CHAPTER I
INTRODUCTION

1.0 INTRODUCTION

Education is one of the basic tools for making people as good citizens. It constitutes the core of human resource development. The growth and development of education facilities of all kinds in the third world countries, with plans to induct all sectors of community, is interesting and instructive.

A compelling need of innovative methods for the technical and non-technical workers has been brought about by revolutionary changes in the field of Information and Communication Technology (ICT) so that the workers can equip themselves according to the requirements of the workplace. The application of technology world over has brought radical changes in the traditional view on career option and security. Within the context of rapid technological change and shift in market conditions, the Indian education system is challenged with providing increased educational opportunities and with increased budget.

New millennium experiences the phenomena of liberalization, privatization, globalization and easy access expediting the emergence of Virtual Universities. The emergence of Virtual University enables the learners to study at work and at home. The learners in the information age can determine their own pace of study and gain quality control values, both to them and to their organizations and can collaborate with conventional universities in conducting need-based programs.
The vision of the Government of India is to attain the status of a developed nation by 2020. The application of ICT in higher education can prove effective to achieve India the status of developed nation\textsuperscript{1}.

In this chapter, a general introduction to the concept of e-governance, need of e-governance and various e-governance initiatives in international and national level and the need for the study of implementation of e-governance in affiliating Indian universities are given. It also presents a brief history of Indian education system and the role of various academic bodies such as University Grants Commission and National Assessment and Accreditation Council.

1.1 INTERNET

Internet today is widely recognized not only as a means of communication but also as a power. It is slowly becoming the key means for information gathering and exchange, education and training, as well as for commerce.

Internet is a collection of thousands of individual networks and organizations, each of which is run and paid for on its own. Each network cooperates with other networks to direct Internet traffic so that information can pass among them. Together, these networks and organizations make up their wired world of the internet.

\textsuperscript{1} Romesh Verma, \textit{Distance Education in Technological Age}, Anmol Publications Pvt. Ltd, New Delhi, India
The conceptual foundation for creation of the Internet was significantly developed by three individuals and a research conference, each of which changed the way we thought about technology by accurately predicting its future:

- Vannevar Bush wrote the first visionary description of the potential uses for information technology with his description of the “memex” automated library system.
- Norbert Wiener invented the field of cybernetics, inspiring future researchers to focus on the use of technology to extend human capabilities.
- The 1956 Dartmouth Artificial Intelligence conference crystallized the concept that technology was improving at an exponential rate, and provided the first serious consideration of the consequences.
- Marshall McLuhan made the idea of a global village interconnected by an electronic nervous system part of our popular culture.

Several research programs began to explore and articulate principles of networking between physically separate networks, leading to the development of the packet switching model of digital networking. A special computer called an Interface Message Processor was developed to realize the design, and the ARPANET went live in early October 1969. The first communications were between Leonard Kleinrock’s research center at the University of California at Los Angeles, and Dougals Engelooart’s center at the Stanford Research Institute.
The first networking protocol used on the ARPANET was the Network Control Program. In 1983, it was replaced with the TCP/IP protocol developed by Robert Kahn, Viston Carf and others, which quickly became the most widely used Network Protocol in the world.

When information is sent across the Internet, the TCP breaks it up into packets. The computer sends those packets to local network, Internet Service Provider (ISP), from there, the packets travel through many levels of networks, computers and communication lines before they reach their final destination.

The late 20th century has witnessed the development and growth of the Internet much like the post-world war II era saw the growth of television. Use of the Internet, and applications such as the World Wide Web (WWW), is no longer a novelty but is becoming as commonplace as the use of the telephone and television.

According to “Internet Usage and World Population Statistics, June 2008, only 21.9% of world population is using the Internet service, in which North America’s contribution is 73.6%. The usage growth from 2000 to 2008 has been increased by 305.5%.

1.2 E-GOVERNANCE

E-Governance is generally referred to as the capacity of ICTs to harness changes looking not only at the increasing use of ICTs as a technological tool for delivering services online and improving the efficiency of administrations, but also as a new
paradigm for opening up government services to citizens, thereby increasing transparency and participation and making government more responsive and centered upon its citizen’s needs.

The advent of information age makes it possible for governments to pursue managerial or governing excellence. E-governance initiatives around the world are certainly playing an important role to redefine the fundamental elements of government, improve government performance, as well as to change the traditional governance institutions and regimes globally.

E-Governance has been defined as the processes of enabling transactions between concerned groups and the government through multiple channels by linking all transaction points, decision points, enforcing/implementation points and repositories of data using ICTs, to improve the efficiency, transparency, accountability and effectiveness of government.²

E-Governance can be categorized as follows

Service to Citizens and Business

- Improve customer satisfaction with access and response
- Achieve savings through moving services online
- Reduce burdens all round

² Anil Srivastava. “E-Governance or Development What Comes First: Issue and Correlations”. Syracuse: The Maxwell School of Citizenship and Public Affairs, Syracuse University
Internal cost efficiency and effectiveness

- Make government employees more productive
- Share infrastructure costs with service delivery
- Improve process and cycle time

Economic Development

- Complete to attract investment
- Reduce burdens on businesses
- Enable business for the digital economy
- Create employment
- Develop existing workforce and attract new

E-Communities

- Enable virtual citizen and business communities
- Add at marginal cost over service infrastructure
- Contributor (quality of life) to economic development

Digital Democracy

- Support e-mediated exchange of value in democratic process information, opinions, campaigning and contributions.

Improving Policy Formulation

- Information gathering and analysis
- Assimilation and decision support
Each government contemplating an e-governance initiative will probably have one or more of these areas at the top of its agenda. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth and/or cost reduction.

1.3 NEED OF E-GOVERNANCE

Citizens all over the world are demanding governments to be more open in their interaction with the civil society. Access to information and knowledge about the political process, about services and about choices available, is a characteristic requirement in all good governance systems.

The prime question remains as to what is it that citizens really want from e-governance. Is there more to e-governance than e-commerce translated to the public sector? Do the standard engineering metrics-faster, better, cheaper--capture the potential of the Internet and WWW to connect citizens to one another and to their government?

There are at least three basic needs apart from the potentials of e-commerce, that ask for instituting “e-governance” both in developing and developed countries.

First, the essentiality of electronic governance emanates from emerging “participatory models” in management systems. The argument lays stress on shared vision for strategies both at the horizontal and vertical levels of planning and management. Therefore, in order to involve citizens in dialogue and decision-making at the public
policy and practice levels, there is a great need for making government departments reachable to stakeholders through harnessing the potentials of new technologies and media.

Second, there is a need to bridge information – data gaps and lapses which lead to inappropriate planning and decision making divorced from sharable scientific statistical data amongst the government departments and planning agencies.

Third, the emerging new model of good governance, which stress to involve governments, civil society and businesses community at appropriate levels of planning and implementation, makes it imperative to let decision making bodies, personnel debate, electronically accessible to public with the rapid diffusion of ICTs in societies.

In today’s speedy and accelerative world passing through a phase of transition like all previous times in which not only means of communication but the very living patterns and norms of societies are in the melting pot, there is an unprecedented urgency for making bureaucracies and state governments responding to social needs.

Governments can respond to the need to be more open by adopting a number of principles of information management, using a mix of technologies.
1.4 E-GOVERNANCE IN WORLD LEVEL

An assessment made by some consulting companies indicates that e-governance is in a nascent stage of implementation in both developed and developing countries\(^3\). Government departments in many developing countries publish information on websites as a first step towards e-governance. Many of these sites are poorly designed and the departments do not update or monitor the quality of information. Initially the publishing of information online was targeted to attracting foreign investments, but as Internet penetration grew in urban areas, many sites began to focus on delivering information and services to citizens and businesses. A large number of developing countries from Asia and Latin America have implemented transaction oriented e-governance applications on a pilot basis. However, only a few of these pilots have been replicated on a wider scale.

A number of countries have implemented online business registration, filing of corporate tax and clearance of traded goods through customs, which have in turn reduced the time and costs for business and the government in processing taxes, and have lessened corruption.

Some countries have used e-governance applications to reach out to communities that do not have easy access to government information. Many of these applications, done as pilot, require that government departments invest a significant amount of time in developing content that is relevant and useful to community needs. In rural South

---

Asia and Latin America, a number of these applications have resulted in limited empowerment of communities that previously could not acquire information such as government rules or prices of agricultural commodities either due to physical distance or corruption. A number of governments in Asia, Latin America, and Central and Eastern Europe are using the Internet to increase external accountability through publication of budgets, civil servant assets, and notices of procurement awards and procedures. Providing this kind of information online has increased transparency of government spending and operations, and also enabled civil society to better monitor government performance and activities.

Developing countries have the advantage of not having a large number of legacy systems. In principle they would leapfrog to an advanced multilayered architecture in the design of their systems to ensure security, scalability and data sharing across applications. In practice, the lacks of resources and technical capacity have produced a great deal of variability in the technical sophistication of e-governance applications built in developing countries. Resource constraints often force departments to use in-house software developers who are not up-to-date in their technical skills and tend to economies in hardware/software purchase.

Many developing countries have adopted a creative approach in designing e-governance applications to overcome the digital divide and lack of resource. As a result, e-governance applications are built different from similar applications in industrialized countries where the delivery model is based on self-service through the Internet.
In the absence of country-wide policies on data standardization and data sharing, security provisions have not been a major issue for citizens in the developing world. Governments are now recognizing the need for authenticating users. Security over network is becoming an issue and the need for a certification authority is being felt.

In countries that use languages other than English, some have been more successful than other in developing a local language interface for their applications. For example, the Middle Eastern countries that use Arabic have been very successful in developing a standard for the local language interface. Similarly in Latin America the use of Spanish is well developed.

In most of countries, e-governance is applied to achieve the objectives of the chief public sector reform ideology since the early nineties the New Public Management (NPM), the “reinventing government” initiative in the US. These overall frameworks of reform are politically determined, and use of digital technologies is merely making possible new levels of achieving these objectives. Among different developed countries, governance reforms, and consequently e-governance, have significant differences of focus, even within a broader framework of NPM. While in the US the major objectives are cost saving, internal efficiency, private partnership and performance measurement; in the UK personalized services is the top objective of governance reform and a shared–culture within the government. Both e-governance

---

strategies and implementation have corresponding differences in orientation, as well as many common elements.

The US federal government’s e-governance effort is led by the President’s office, through the Office of Management and Budgets. In Brazil, the Minister Chief of Staff of the Brazilian Presidency is responsible for implementing the country’s e-governance vision. In Ireland e-governance is directly under the Prime Minister Office. In UK this responsibility is with the e-governance unit in the Cabinet Office. In Mexico recognizing the need for greater institutionalized of e-governance, the e-governance unit has recently been moved from the President’s Office to the Ministry of Public Administration.

In South Africa, e-governance is with Department of Public Service and Administration – Office of the Government Chief Information Officers, and in Australia with the Department of Finance and Administration – Government Information Management Office, overseen directly by a Special Minister of State.

\[5 \text{ http://www.whitehouse.gov/omb} \]
\[6 \text{ http://archive.cabinerooffice.gov.ie/index.asp?locID=175&docID=1} \]
\[7 \text{ http://archive.cabinetoffice.gov.uk/e-governance/} \]
\[8 \text{ http://www.funcionpublica.gob.mx/english/} \]
\[9 \text{ http://www.dpsa.gov.za/} \]
\[10 \text{ http://www.agimo.gov.au} \]
In Denmark e-governance is a part of the Ministry of Finance’s government modernization programme\textsuperscript{11}, in Korea it is with the Ministry of Government Administration and Home Affairs\textsuperscript{12}, in New Zealand the responsibility lies with the State Service Commission\textsuperscript{13}, in Finland with the Public Management Department\textsuperscript{14}, and in Norway with the newly created Ministry of Modernisation\textsuperscript{15}. In fact there is no country with any serious e-governance effort where the IT Department is in charge of e-governance.

In UK, the distinction between issues of “service transformation” and process/system restructuring on one hand and technical common infrastructure on the other is kept very clear. Under the overall remit of the E-governance Unit, the former is the responsibility of the “Service Transformation Board” and the “Chief Information Officers Council” and the “Chief Technology Officers Council”. The technology support groups are clearly there to serve the priorities of the “business” group\textsuperscript{16}.

In the US, while the e-governance strategy is provided by the Office of Management and Budget (OMB) under the President’s Office, separate structures for public sector technology support to serve e-governance strategy have been laid out. In 2006 OMB

\textsuperscript{11} http://www.fm.dk/1024/default_eng.asp
\textsuperscript{12} http://www.mogaha.go.kr/warp/webapp/home/en_home
\textsuperscript{13} http://www.ssc.govt.nz/display/home.asp
\textsuperscript{14} http://www.vm.fi/vm/en/02_Ministry/02_organisation_and_functions/06_public_management_department/index.jsp
\textsuperscript{15} http://www.regjeringen.no/en/dep/fad.html?id=339
\textsuperscript{16} http://archive.cabinetoffice.gov.uk/e-governance/
identified the Infrastructure Optimization Initiative (IOI) as an e-governance Line of Business (LoB)\textsuperscript{17}. The federal logistics support agency, General Service Administration (GSA), was selected as the managing partner for this LoB. A government-wide IOI Task Force was created to develop “Common Solutions” to realize the goals and objectives of this LoB. With GSA, the technology support activity is looked after by the “Office of Technology Strategy”\textsuperscript{18}.

In Denmark, while the e-governance program is part of Ministry of Finance’s government modernization program, the Ministry of Science, Technology and Innovation contributes via the government’s IT policy and the public sector IT policy, “to the realization of government policy with respect to citizens, business and the public sector”\textsuperscript{19}. This Ministry is responsible to the public sector for technical development, including the compilation of standards and policies.

The United Nations Department of Economic and Social Affairs (UNDESA) report, “World Public Sector Report 2003: E-governance at the crossroads\textsuperscript{20},” is worth quoting at some length on the issue of key ‘higher level’ policy choices involved in e-governance, which cannot be abdicated by any government.

\textsuperscript{17} http://www.whitehouse.gov/omb/egov/c-6-9-ioi.html

\textsuperscript{18} Office of Technology Strategy, http://159.142.162.71/Portal/gsa/cp/channelview.do?pageTypeId=8199&channelPage=%2Fep%2Fchannel%2FgsaOverview.jsp&channelId=-13315

\textsuperscript{19} http://oldgov.dk.upsilon.t3c.dk/english/government/egov/government_strategy/development_and實施mentation/index.html

\textsuperscript{20} http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN012733.pdf
Right now, very few dispute the claim of the New Public Management reforms that efficiency and effectiveness is possible in government operations. Therefore, for many, building e-governance applications for the sake of efficiency and effectiveness alone is a beneficial enough initiative. However, a discussion on the use of ICT to raise efficiency and effectiveness would not present the whole picture. It would also have to address the fundamental issue of the ‘trade off’ with which the introduction of modern ICT confronts any society.

In the case of e-governance, this trade-off and the concerns that are raised have to be considered early on and carefully. ICT alone, to say nothing of ICT in the hands of public administration, represents a great power to transform.

1.5 SOME OF THE MAJOR E-GOVERNANCE INITIATIVES IN INDIA

In India the government has taken as a policy to promote E-Governance initiative to ensure transparent, speedy and responsive delivery of government services to the citizens. E-governance initiatives were taken in major departments like Registration, Revenue, Transport, etc. The Electronic Delivery of Services (EDS) is receiving a lot of thrust. The payment of utility service charges of TNEB, Metro water and Chennai Corporation can be effected through the EDS centres. To promote E-Governance in the Government during 2004-05, a sum of Rs.2357.52 lakhs has been provided in the State Budget under Part-II (new) schemes for 2004-05 of which Rs.1836.52 lakhs is provided under Plan schemes and Rs.521 lakhs under Non-Plan towards hardware and software for the Departments of Commercial Taxes, Registration, Treasuries &

The Department of Revenue in Karnataka State has computerized 20 million records of land ownership of 6.7 million farmers in the State. Previously, farmers had to seek out the Village Accountant to get a copy of Record of Rights, Tenancy and Crops (RTC) – a document needed for many tasks such as obtaining bank loans. For a fee of Rs. 15, a printed copy of the RTC can be obtained online at computerized land record kiosks (Bhoomi centers) in 177 taluk offices. This system works with the software called “BHoomi21” designed fully in-house by National Informatics Center, Bangalore. The Department of Information Technology, Govt. of India has embarked upon a major programme to rollout Land Records Computerisation in several States of the country.

Launched on the 25th of August 2001, electronic seva (e-Seva22) is the improved version of the TWINS project launched in 1999, in the twin cities of Hyderabad and Secunderabad in Andhra Pradesh. Seventy centers are in operation at different municipalities covering thirteen districts. The eSeva centres offer 118 different services like payment of utility bills/taxes, registration of births/deaths, registration of applications for passports, issue of births/deaths certificates, filing of Sales Tax returns, Trade licenses of MCH, B2C services like payments of Tata Teleservices,

21 www.revedept-01.kar.nic.in/Bhoomi/Importance.htm
22 www.esevaonline.com
Reliance and sale of Airtel Magic cards. These services can be availed at any counter in the centre and at any place in the city.

The Computer-aided Administration of Registration Department - CARD in Andhra Pradesh is designed to eliminate the maladies affecting the conventional registration system by introducing electronic delivery of all registration services. CARD\textsuperscript{23} was initiated to meet objectives to demystify the registration process, bring speed, efficiency, consistency and reliability, and to substantially improve the citizen interface etc. Six months following the launch of the CARD project, about 80\% of all land registration transactions in AP were carried out electronically. Since 60\% of the documents, Encumbrance Certificates (ECs) and certified copies relate to agricultural properties, the success of the CARD project has great benefit for the rural farming community. CARD is operational at 387 Sub-registrar offices in the entire state of Andhra Pradesh since 1998.

FRIENDS is part of the Kerala State IT Mission. FRIENDS\textsuperscript{24} counters handle 1,000 types of payment bills originating out of various PSUs. The payments that citizens can make include utility payments for electricity and water, revenue taxes, license fees, motor vehicle taxes, university fees, etc. Firewalls safeguard data from manipulation. The application has provisions for adding more modules and for rolling back incorrect entries without affecting the database even at the user level. One important feature of FRIENDS is a provision for adding more modules and a queue management system.

\textsuperscript{23} http://www.ap-it.com/cards.html

\textsuperscript{24} http://www.friendscentre.net/
The Gyandoot project was initiated in January 2000 by a committed group of civil servants in consultation with various gram panchayats in the Dhar district of Madhya Pradesh. Gyandoot\(^{25}\) is a low cost, self-sustainable, and community-owned rural Intranet system (Soochnalaya) that caters to the specific needs of village communities in the district. Thirty-five such centres have been established since January 2000 and are managed by rural youth selected and trained from amongst the unemployed educated youth of the village. They run the Soochanlayas (organised as Kiosks) as entrepreneurs (Soochaks); user charges are levied for a wide range of services that include agricultural information, market information, health, education, women’s issues, and applications for services delivered by the district administration related to land ownership, affirmative action, and poverty alleviation. Kiosks are connected to the Intranet through dial-up lines, which are soon to be replaced by wireless connections using CorDECT technology. The Soochanlayas have been equipped with Pentium multimedia colour computer along with dot matrix printers. The user interface is menu based with information presented in the local Hindi language and the features of the Gyandoot software are continuously being updated.

Lok Mitra\(^{26}\) is the first of its own kind of Electronic service in the state of Rajasthan. It aims to deploy Information Technology for the benefit of the masses. It is a onestop, citizen friendly computerized centre located in the heart of the city at

\(^{25}\) [www.gyandoot.nic.in](http://www.gyandoot.nic.in)

\(^{26}\) [http://www.lokmitra.gov.in](http://www.lokmitra.gov.in)
Government Hostel, Jaipur. This has provided relief to a common man as he gets efficient services through IT driven interfaces at a single window.

Launched on the 17th of July 2002, as part of the VISION 2020, the state's focus on modernization of police administration takes the shape of eCOPS\textsuperscript{27}. It will help police stations reduce paperwork and automate the maintenance of registers, report generation, data analysis, planning and coordination, enable the speedy detection of crime and monitor prosecutions. For citizens, the project will lead to online interaction with the police department over the Internet. The central Oracle database of crime records is hosted at the DGP’s office in Hyderabad. This database records information such as FIR (First Information Report) crime detail form, arrest/court surrender, charge sheet and case disposal reports.

The Tamil Nadu State Wide Area Network (TNSWAN) is the first State wide area network in the country that has commenced commercial operations since December 2007. The overall cost of the project for five years is Rs 181.69 crores. The share of the Central Government in this project is Rs 97.17 crores and that of the State Government is Rs 84.52 crores. HCL is the technical consultant for the project and TCS is the build, own, operate and transfer (BOOT) operator. The bandwidth for the project is leased from BSNL. The TNSWAN provides the connectivity backbone for the State over which voice; data, Internet, intranet and video conferencing services have been launched. 708 Points Of Presence (POPs) have been established all over the

\textsuperscript{27} www.apstatepolice.org
State linking the State headquarters to every district (31), taluk (395) and block headquarters (282).

All the taluk offices in Tamil Nadu have been provided with computers under Tamil NILAM programme. The major applications on these systems are, Land Records, Old Age Pension Management, Certificates Management, Public Grievances Redressal, Personnel and Payroll system.

STAR is a Citizen-centric application which has been implemented at 300 sub registrar offices in Tamil Nadu. With the computerized system the issue of Encumbrance certificate has become quicker and easier. The documents are scanned and archived.

Vahan and Sarathi are application Software developed for State Transport Authority, Tamil Nadu. The software developed by National Informatics Centre (NIC) for use at Regional Transport Offices is a workflow system to carry out the activities using Computers.

Vahan is for processing all transactions related to Vehicles and Sarathi is for processing Driving Licence and related activities. Vahan can be used to issue Registration Certificate, Fitness certificate and Permits. Sarathi can be used to issue a Learner’s Licence, Permanent Driving Licence and Conductor Licence to the applicant. This software has provision for Online Booking Appointment for Learner’s Licence and Driving Licence.
RASI, an initiative started in a village in Madurai district in Tamil Nadu as a drop, progressed as a ripple and has today assumed the dimensions of a wave. RASI has its beginnings in the form of Sustainable Access in Rural India (SARI), an initiative that was started a few years ago to bridge the digital divide between urban and rural areas. SARI is a project of IIT-Madras; MIT Media Lab; Berkman Center for Internet and Society, Harvard University Law School; and the I-Gyan Foundation. It is carried out jointly with n-Logue Communications Pvt. Ltd.

It aims to bridge digital divide between urban and rural areas by setting up Internet kiosks through public-private partnerships. The technology provides high speed Internet wireless access to more than 1,000 systems within a radius of 25 km. The overwhelming public response to the project led the government to not only scale up the project throughout the state but also make RASI centres as e-governance centres. All government departments were advised to identify the kind of services that were needed to be delivered through the RASI centres and to report on their efficacy.

Tiruvarur district of Tamil Nadu was declared the Pilot-e-district by the Government of Tamil Nadu on 13th June 1999. The largely agrarian district which is located at 350 KMs from Chennai had accomplished near total automation of the field level government functioning in Taluk offices, District Rural Development Agency (DRDA), Collectorate, Block offices, Town Panchayat Office (local body) and Regional Transport Office. Land record administration, rural development scheme administration, student scholarship administration, public grievances handling, HR
administration, Social welfare scheme administration such as National Old Age Pension Scheme, Distress Relief Scheme, Accident Relief Scheme, marriage assistance scheme, Agriculture labourers’ Insurance scheme, etc were migrated to manual register free status, thus removing hurdles in getting citizen service delivery.

Under the title ‘Power of e-governance’ the district conducted 8 outdoor camps in different places where the Taluk office functioning was held in Marriage halls proving a point that the district could run government offices literally anywhere, without moving any manual registers. Times of India, a leading newspaper in India had rated Tiruvarur as ‘20 years ahead of rest of India’.

The pilot-e-district rolled out over 20 e-governance software packages touching various areas of citizen interface with the government. The major beneficiaries were agriculturists, land owners, students, widows, agricultural labourers above 65 years of age, schools, local body population, rural population, below poverty line people benefiting from social welfare schemes such as marriage assistance scheme, pregnant women assistance scheme etc.

Honorable Minister of Commercial Taxes, Government of Tamil Nadu launched the following e-Services for Commercial Taxes Department for the benefit of dealers on 17th July 2008. The web based software was designed and developed by NIC, Chennai.

• Online Refund Claim for Exporters (Form W)
• e-Request for Saleable Forms
• Fast Track Clearance System
Online Refund Claim for Exporters (Form W) enables the dealers to submit their export related refund claims online and to monitor the status of refund claims. Facility is provided to the Commercial Tax Officers to process the online claims.

The e-Request for Saleable Forms facility enables the dealer to make online request for Saleable Forms, applicable for Inter State purchase of goods. The status of e-Request for saleable forms can also be viewed by the dealer from the web site using the Acknowledgement Number.

Fast Track Clearance System – A Dealer can submit the details of the goods movement in advance using this Fast Track Clearance System. This facility permits the Check Post Officer to scrutinize the online applications made prior to the arrival of the vehicle at the check post and enables quick clearance of the vehicles at the Check Post. The dealer can view the status of movement of vehicle from the web site using the Acknowledgement Number.

1.6 HISTORY OF INDIAN EDUCATION SYSTEM

1.6.1 GENESIS

From ancient Bharat to modern India, higher education has always occupied a place of prominence in Indian history. In ancient times, Nalanda, Taxila and Vikramsila universities were renowned seats of higher learning, attracting students not only from all over the country but from far off countries like Korea, China, Burma (now
Myanmar), Ceylon (now Sri Lanka), Tibet and Nepal. Today, India manages one of the largest higher education systems in the world\textsuperscript{28}.

In ancient India, education was imparted at the feet of ‘Guru’ at his ‘Gurukula’ and students lived with their teachers in gurukulas and ashrams and received higher education in particular subjects\textsuperscript{29}. The concept of teacher (‘guru’, ‘acharya’, ‘adhyapaka’) under the heritage is both unique and venerable. He is treated as a real god incarnate. The curriculum of higher education at this time was dominated by the teaching of Vedas, Upanishads and Vedangas. The Upanishad invocation on truth, light and immortality says: “Lead me from untruth to truth; from darkness to light; from death to immortality, by entering the domain of parabrama and abode of eternal peace”.

There were three kinds of educational institutions called Shaaka, Charana and Ksbetra. Counseling also existed for the purpose of directing higher education. During the ancient period of Indian history, Takshashila University (17th century B.C) and a network of Gurukuls, Ashramas and Parishads were run by scholars, Pandits and gurus. During the Buddhist period, higher education was imparted in Viharas and Sangharamas. Universities like Nalanda (Bihar), Vallabhi (Gujarat), Vikramshila (Bengal), Purushapur (Pashaver), Sharda (Kashmir), and Kanchi (Madras) were universities in real sense in terms of the slandered of scholarship of the teachers,

\textsuperscript{28} http://www.ugc.ac.in/about/genesis.html

\textsuperscript{29} http://www.indianetzone.com/37/history_indian_education.htm
the high intellectual atmosphere and research. The universities like Nalanda and Taxila had international values and students from many countries came there to pursue education.

During medieval period most of the above universities were closed down. The Muslim rulers did not encourage the native seats of learning but started their own institutions called Madrasas at Delhi, Agra, Lucknow, Ajmer and other places, wherein subjects like Arabic languages and literature, religion, grammar, mathematics, astronomy and history were taught and the medium of instruction was Persian.

1.6.2. BRITISH PERIOD

Conspicuous modification took place during the British era in the field of Indian education. The history of Indian education during British rule suggests that education was spread all over India in the 18th century. There was a school in almost every temple, mosque or village in most regions of the country. These schools gave the students lessons on the subjects like reading, writing, arithmetic, theology, law, astronomy, metaphysics, ethics, medical science and religion. The British rulers introduced the western style and content of education to India, during the 19th century.

During the administration of east India Company it came to be felt that administration could not be carried on without education. In 1857 a number of English and oriental colleges were started. There were 27 colleges including 3 medical colleges and one
engineering college. Universities were established at Bombay, Calcutta and Madras on the model of London University. Later on in 1882 Punjab University, in 1887 Allahabad University were established. In 1882 the affiliated colleges were 68. The universities worked as purely examining bodies’. In the beginning of the 20th century Lord Lurzon stressed the need for residential universities. Between 1913 – 1921 six more universities were established mostly residential in character. A number of reforms were made in the constitution and working of the universities in accordance with Indian universities act 1904. Some more amendments were made in accordance with the Calcutta university commission. There was a rapid increase in the number of universities during 1927-46 from 6 to 19\(^{30}\).

Renaissance in Bengal led by Raja Rammohan Roy (1772-1833) was a landmark in Indian history. The charted acts, 1813 and 1833 and grants for education for Indians by the East India Company. This grant was increased seven or eight fold in 1833, and at the next renewal of the Charter act, 1853, the grant was again renewed seven or eight fold.

In 1855, for the whole of India with a population of nearly 200 millions, the total number educational institutions recognized by the government was 1,474 with only 67,569 pupils with budget allotment of less than one percent of total revenue. The situation was somewhat redeemed by the Christian missionaries, who maintained 1,628 schools imparting instruction to 64,000 pupils. The Indian contribution was

\(^{30}\) http://currentnursing.com/cr//index.php?blog=1&p=31&more=1&c=1&tb=1&pb=1
quantitatively insignificant; it included the maintenance of some institutions of higher learning and few schools, besides, of course, the old indigenous primary institutions.

Lord Ripon (1880-1884) appointed the education commission in 1882 under Sir William Hunter to review the work during the preceding thirty years. It deplored the neglect of primary education delegated to newly-created municipalities and district boards, and desired the state to undertake large expenditure for its encouragement, and suggested to maintain a model high school in each district and control private schools by means of grant-in-aid and inspection. The Hunter commission report gave impetus to the growth of educational institution, vocational schools, and universities in India, leading to the passing of Indian Universities Act, 1904 during the period of Lord Curzen (1899-1905). It gave a legal shape to the presidency universities already established in Calcutta, Bombay and Madras in 1857.

Toady India has one of the largest Higher Education Systems in the world\textsuperscript{31}. The higher education system in India caters to needs of approximately 99.54 lacs of students. Despite having the largest Higher Education System, the quality of education, in general, cannot be claimed to be the best.

The last quarter of the twentieth century has brought higher education high on the agenda of many nations. The reason being the higher education seems to have worked as a driving force for the technological progress and economic development of nations. The beginning of the 21\textsuperscript{st} century has seen quite massive changes in

\textsuperscript{31} FICCI Survey on Understanding of Private Higher Education in India, 2006
higher education systems both in terms of complexity of the systems and also in terms of utility for converting education into an effective tool for social and economic changes. A very interesting relationship has emerged among education, knowledge, conversion of knowledge into suitable entities from a trade point of view, wealth and economy. Institutions of higher education and research have now become central to a nation’s capacity to develop the new knowledge.

Against the background, when University Grants Commission (UGC) embarked on devising the road map for the 10th plan, it had to take into account several complex challenges facing the Indian higher education system in relation to the new emerging realities of the knowledge driven 21st century. The challenges were of diverse nature, never witnessed earlier. In the last five decades the Indian higher education system has grown enormously since independence. The problems of Indian higher education system are of access, equity, number, relevance, quality and resource crunch. The UGC, in the Xth plan, has taken several initiatives for consolidating the good work done in the past and has initiated several new initiatives for strengthening the future. One of the most important strategies that were adopted was to create information communication network connecting all the universities and colleges spread across the country for carrying forward the central agenda of social justice and equity while emphasizing on the need for access to information, quality and relevant education independent of geographical barriers. A twin strategy was for strengthening of teaching and research activities in colleges and universities. One approach, the creation of technology infrastructure for flow of information and blending of face to face education with multi-media content material, focused on enhancing the quality in
teaching and research thereby elevating the academic ethos across the board. The other approach focused on cultivation of excellence through identification of Colleges and Universities with Potential for Excellence in teaching and research and also on identification of Centres for Excellence in Science and Technology and Humanities and Social Sciences in various universities for creating excellence at par with global standard.

1.6.3 SIZE OF THE INDIAN HIGHER EDUCATION SYSTEM

Indians are presently in the 62nd year of our independence. When India became independent in 1947, had only 19 universities and 636 colleges with a student enrolment of a little over one lakh. During the past five decades, there has been a phenomenal expansion of science and technology education facilities in the country. According to the information furnished by the University Grants Commission (UGC), there are 388 Degree granting institutions (as on 16.8.2007) including under Section 2 (f) of the UGC Act, 1956. These Degree granting institutions comprise 221 State Universities, 24 Central Universities, 11 Private Universities, 114 Institutions Deemed to be Universities, 13 Institutions of National Importance and 5 Institutions established under State legislations. Of the 232 State universities (including 11 Private Universities), 161 universities are recognized by the University Grants Commission for grants under Section 12B of the UGC Act32. Most of them provide facilities for higher education in science and technology. About 30 per cent of the 65 lakh students in the higher education system are enrolled for courses in science, engineering, medicine, agriculture and related disciplines.

32 http://prayatna.typepad.com/education/datastatistics/
There has been significant growth in higher education during the academic year 2005-06. According to the University Grants Commission (UGC), enrolment in various courses at all levels in universities/colleges and other institutions of higher education in 2005-06 was 11.34 million as compared to 10.50 million in the previous year\(^3\). Out of this, the number of women students was 4.58 million constituting 40.39 per cent. There has also been a significant expansion of central institutions of higher education in recent years. With the increased demand for higher quality education, training of teachers has become even more important and out of box thinking is required to ensure adequate supply of quality teachers.

### 1.6.4 UNIVERSITY GRANTS COMMISSION

Soon after Independence, the University Education Commission was set up in 1948 under the Chairmanship of Dr. S Radhakrishnan "to report on Indian university education and suggest improvements and extensions that might be desirable to suit the present and future needs and aspirations of the country". It recommended that the University Grants Committee be reconstituted on the general model of the University Grants Commission of the United Kingdom with a full-time Chairman and other members to be appointed from amongst educationists of repute.

In 1952, the Union Government decided that all cases pertaining to the allocation of grants-in-aid from public funds to the Central Universities and other universities and Institutions of higher learning might be referred to the University Grants Commission

(UGC). Consequently, the UGC was formally inaugurated by late Shri Maulana Abul Kalam Azad, the then Minister of Education, Natural Resources and Scientific Research on 28 December 1953.

The UGC has been vested with two responsibilities – providing funds and that of coordination, determination and maintenance of standards in the institutions of higher education.

The UGC has launched various programs and projects such as the Scheme of Strengthening of Infrastructure Facilities in Science and Technology and Special Assistance program to assist, on a selective basis, science and technology departments in universities and colleges.

1.6.5 UGC-INFONET

UGC-INFONET is one of the programs of UGC for building high speed Nationwide Communication Network for Indian Universities. ERNET/INFLIBNET (Inter University Centre for Library Network) is regularly organizing training programs for Computer professionals, system analysts from Universities to manage/maintain the UGC-INFONET in their universities. As on 31-03-2006, about 149 universities across the country are connected under UGC-INFONET project with VSAT/SCPC/Leased line in the bandwidth range of 256 Kbps/512 Kbps/1 Mbps/2 Mbps. Now, all the universities under the ambit of UGC are able to access UGC-INFONET e-journals over the UGC-INFONET successfully for the last two years. UGC-INFONET program is managed by INFLIBNET for its execution and
monitoring. During the year 2005-06, the UGC has also released a total grant of Rs. 7.50 Crores to the INFLIBNET\textsuperscript{34}.

### 1.6.6 NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

National Assessment and Accreditation Council\textsuperscript{35} (NAAC), an autonomous body, was established by the University Grants Commission in 1994 at Bangalore in pursuance of the recommendations made by the National Policy of Education, 1986 and the Program of Action (POA), 1992 which lay special emphasis on evaluating the quality of higher education in India. The prime mandate of NAAC, as envisaged in its Memorandum of Association (MoA), is to assess and accredit institutions of higher learning, universities and colleges or one or more of their units, i.e., departments, schools, institutions, programs and so on.

The NAAC functions through its General Council (GC) and Executive Committee (EC) where educational administrators, policy makers and senior academicians from a cross-section of the system of higher education are represented. The Chairperson of the UGC is the President of the GC of the NAAC, the Chairperson of the EC is an eminent academician in the area of relevance to the NAAC. The Director of the NAAC is its academic and administrative head, and is the member-secretary of both the GC and EC. The NAAC also has many advisory and consultative committees to guide its practices, in addition to the statutory bodies that steer its policies. The

\textsuperscript{34} UGC Annual Report 2005 – 2006, p.89

\textsuperscript{35} http://www.education.nic.in/uhe/uhe-naac.asp
NAAC has a core staff and consultants to support its activities. It also receives assistance from a large number of external resource persons from across the country\textsuperscript{36}.

The system of higher education in India has expanded rapidly during the last sixty years. There are built-in regulatory mechanisms that aim to ensure satisfactory levels of quality in the functioning of higher education institutions (HEIs). The NAAC, has been instilling a momentum of quality consciousness amongst Higher Education Institutions, aiming for continuous improvement.

The NAAC has adopted New Methodology of Assessment and Accreditation from 1\textsuperscript{st} April 2007. The new grading system, Cumulative Grade Point Average (CGPA) is expected to bring the rigor, reliability and validity. The institutional CGPA arrived at on a four-point scale, from with letter grade A (3.01 – 4.00) with performance descriptor Very Good (Accredited); B (2.01 -3.00) with performance descriptor Good (Accredited); C (1.51 – 2.00) with performance descriptor Satisfactory (Accredited); and D (\leq 1.50) with performance descriptor Unsatisfactory (Non-Accredited).

\subsection*{1.6.7 PROFESSIONAL EDUCATION BODIES}

The technical education system in the country has today about 450 recognized educational institutions at the first-degree level and 1100 polytechnics at the diploma level. More than 150 institutions offer facilities for postgraduate studies and research in engineering, technology and management.

\textsuperscript{36} http://naacindia.org/aboutus.asp
The All India Council for Technical Education (AICTE), is the statutory body established for proper planning and co-ordinated development of the technical education system in India. It was established in November, 1945. AICTE is vested with statutory authority for planning, formulation and maintenance of norms and standards, quality assurance through school accreditation, funding in priority areas, monitoring and evaluation, maintaining parity of certification and awards and ensuring coordinated and integrated development and management of technical education in the country as part of the AICTE Act No. 52 of 1987.

The National Board of Accreditation (NBA), India was established by AICTE (All India Council of Technical Education) as an autonomous body under section 10(u) of AICTE act, 1987 to periodical evaluations of technical institutions & programs on a periodical basis according to specified norms and standards as recommended by AICTE council. It has the full authority to recognize or derecognize institutions and programs under them.

The Bar Council of India is an autonomous body in India which governs the legal/law institutions in India. The Bar Council of India sets the standards of professional conduct and etiquette and the standards of legal education.

The Medical Council of India is a constitutional body in India set up primarily to establish uniform standards of higher qualifications in medicine and to grant recognition of medical qualifications in India and abroad. The Pharmacy education and profession in India up to graduate level is regulated by the Pharmacy Council of
India (PCI), a statutory body governed by the provisions of the Pharmacy Act, 1948 passed by the Indian Parliament.

The Board of Theological Education of the Senate of Serampore College (BTESSC) is the arm of theological education under the Senate of Serampore College (University). BTESSC was formed in 1975.

1.7 INDIAN GOVERNMENT INITIATIVES

National Informatics Centre\(^{37}\) (NIC) of the Department of Information Technology is providing network backbone and e-governance support to Central Government, State Governments, UT Administrations, Districts and other Government bodies. It offers a wide range of Information and Communication Technology services including Nationwide Communication Network for decentralized planning, improvement in Government services and wider transparency of national and local governments. NIC assists in implementing Information Technology Projects, in close collaboration with Central and State governments. NIC endeavors to ensure that the latest technology in all areas of IT is available to its users.

1.8 ICT AND HIGHER EDUCATION

ICT has played a major role in reducing operational inefficiency and improving decision-making in many areas of governance. An integrated "Higher Education Service System" is one such concept that can empower the governing bodies to

\(^{37}\)http://home.nic.in/\#
administer the progress of the education plan in the whole country and serve various stakeholders in a much better manner.

ICTs are increasingly utilized by higher education institutions worldwide. ICTs are emerging as a part of on-campus delivery as well as open and distance modalities of higher education delivery. ICTs in higher education are being used for developing course material; delivering content and sharing content; communication between learners, teachers and the outside world; creation and delivery of presentations and lectures; academic research; administrative support, student enrolment.

Higher education institutions (HEIs) in developing countries are on the whole making the most of computers and software available to them even though challenges including insufficient telephone and telecommunication infrastructure, lack of training resources for teachers, and lack of skilled and experienced information technology specialists to assist with development, maintenance and support of ICT usage in HEIs remain.

According to Rosswall, Thomas (1999), ICT enhances Higher Education in a number of ways: It enables the effective storing/sorting of information, and can offer new fast ways of communication. It enables the reduction of information quantity towards a higher quality and better structure. It can be integrated into teaching and learning strategies and used to support relative learning theories; and ICT (Computers, Internet

and Intranet) can be used to create new types of interactive learning media for improved quality, equity, and access in Higher Education. ICT enhances teaching and learning, and can be “integrated into teaching and learning strategies.

Almost every country in the world, and every regional educational authority, has at some time during the previous decade extolled the virtues of e-governance in higher education. Some of the experiments are driven by the desire of quality universities to enhance their offerings and to differentiate themselves from lower tier institutions; some are driven by upstart universities seeking cost-effective means for expanding their student enrolments under conditions of constrained resources, in competition with the more established universities; while others are founded on public policy goals of expanding access to university education to social groups previously excluded from participation. Some are even motivated simply by the desire of universities to make money by serving new “markets” for educational services.

1.9 E-GOVERNANCE IN UNIVERSITY ADMINISTRATION

The concept of governance applied to the university is related to the exercise of controlling the power of different centers and departments which are part of the university.

This kind of exercise is based on the drawing of an adequate system which executes different levels of institutional and relational power. These are integrated in a model of electronic governance (e-governance), which is structured in different Internal Information Systems (IIS).
Those systems make use of data warehouses that consist of information that is extracted from the users’ profile. The full operation of these new digital e-governance platforms implies the transposition of e-business models into the institutional, organizational and relational networks of the universities.

The exercise of a governance model must include independent but interconnected units, whose activities should be clear, accountable, responsible, and especially regular in order to reduce the inequalities in terms of access to the services that are made available by public institutions.

‘IntelliEXAMS’ the software suite of Mindlogicx has been designed to manage the examination process of Anna University by diligently handling the complete life cycle of their high stake examinations starting from online registration of candidates, online scheduling of examinations, examination fee management, internal mark uploading, online hall ticket generation, distributed authoring of question papers, secured question paper delivery, multiple digital evaluation, tracking of students performance & performance analysis to publishing of results and printing of mark sheets and certificates.

The work flow system integrated in the system provides instant access to the university authorities for effectively managing the whole process in a scientific manner. ‘intelliEXAMS’ framework built as a technology suite, provides solution to universities / institutions as Managed Application Service (MAS). It is a web based
authoring tool that offers convenience & alacrity and at the same time its hardware based authentication ensures the whole process is highly secure / fool proof.

The framework also has a process that encompasses the management of examinations that are online or offline. Further, the robust technology built by the company also enables intelliEXAMS to provide authentication services to the certificates issued by the university through a value added tool called ‘intelliCAS’ by which the certificates are validated globally through a 12 digit Global Access Code (GAC).

The EMS can handle both offline and online examinations while the question papers are transmitted from the university just few minutes before the commencement of the examinations with security features such as 128 bit encryption, hardware based authentication and the system deployed here is similar to the one that are being used for online banking or e-commerce transactions. The certificate authentication is done through a standard browser or mobile browser. The Global Access Codes (GAC) that are assigned to each certificate are randomly generated, non-sequential and alpha-numeric and can produce 131 quadrillion (131,621,703,842,267,000) codes per prefix which makes it extremely difficult for anyone to deduce codes to thwart the system. The GACs can be incorporated with optically variable devices, radio frequency tags, barcodes, labels, laser marking & printing etc. This will effectively solve the fake mark sheets and fake degree certificates problems once for all and give complete peace of mind to the academic administrators.
1.10 ORGANIZATION OF THE THESIS

Several e-governance initiatives have been carried out in various sectors, some of them are successful, some partially successful and some failure. In the field of education the major initiative is in the process of teaching and learning and not much has been done in introducing e-governance in administration of Affiliating Indian Universities. The main aim of this study is to explore the possibility of introducing e-governance in Affiliating Indian Universities.

In Chapter II, the administrative setup of an Indian affiliating university and the file movement within the university administration are dealt with in full detail. This provides an overview of the types of clerical activities in the administration of an affiliating university and the various sections in the administrative setup.

A review of literature is presented in Chapter III. Further, the literature in relation to Technology Acceptance Theories/Models is also presented which includes (1) Innovation Diffusion Theory (IDT), (2) Theory of Reasoned Action (TRA), (3) Technology Acceptance Model (TAM) and (4) Technology Acceptance Model 2 (TAM2). In addition, literature about IT adoption and usage are presented. In this research thesis, the researcher proposed to adopt TAM2 and Structural Equation Model (SEM).

In Chapter IV the methodology adopted in this research thesis to achieve its objective namely, systematic method of finding solutions for the problem of introducing
e-governance in the administration of affiliating Indian universities, so as to improve performance at all levels is presented.

In Chapter V the results and interpretations are presented and in Chapter VI conclusions and recommendations are presented.