staff. There are other reasons like increased work load,

improvement in efficiency etc. The interesting fact to note is, there are at least few colleges where this activity was started just “out of interest”.

- Almost all the staff members working in accounts section have taken initiative and obtained the sufficient training on computerized financial accounting. This again shows the interest in the minds of personnel in accounts.

From the entire explanation given above, it reveals that still there are some colleges where training could not take place and its reason is poor response from staff as viewed by principals.

In the interactions with the staff it was crystal clear that no body was carrying fear in mind about the failure in adopting the computerized systems in routine work.

Hence the hypothesis stands invalidated.

In spite of 100% support from Management, till today, “Total Computerization” is not observed in undergraduate colleges:

The research was focused on various aspects of computerization of administration in colleges. One of the objectives was to find out the reasons where the total computerization has not started yet. This information will help to locate the problems in transforming manual or partially computerized systems to totally computerized systems. The Management of colleges has realized the importance of computerization and naturally extends all possible support for computerizing the administration and student-services. But the administrative and financial support from Management is not the only criteria needed to achieve the desirable results. So it can be said that Management’s support is necessary but not sufficient condition to improve the service efficiency through computerization.

- There are the colleges in majority where Management has imparted the training to staff by appointing a professional agency from out side. This indicates the supportive approach and seriousness about the training. The next important fact to note is, all the employees are extremely happy about training given to them. Nobody from them found something that was necessary but not taught to them.
- No staff member was found who felt that certain computer facility was required but not provided to him or her. This again speaks about keenness of Management to provide all possible inputs for computerization.
- The important role of Management lies in dedicating one separate person for computerization. The Management should invest enough in human resource required for successful computerization. The Management is also one of the users of Information System of college-administration. In this view, the Management should support the automation process by extending support by means of keeping special manpower for this purpose. There are at least few colleges that have appointed exclusively separate person to lead the computerization of their administration. This shows the awareness about the necessity of separate person. The colleges that could not appoint separate person have deputed one internal staff member for the same. I.e. It can be said that the Management of every college has understood the manpower requirement for computerization and for upgrading the student-services.

- The management of today's college believes not only in assuring adequate manpower but also in providing the required training. So it was seen in almost every college (with very few exceptions) that staff members have received extensive training to work in computerized systems. Management is also keen in overcoming the problems arising while retaining the expert manpower in Information Technology. Management in some colleges has developed special administrative systems to tackle the demands from various departments regarding computerizing departmental administration that is part of college-administration.
- Some colleges have established digital library with financial and technical support from their respective Managements.

100% computerization ensures the utilization of all the strengths of computers to smoothen the routine work and improve the services. Many times the technology is underutilized and expected results are not observed. This may happen out of ignorance for which training is the only solution. Almost all the colleges have this support from management and staff has received the required training.

- The text processing is the only area where the office staff from all the colleges uses the computers. This cannot be said to be "complete computerization". It is merely typewriting and not computerization in real sense. Any such work area other than word processing was not observed where 100% colleges utilize the computers. For example, only 14% colleges use computers for graphical display of data.
- The research-study has identified various processes / activities in college-office and analysis was made regarding the extent of computerization in those processes. Not even a single service like certificates, receipts etc. was found to be totally computerized in every college. Certain service or process was found to be computerized in some colleges whereas the same was carried out by manual method or partially computerized method in the other colleges. This shows that there is no 100% computerization in undergraduate education.
- There are large number of colleges where the impression in minds of the students about the administrative office of their college is "not computerized". Computerized systems are supported to give a feel of faster services to the student who is viewed as center of the entire system of education.
- In spite of Internet facility being available every where in colleges very few colleges have uploaded the information about their past students (ALUMINI) on the Internet.
- In accounts section also not even a single process was found to be computerized in ALL the colleges. For example, the purchase orders are computerized in some colleges and are processed manually in some other college/s.
- In libraries, simple services like on line issuing of books, on line searching, communication with users are not computerized by majority of colleges. Digital library is established in very few colleges even if it is accepted all over the world.

Hence the hypothesis stands validated.

Inadequate training results in wrong or partial results in spite of good infra structural facilities of computers:

There are various factors that contribute in attaining 100% desired results after computerization. The technology must be supported by proper human resource. Today it is being age of globalization, the computer facilities are good every where. These facilities can be brought in colleges at very reasonable prices. So even some of newly opened colleges have established a full-fledged computer center. To make effective utilization of the computers, staff members working with it are required to be well trained about the concepts and practices of computerized systems. If this doesn't happen, the facilities remain underutilized and the investment made doesn't prove to be fruitful.

- There was not even a single college found where computers were not available at all. At every place computers were found in sufficient number. Further, they are available to staff for 24 hours for use. Almost all the staff members are extremely happy about computer facilities made available to them.
- In spite of ready availability of training resources, still there are some colleges where computer training has not taken place even if their computer facilities are quite good. The same situation is observed in case of training on computerized financial accounting.
- Networking is necessary requirement to upgrade the services for students. Majority of colleges have installed computer network in their campus. In spite of all these facilities, the service quality at students' end still can not be assured to be the best. Why this situation is observed? Where are the loop-holes that are causing wrong or partial results? The answers to these questions are important to take corrective measures to assure 100% desired results.
- Internet and e-mail facilities are available in all the colleges. But their proper and extensive utilization was not found in all the colleges. The only reason behind this may be lack of proper training because all other possible reasons are verified, for ex. fear in minds etc. and not found in any college. As the staff members were found quite interested in working in computerized environment without any sort of complex in mind, "the lack of training" seems to be the only hurdle causing underutilization of information technology.
- The facilities of literature and documentation of computerization are also quite satisfactory in the colleges. Technical literature is also one of the important facilities to encourage and facilitate the working with computers.
- Almost all the colleges have provided a branded software package for administration and accounts.
- In all the libraries, the computers were found in sufficient number. From all above explanation it is clear that infra structural facilities are quite good in all the colleges. So it can be said in no case that process of computerizing student services is holding back because of infra structural facilities. All the analysis described above lead to the conclusion that computer facilities in the colleges are sufficient in view of upgrading service efficiency by way of computerizing the administration.

Inadequate training results in wrong / partial results:

- It has already been explained that computers are used just for word processing in the offices of majority of colleges. This shows unawareness about capabilities of computers and ways to utilize them. This unawareness is nothing but outcome of inadequate training or not having computer training at all.
- Out of various student-services, very few services are totally computerized and that too by very few colleges. This should not be the expected result of computerization. The computerization must result in “total automation” as the objective is to improve the service efficiency towards the students.
- There are routine processes and services in college administration that are simple in nature and to computerize them is technically very simple. But such services are also not computerized in majority of colleges (for ex. leave processing, fee-receipts etc.). All other factors like management’s support, computer facilities, manpower are available but still the result observed is not “100% computerization of student-services” only because of insufficient training or no training at all. Some services are partially computerized even if facilities needed for computerizing them totally are available. For example, in libraries the database of books is available on computers but online searching facility could be made available to students at very few colleges. This can be viewed as the best example of partial or incomplete computerization. Service efficiency of staff and thereby that of the college and the service-quality experienced by students cannot assured to be the best without proper and sufficient training in spite of fulfilling all other requirements.

Hence the hypothesis stands validated.

7.10 CONCLUSIONS

Where the computerization was implemented or started, there was positive impact on over all functioning of college administration and especially on quality of student-related services.

- Views of the staff about computer facilities at their work places were obtained. From their views it was observed that the facilities regarding software, hardware and infra structure required to computerize services to students and other users of college administration are available in all aspects in 93% of the colleges imparting undergraduate education in and around Pune city but in 7% of the colleges they are not good but are moderate in view of administrative staff .
- Administrative staff opined that they are extremely happy with the facilities provided to them. This is very important because staff cannot work efficiently without satisfactory facilities and environment. The entire class of office staff expressed firmly that it is necessary to have an exhaustive computer training to start the use of computers in administration and especially in student services. 80% of the colleges have imparted enough training by inviting professional agency from out side. Still there are 20% of colleges where it was found from the discussion with the Principals that they experienced a poor response from office staff and due to lack of initiative from them the training could not take place.

In these cases, the administration of the colleges has not totally succeeded in computerizing every service given to students.

- From the feedback received from office staff, it was revealed that, now a days staff doesn't have fear in mind about possibility of manpower reduction or unemployment due to computerization. Very famous and ancient myth about computerization that "computerization results in decrease in manpower requirement" is vanishing day by day and every body has started understanding the necessity of information Technology to upgrade the services in undergraduate education.
- The areas where computers are used in routine administrative work were critically observed by visiting the colleges. In these observations and discussions with staff it was found that in the 87% of the colleges computers are used almost for word processing and data entry work. **This indicates that these colleges do not make use computers to its all capabilities so as to improve the service efficiency by a substantial extent.**
- From the office-questionnaire-data it reveals that office of 7% colleges maintain a specially designed students-database on computers to offer better services.
- It has been mentioned earlier that administrative staff is happy about the computer facilities and they opined that they are adequate. In spite of this facts, in only 47% of the colleges, staff informed that they utilize the computers for offering on line services / searching facilities to students. During the discussion at length it was known that 53% of the colleges do not follow a completely computerized procedures for on line searching of information. In the 47% colleges mentioned above, the functioning of office was studied observing student related work. It was found that out of the total services, 40% of work is totally computerized, 7% of work is partially computerized, but 53% of work was done manually. **Here it was observed that in spite of computerized set up in office the service efficiency at the user end was not improved to a remarkable extent.**
- Minimum administrative ladders help to improve service efficiency. So an opinion of staff was obtained whether there are changes in the administrative ladders and reduction in time needed for verifying the documents / certificates before signatures of authorities. **Office staff has experienced positive changes in administrative ladders in hierarchy in 47% of the colleges after starting computerization. These changes have helped to improve the service efficiency than that in past.** They (all of them) are also hopeful about bringing out such changes in future.
- "Student" is the main customer of education. There fore their views about whether there are advantages of computerization were gathered in depth. Students in 40% of the colleges informed that their office is computerized. **But they further expressed that they are not benefited much as there is no reduction in time needed for various services.**
- In 73% of colleges, students opined that there is substantial reduction in time required to avail particular service from college office colleges after adopting computerized systems. **Students, the most important users of the education system, feel these changes before and after the implementation of computerization. This service efficiency has got improved not only at the end of students but also towards the other users of the college-**

administration-system i.e. Principal, office staff, accounts staff, computer in charge, library staff etc. But services like issue of various certificates (like leaving certificate, bonafide certificate, admission letter etc. are generated through application software at 33% colleges only as per students' feedback. **i.e. Only 33% of the colleges have really succeeded in computerizing the important services like leaving & bonafide certificate, admission letter etc. as they are served to students quickly by generating through software.** In the rest of 67% colleges it was found that every body is aware of importance of "total automation" of services but whatever computerization has been taken place in various colleges, it has resulted in improving the services for students only to a limited extent. **i.e. In these 67% of colleges service efficiency is not upgraded to a substantial extent so that students and other concerned can sense it.**

- The students in 53% of the colleges experienced that the services like issue / enquiry of books became faster after computerization. **From the questionnaire it reveals that the library-services are faster after computerization.** During the observation of functioning of libraries and discussion with students in 60% of the colleges, students told that libraries have not yet entered in offering on line services to students in spite of availability of sufficient number of computers and the software. But in 40% of colleges library staff happily informed that they are implementing the method of on line services to members of library.
- As a Head of an organization, Principal plays major role in offering an efficient services to variety of users. They were thoroughly interviewed. During the dialogue and from the questionnaire-answers it is clear that they are totally aware about the need for computerization of administration and automating the routine services needed by the students. They are not only aware but they informed that 74% of them have framed a concrete policy for computerization and have taken all possible steps at their level regarding administrative and financial support, training etc. to execute the same. **In case of these 74% colleges it can be said that in future, they will attain remarkable improvement in student-services as these colleges are not casual but serious about this aspect as have formed a systematic strategy.**
- During the interaction with Principals they expressed that office staff was not found with any fear of failure about computers in their minds in 88% of colleges but there were some exceptions i.e. 12% of colleges where principals have observed and experienced hurdles like resistance to change, lack of enthusiasm etc. amongst the staff members. Initially it is quite natural also. They have started taking measures to overcome these problems. The measures are being taken by way of proper motivation, training etc. 33% of the Principals are getting complete success in eliminating the hurdles in the way leading to computerization. Computerization must result in positive changes in work distribution. It is expected that any person should be able to carry out the job of the colleague if he / she is absent as it directly improves the service efficiency of the administration. The principals of 53% of the colleges have experienced positive changes in work distribution. **Due to these changes work distribution has become more flexible which is necessary to maintain good service efficiency. The improvement in service efficiency is observed by many ways like students feed back, experience of authorities and the reasons are positive changes in working environment, interpersonal relationships, flexibility in work-distribution etc.**

- A strategy of top management towards computerization directly affects the service efficiency of college office. **Whether an exclusive person is appointed for computerization or not, partially speaks about keenness in upgrading the services.** Principals of **26%** of colleges gave feedback that a separate person is appointed to look after especially the computerization of college administration. Principals of **7%** of colleges informed that they have entrusted this task on internal staff member as additional charge. There are **60%** of colleges where there is no separate person for this work, as replied by concerned Principals. Principals of **7%** of colleges told that every staff member participates in computerization and therefore no separate person is appointed.
- A very important point to note is all i.e. **100%** the principals have a firm opinion that to work with computers is to be treated as a part of the duty and should not be treated as something very specialized work .
- From the primary data it reveals that more than half i.e. Principals of **60%** of the colleges have made use of Internet to put their web site in for the information of others.
- Out of the colleges using computers in administration, **40%** of the Principals expressed that they had started computerization keeping an objective to improve the service efficiency and to computerize the entire administration step by step.
- During an interaction with Principals, their opinion about change in service efficiency was obtained. Information about the way by which this change was noticed was also asked for. 53% of the Principals told that they did this by their own observations. 73% of the Principals told that they received informal feedbacks from the staff for this purpose. 13% of Principals informed that they carried out a systematic evaluation to assess the change in service efficiency. This means that many Principals have followed more than one method for this purpose. For ex. Some have done it both by observations and feedbacks etc.
- During the interviews with Computer Centre In charge and their questionnaires it was found that all the colleges have understood the importance of networking but still there are 20% colleges that do not have this facility. The centralized computer center is connected to the other departments / sections in the campus of 40% colleges. The modern facilities of electronic communications like e-mail are available in each and every college. **But in 60% of the colleges, Computer Centre In charge informed that extensive utilization of electronic communication tools in official work is not done.**
- It was observed that the facilities regarding technical literature (books, manuals etc.), software and hardware are adequate in **47%** of colleges only. Maintenance of hardware is out sourced by **93%** of the colleges with a few exceptions of the **7%** of colleges where a separate hardware engineer is appointed.
- In **60%** of the colleges computer in charge informed that college has prepared a systematic plan to computerize the administration especially to improve the service efficiency towards students. In **53%** of colleges, it was informed that they have also started in house development to meet the I.T. needs in their campuses. This helps to improve service efficiency easily as the inside people know their needs accurately and software becomes proper.

- In the area of accounts, during a dialogue it was found that the staff is fully aware of importance of using Information Technology in accounts work. Staff in **80%** of colleges replied that they have received training on computerized financial accounting (with few exceptions of **20%** of colleges where staff told that training was not imparted). Accounts staff of **86%** of colleges told that they have branded software (like Tally) on accounts procedures. In spite of all these facts, accounts staff in only **53%** gave a feedback that computers are utilized to offer “on line” services to the concerned. In spite of computerizing pay roll system staff of only **60%** of colleges told that they have succeeded in providing the computerized pay slips to the employees. **During an interaction it was further noticed that out of entire accounts work, only 57% of it is computerized completely.**
- The branded software packages are available in **60%** of colleges in libraries as known from library staff. The full-fledged database of books is not created and maintained in **60%** of the colleges as indicated from the opinion of the staff.
- Services like knowing availability of desired book, physical location of the book, tentative date of probable availability of particular book are given using computers in 24% of the colleges
- The concept of digital library was found implemented in the colleges with exceptional in number. Only in **6%** of colleges library staff informed that they are offering this facility to the members of library.

Some colleges have foreseen the trends of computerization, prepared well-conceived plans, and well adjusted their organizations and paces for the above impacts. So they can shift these impacts into positive pressure for growth of the college. On the contrary, some colleges lack of the necessary sensitiveness, they just computerized their campus for the purpose of computerization, regarding buying hardware and software as the final goal. By doing so, cost increased, but lacking of positive effects in terms of improved service efficiency.

Except the aspects mentioned above, there is no change in degree of computerization. From this, it is observed that computerization is being done progressively and extent of progress in computerization in various colleges under study vary.

Recent follow up study confirmed the earlier conclusions. Researcher observed that, though the number of applications implemented by the colleges under follow up sample study have increased marginally as there is some degree of organic growth, there has been no qualitative change in the over all direction of computerization. The basic inferences drawn from the previous study have there fore remained unchanged.

7.11 SUGGESTIONS:

- The concept of “service” in educational administration is yet in developing process. Its development is required to trigger the administration to rush towards 100% computerized systems that will facilitate total automation.

Training might not been imparted looking in to specific requirements or it might be proved to be insufficient so as to computerize and improve every service for students. The entire system is slightly lagging in skills needed to utilize the technology with its full strength to upgrade the

service efficiency of particular college as whole. The lacunas in training methodology and contents be reviewed and corrective measures be taken to remove the loop holes.

- During the discussion with office staff and from their questionnaire-data, it was clear that still the manual methods are followed in office-work. Merely an extensive use of computers during the routine administrative work doesn't result in real computerization because it doesn't ensure the comfort to the concerned users like students, staff members etc. While studying the various processes in the college offices it was found that computerization of many activities / services has started but the substantial elimination of manual intervention in process of giving the services has not taken place. **Service efficiency can be improved if the manual interference in the office-work is gradually minimized. During this study it was not observed. The step towards developing application software as per the exact need of office should be taken immediately. It will enable to offer the faster and faster services to students and others.**
- The "word processing" is a better term but actually speaking computers are used as typewriters as it requires minimum technical knowledge. Word processing is best tool to start working with computers but that should not be the destination.

It is seen that in 88% of colleges, information received from office-staff tells that use of computers is limited to word processing and data entry. The domain of computer usage in administration should go ahead from this primary step.

- In 60% of colleges, computer centre in charge told that exhaustive use of electronic communication tools is not done in the process of handling student-services. All the administrative information should be made available in shared form to the concerned using campus wide network. This will help to minimise the time required for internal communication amongst the various departments / sections of the college.
- It is elaborated earlier that office-staff of only 7% colleges have informed that a complete database of students is maintained on computer. There fore it is suggested that the information that is made for students, teachers etc. should be made available to the concerned. For example students should be able to see his academic record like attendance, performance in previous tests etc., financial details like fees paid, fees balance, amount of refundable deposits etc. The faculty member should be able to see his or her leave record, previous pay record with details like total earnings, total deductions on screen instead of physically finding the same in college office.
- It is observed that on line processing of student-services is not done in 47% of the colleges as found in data received from accounts departments. So it is recommended that the transaction recording of students (payment of fees, obtaining various certificates etc.) should be made on line to simultaneously create / update the database.
- Management Information System (MIS) including all the relevant information required for various users be developed. It should consist of a Decision Support System (DSS) useful in administration of the college at various levels.

ANNEXURE

QUESTIONNAIRE

IMPACT OF COMPUTERIZATION ON SERVICE EFFICIENCY – A STUDY OF UNDERGRADUATE EDUCATION IN & AROUND PUNE CITY

QUESTIONNAIRE FOR “OFFICE-STAFF”

Personal Information:

Name: _____

Post held: _____

=====

1. How many computers are available in your office?
 - a. Zero
 - b. 5
 - c. 10
 - d. 20
 - e. Above
2. Whether the computers in your office were brought all at once or step by step?
 - a) All at once
 - b) Step by step
3. Out of total computers in the office are all computers accessible to all?
 - a) Y
 - b) N
4. How are the computer facilities in your office?
 - a) Good
 - b) Bad
 - c) Moderate
5. Do you feel that a formal training is must to start the use of computers in routine work?
 - a) Y
 - b) N
6. Have you received any formal computer training?
 - a) Y
 - b) N
7. If you have not received the formal training what might be the reasons behind the same?

- a) Lack of management's support
 - b) Lack of adequate funds
 - c) Lack of interest amongst the office-staff
 - d) Lack of initiative
 - e) Unavailability of suitable external professional agency
8. If yes, what was the source of training?
- a) Professional training institute from outside
 - b) Computer staff of your college
9. What is your opinion about the training given to you?
- a) Adequate
 - b) Inadequate
10. If it was inadequate, have you informed about the same to the Management?
- a) Y
 - b) N
11. How much useful did you find this training in view of using computers in daily work?
- a) Very useful
 - b) Not that much useful
 - c) Not useful at all
12. Was there any advice that you would have found useful but you didn't receive?
- a) Y
 - b) N
13. If yes, please specify in brief.
-
-
-
-
14. Do you hope that if computers are introduced in office they will cause positive changes in office?
- a) Y
 - b) N
15. If computers are available presently was the office-staff consulted before purchasing the computers?
- a) Y

- b) N
16. If yes was there full freedom to users about making choice of the computers?
- a) Y
- b) N
17. Do you carry any fear in your minds of the staff members about reduction in manpower after computerization?
- a) Y
- b) N
18. In what area you are using the computers presently, as a part of work?
- a) Text processing
- b) Data collection
- c) Data storage
- d) Data entry
- e) Data analysis
- f) Graphical display of data
- g) Sending & receiving mail to the colleges / University
- h) Exchange of data with the colleagues reading academic literature
- i) Searching online database
19. What type of computer you use?
- a) Stand alone
- b) Networked
20. What is the method you adopt to maintain information of the students?
- a) Lists
- b) Files
- c) Ledgers
- d) Combination of all these
- e) If any other, please specify.
21. Are computers utilized to carry out / administer the admission process?
- a) Y
- b) N
22. What activities / services in your office are computerized, partially computerized or done fully by manual process? (please tick in proper column)

Sr. No.	Activity	Computerized	Partially computerized	Totally manual method
1.	Admission form			
2.	Fee acceptance & receipt			
3.	Bonafide Certificate			
4.	Transcript Certificate			
5.	Railway/bus concession form			
6.	Hall tickets(admit cards)			
7.	Returning deposit/caution money			
8.	Appointment order of staff			
9.	Leave application form for staff			
10.	Leave application form for student			
11.	Database of present/past students			
12.	Fee register			
13.	Eligibility register			
14.	Exam. performance register			
15.	Students' personal information register			

23. Do you maintain employees' database on computer?

- a) Y
- b) N

24. What is the method of maintaining the leave record of the staff?

- a) Filing system
- b) Leave database on computer
- c) Card system

25. Do you feel that work efficiency of the office has been improved after using computers in routine work?

- a) Y
- b) N

26. After computerization have you noticed any change in administrative ladders of organizational structure?

- a) Y

b) N

27. After computerization have you noticed any change in inter personal relationships?

a) Y

b) N

28. Do you feel that in future also the changes will take place in the administrative structure of the office due to the computerization going on presently?

a) Y

b) N

29. Are there any facilities that you feel necessary but are not available on computers in the office?

a) Y

b) N

30. If yes, please explain in brief about them.

IMPACT OF COMPUTERIZATION ON SERVICE EFFICIENCY – A STUDY OF UNDERGRADUATE EDUCATION IN & AROUND PUNE CITY

QUESTIONNAIRE FOR “STUDENTS “

Personal Information:

Name: _____

Class: _____

31. What are variety of reasons for which you require to approach the office of the college?
(Please tick amongst the list of probable reasons)

- f. Obtaining information about time table
- g. Obtaining identity card,
- h. Obtaining admit card
- i. Filling the examination form
- j. Deposition of fees
- k. Getting the result
- l. Filling verification/revaluation form
- m. Obtaining some certificate (for ex. Leaving certificate)
- n. Traveling concession forms
- o. Obtaining information about University rules, ordinances etc.
- p. Refund of deposits (for ex. caution money)
- q. Training & placement
- r. Library related matters

31. What are the tentative periods required to get these done?

WORK	Few hrs.	A day	A month	> A month
1. Obtaining information about time table				
2. Obtaining identity card				
3. Obtaining admit card				
4. Filling the examination form				
5. Deposition of fees				
6. Getting the result				
7. Filling the verification / revaluation form				
8. Obtaining some certificates (for ex. leaving certificate)				

9. Getting/signing travel concession forms				
10. Obtaining information about rules, ordinances etc.				
11. Obtaining the various deposits (for ex. caution money)				
12. Training and placement				
13. Library related matters				

33. What is your observation about the office of your college in view of computerization?
- Not computerized
 - Partially computerized
 - Fully computerized
34. Is there any reduction in time required in getting work done related to various reasons listed in Q.2 after computerization?
- Y
 - N
35. What is your observation about the library of your college in view of computerization?
- Not computerized
 - Partially computerized
 - Fully computerized
36. If it is computerized, are you getting the issue of books & other related services faster than in the period before the computerization?
- Y
 - N
37. Whether the database of books-catalog in made available on line for searching?
- Y
 - N
38. Which of the following certificates are available in a computerized form? (Please tick)
- Time table
 - Admit card
 - Bonafide certificate
 - Leaving certificate
 - Admission letter
 - Mark sheets of internal examinations

- g. Receipt of fees
- h. No dues certificate

IMPACT OF COMPUTERIZATION ON SERVICE EFFICIENCY – A STUDY OF UNDERGRADUATE EDUCATION IN & AROUND PUNE CITY

QUESTIONNAIRE FOR “PRINCIPALS “

Personal Information:

Name: _____

Post held: _____

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39. Do you feel that computerization of administrative office is must in near future to withstand in the competition in education field?
- a. Y
 - b. N
40. Have you fixed any policy regarding the use of computers in present or near future?
- a. Y
 - b. N
41. Please give the following details.
- a) Number of total staff – ()
 - b) Number of computer literates out of them – ()
42. Have you sat down & planned for computerization or just got on started using computers?
- a. Planned in advance
 - b. Just started working
43. In your annual budget, is there a separate provision for computerization of administration of your college?
- a. Y
 - b. N
44. Did you experience any fear in the minds of the staff members about reduction in manpower after computerization?
- a. Y
 - b. N
45. Whether the quantity of manpower is reduced after computerization?
- a. Y
 - b. N
46. Whether any specific measures were taken by you to start the computerization in administration of your college?

a. Y

b. N

47. If yes, please specify them in brief.

48. What is the percentage of success about the measures taken?

a. 25%

b. 50%

c. 100%

49. If the process of computerization has already been started in your administrative office, have you noticed any changes in the working environment?

a. Y

b. N

50. If yes, how these changes are?

a. Good

b. Bad

c. Neither

51. Is there any effect observed regarding the distribution of work due to usage of computers?

a. Y

b. N

52. If yes, whether these changes are good, bad or neither in view of improving the quality of work, speed of rendering the services etc.?

a. Good

b. Bad

c. Neither

53. If the process of computerization has not started in your office what are the reasons of the same in your opinion?

a. Lack of guidance

b. Lack of motivation

c. Lack of funds

d. Lack of space

e. Lack of positive attitude to adopt the change

f. Unable to specify

-
54. Are there any particular factors that are holding back the computerization in the offices of colleges?
- Y
 - N
55. If yes please specify or tick on the probable reasons listed below.
- Lack of interest amongst staff
 - Lack of motivation
 - Lack of training
 - Lack of sufficient funds
 - Lack of management's support
 - Resistance of staff to adopt the change
 - Lack of enough time
 - Other (please specify)
56. What measures you suggest and take to overcome these? (Please tick)
- Convincing the staff
 - Organizing proper training
 - Giving incentives to learners
 - Enforcing
57. Have you appointed any person exclusively to start & lead the computerization?
- Y
 - N
58. If yes, what is the nature of his/her appointment?
- Permanent
 - Temporary on ad hoc basis
 - Contract basis
59. This person is working with your college for previous :
- One year or less
 - More than one year
60. Please tick on appropriate statement.
- Staff members should be given incentives/rewards as appreciation if they use computers in daily work
 - Working on computers should be viewed as a part of their duty

61. If “a” in above is true, have you formulated any system of giving incentives/rewards?

- a. Y
- b. N

62. If yes, please give the details.

63. If any separate person is not appointed, any internal person is fixed to handle this task?

- a. Y
- b. N

64. What is the nature of his responsibility?

- a. Exclusively to look after computerization
- b. Additional responsibility

65. Did you face any problems in retaining the expert manpower in this field?

- a. Y
- b. N

66. If yes are you taking any specific measures to overcome them?

- a. Y
- b. N

67. If no, what methods did you adopt to retain the experts?

- a. Offering freedom of work & good work-atmosphere
- b. Offering good pay package

68. If you demand for some information, to assisting administrative staff, is it made available immediately to serve your purpose?

- a. Y
- b. N

69. Whether the web site of the college is designed & made available on internet?

- i. Y
- ii. N
- iii. It is in progress.

70. Which were the initial reasons behind purchase of computers?

(Please tick on one or various reasons whichever are applicable)

- a. Increased work load
 - b. Just interest
 - c. To improve the efficiency of office staff
 - d. To go for computerization of college-administration step by step
 - e. Other (please specify)
71. Whether an impact is observed after computerization in terms of job roles?
- a. Substantial impact
 - b. No impact observed
72. Do you feel that work efficiency of the office has been improved after using computers in routine work?
- a. Y
 - b. N
73. What is the source of this opinion?
- a. Qualified evaluation
 - b. Informal feed back from others concerned
 - c. Own observations

IMPACT OF COMPUTERIZATION ON SERVICE EFFICIENCY – A STUDY OF UNDERGRADUATE EDUCATION IN & AROUND PUNE CITY

QUESTIONNAIRE FOR “COMPUTER CENTRE I/C “

Personal Information:

Name: _____

Post held: _____

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74. Please opine about the present investment in your computer setup.
- a. Insufficient
 - b. Sufficient
 - c. More than sufficient
75. If “a”, whether any measures are being taken to make it sufficient?
- a. Y
 - b. N
76. Whether LAN (Local Area Network) is installed?
- a. Y
 - b. N
77. If yes, your computer center connected with all other departments / units in the college through the network?
- a. Y
 - b. N
78. Whether the Internet, E-mail facilities are available?
- a. Y
 - b. N
79. If yes, do you use them while communicating with external agencies (i.e. colleges, University etc.) during official work?
- a. Y
 - b. N
80. Whether the separate library of computer related books, manuals is maintained locally at computer center?
- a. Y
 - b. N
81. What method is adopted for maintaining the hardware?

- a. Separate hardware engineer is appointed
 - b. Annual maintenance contract to outside agency
82. What type of printers are used in office?
- a. Dot matrix printers
 - b. Ink jet printers
 - c. Laser jet printers
 - d. Color laser jet printers
83. Do you send your staff for training programs / seminars to keep them updated and conversant with current developments in the field of technology?
- a. Y
 - b. N
84. Do you receive the service demands regarding computer – related services / solutions to operational problems in routine working with computers?
- a. Y
 - b. N
85. If yes, whether these demands are verbal or in writing?
- a. Verbal
 - b. In writing
 - c. Both
86. Which type of demands, are normally attended on priority basis?
- a. Verbal
 - b. Written
 - c. Both
87. Do you maintain a catalog of “demands for computerizing the routine activities “, department / section wise?
- a. Y
 - b. N
88. Have you prepared the timetable for computerizing the entire administration of the college, department wise, and submitted to the management?
- a. Y
 - b. N
89. Have you developed a separate system for handling such demands?
- a. Y

- b. N
- 90. Have you spared the separate manpower within your unit only to address the needs of other departments in your organization?
 - a. Y
 - b. N
- 91. If no, what are the reasons?
 - a. Insufficient manpower
 - b. Too little frequency of problems to spare separate manpower
- 92. If yes, do they visit various departments periodically or only when certain problem / service demand is reported?
 - a. Periodically
 - b. Only when problem is reported
- 93. Have you developed any software packages for any individual department(s) for their internal use in daily work?
 - a. Y
 - b. N
- 94. Which method do you recommend for computerizing the administration of the college?
 - a. In house development
 - b. Entrusting the entire task on outside agency
- 95. Do you conduct regular meetings with other departments?
 - a. Y
 - b. N

IMPACT OF COMPUTERIZATION ON SERVICE EFFICIENCY – A STUDY OF UNDERGRADUATE EDUCATION IN & AROUND PUNE CITY

QUESTIONNAIRE FOR “ACCOUNTS OFFICER “

Personal Information:

Name: _____

Post held: _____

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96. Are you aware of the importance of computers in smoothening accounts’ work?

- c. Y
- d. N

97. Have you received a formal training on “Computerized Financial Accounting”?

- a. Y
- b. N

98. If yes, who imparted that training?

- c. Computer Department of your college
- d. Out side agency

99. Do you work on computers for official purpose?

- e. Y
- f. N

100. If yes, what type of software you use?

- a. Ready made software
- b. Software which is developed in house

101. Do you use computers for on line data processing? (for example, fees acceptance & giving receipt)

- a. Y
- b. N

102. Whether your pay roll system is computerized?

- a. Y
- b. N

103. Do you provide computerized pay slips to staff?

- a. Y
- b. N

104. If not what are the reasons for inability of providing computerized pay slips? (Please tick whichever is applicable.)

- a. Lack of software
- b. Lack of suitable hardware
- c. Both
- d. Other. (Please specify)

105. Whether the standard commercial packages for accounts purpose are available in your section?

- a. Y
- b. N

106. If yes, please give their names.

107. Which activities from the following are computerized in your office? (Please tick in the proper column.)

Sr. No.	Activity	Computerized	Partially computerized	Manual
1.	Annual Budget			
2.	Balance sheet			
3.	Annual report/magazine			
4.	Purchase orders			
5.	Comparative statements			
6.	Audit			
	Please specify if any other activity is present			

IMPACT OF COMPUTERIZATION ON SERVICE EFFICIENCY – A STUDY OF UNDERGRADUATE EDUCATION IN & AROUND PUNE CITY

QUESTIONNAIRE FOR “LIBRARIAN “

Personal Information:

Name: _____

Post held: _____

=====

108. Are computers available in the library?

- a. Y
- b. N

109. If yes, tick on the applicable alternative about their number.

- a. <5
- b. 5 to 10
- c. >10

110. Whether the stock register of books is available on computers?

- a. Y
- b. N

111. Whether the author wise and title wise index of books is available on computers?

- a. Y
- b. N

112. Whether the department wise libraries are maintained in various departments?

- a. Y
- b. N

113. Whether the status of availability of particular book can be known from computer?

- a. Y
- b. N

114. Whether the location of particular book can be known from computer?

- a. Y
- b. N

115. Whether the tentative date of becoming particular book available is displayed on computer?

- a. Y

- b. N
- 116. Whether the price list of all the books is available on computer?
 - a. Y
 - b. N
- 117. Whether department wise total investment in books is recorded & maintained on computer?
 - a. Y
 - b. N
- 118. Whether any branded software is made available in your library?
 - a. Y
 - b. N
- 119. Do you send the letters to the members not returning the books in time?
 - a. Y
 - b. N
- 120. If yes, whether these letters are prepared manually or are computerized?
 - a. Manually
 - b. Computerized
- 121. Whether the concept of digital library is introduced?
 - a. Y
 - b. N
 - c. In progress

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