

Importance of E-governance in transforming Technical education in India

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Abstract: Governance and leadership play a crucial role in development and progress of technical institutes in India, a developing country. During the last decade, there has been a mushrooming growth in technical institutions. This growth has not been accompanied by maturity in governance and leadership. Statutory bodies like UGC, AICTE, Technical education department of state governments, Universities have failed to protect the interest of all the stakeholders, particularly the most important stakeholder, the students. There is a lack of continuity in policies, rules, guidelines, which leads to confusion in the minds of the stakeholders. Lack of transparency and procedural clarities play a role. Today, we are living in an information economy, where governance and leadership have to be dynamic and responsive to the needs of the stakeholders. E-governance, if implemented in correct spirit, can be a game changer, as it will lead to transparency, accountability, empowerment, processes, security and most important accountability. Modern information technology can be successfully harnessed to provide a dynamic repository of rules and regulations to all the stakeholders. This will improve quality of decision-making and benefit the students. The paper suggests how e-governance can be used at different levels to ensure the transformation of technical education in India.

Keywords: Governance, e-Governance, Technical education

1. Introduction

e-Governance or “electronic Governance” use of Information Technology, especially the internet, to improve the delivery of government services to citizens, businesses and government agencies. It is useful in management and administration of policies and procedures in public as well as private sector. The use of internet not only delivers the services faster but also brings more transparency between the government and the citizens. e-Governance is also playing very important role in technical education field. For technical education institutes e-governance can equally apply for the benefit of all the stakeholders such as a) Students b) Educators c) Administrators d) Employers and

Parents. Proper re-engineering of processes as required for implementation of e-Governance, by technical education institutes, can effectively enhance quality in both the internal and external services. Educational institutions may have various requirements that include automation and management of processes such as registration, admission, student information, classes, time table, transport, attendance, library, salary and expenses, examinations, performance, grades, hostels, security and reports. Many of the software providers allow their clients to choose from the available modules to suit their needs. Government is facing number of problems to provide effective e-Governance services in technical education. The immediate problems to be addressed are shortage of talent, new kind of engineer with system thinking, and multidisciplinary, innovative approach to meet the challenges ahead.

CHALLENGES-AHEAD

The challenges from state perspective are as follows

How to ensure that increasingly autonomous institutions will deliver the government's education and social policy agenda?

How to ensure that financial incentives introduced for policy purposes do not cause technical education institutes to act sub-optimally reducing diversity and responsibility and perhaps threatening their own financial sustainability?

How to ensure that the public interest is adequately represented?

How to reduce the risk that a more autonomous and market driven university system will become financially unstable and make further demands on the state if institutions get into difficulties?

The challenges from Institute perspective are

In higher education, governance processes deal with multiple dimensions of an institution: how it coheres; how it exercises authority; how it relates to internal members (students and staff); how it relates to external stakeholders (government, business, local community, international institutions); how it makes decisions; and how and how far it delegates

responsibility for decisions and actions internally. The structure of governance includes the role of institutional governing boards and presidents, their participative structures, their procedural rules and sanctions, their policies for resource allocation, and their arrangements for performance management, monitoring and reporting.

A central consideration is the relationship of institutional governance to the state, primarily the extent of institutional autonomy and its effect on institutional performance. Institutions necessarily have to develop new capacities for internal governance when the locus of responsibility for decisions about student admission, staffing, curriculum, and the use of financial resources is shifted to the institutional level. An interesting policy question arises in respect of managing such a transition: should the devolution of responsibilities await demonstration of an institution's capacity to manage them, or does the capacity to manage increased responsibilities only develop once they are devolved?

In general challenges facing technical institutions are (Priyanka Mahindru et al., 2011)

a. Shortage of employable Talent

All the private-public partnership projects are highly complex, are high-tech and impact a phenomenal number of Indians. As more such initiatives get under way, the effort will require an enormous increase in the engineering workforce. Because organizations and the environment in which they operate are changing fast, the chasm between the skills required and skills available is widening rapidly. In the power sector, for example, the total additional manpower required for the 11th plan period is of the order of one million. In 'Power Generation' related projects the requirement for entry level people is 7,308 but only 5,040 are available. The shortfall is about 31%. At senior levels the shortfall goes up to 34%. There is a demand for 8,000 to 10,000 engineers in the embedded software and chip design space, but the supply is just a third of that number. In telecom, the wireless segment, there is an annual shortfall of 8,000 engineers. How will we as a nation address this shortfall?

b. problem of vacancies against sanctioned seats

To get a better handle on the problem, IIT Bombay undertook a study on the engineering landscape in India. The study aimed to answer questions such as: The study shows that against the sanctioned seats of 6.57 lakh for Under Graduate Engineering education in India, only 2.37 Lac engineering degrees were awarded in 2007-08. This very clearly highlights the shortfall. In 2006, India awarded about 2.37 lakh engineering degrees, 20,000 engineering Masters degrees and 1000 engineering PhDs, which means a total of 2.58 lakh engineering degrees of all types. This is clearly not enough! The awarding of degrees is also not

evenly distributed across India. Five states – Tamil Nadu, Andhra Pradesh, Maharashtra, Karnataka and Kerala are said to account for almost 69% of the country's engineers. It is estimated that about 30% of the fresh engineering graduates are unemployed even one year after graduation; and this is even as many sectors complain of lack of talent. This clearly points that there is definite scope to improve quality of engineering education. For this, we need to have a mechanism to identify important areas and develop policies and institutions accordingly.

c) Multi-Disciplinary Approach

A multidisciplinary approach involves drawing appropriately from multiple disciplines to redefine problems outside normal boundaries and reach solutions based on a new understanding of complex situations. Today there is need for engineers to be able fit in a multi-disciplinary teams to satisfy the business requirements. Today's engineers must also be able to view management activities through different lenses and work with people from different disciplines and diverse fields such as business, banking services and medicine. Even the software development process can incorporate complementary techniques from other disciplines, such as, accounting, product management, marketing, economics, and organizational behaviour. The great advances of recent times such as nanotechnology, telecommunications, IOT require engineers who understand a multi-disciplinary approach.

d) Low IT Literacy

Much of the Indian people are not literate and those who are literate, they do not have much knowledge about Information Technology (IT). Most of the people in India are not aware about the usage of Information Technology. So, in India, having such low level of IT literacy, how can e-Governance projects be implemented successfully? We can say that IT illiteracy is a major obstacle in implementation of e-Governance in India. So, first of all Indian people must be made aware about the usage of Information Technology.

e) Cost

In developing countries like India, cost is one of the most important obstacles in the path of implementation of e-Governance where major part of the population is living below poverty line. Even the politicians do not have interest in implementing e-Governance. A huge amount of money is involved in implementation, operational and evolutionary maintenance tasks. These costs must be low enough so that to guarantee a good cost/benefit ratio.

2.State Government Responsibility

The concerned state government through the affiliating University has all the powers to control and regulate technical institutions through the powerful tool of e-

Governance. Existence of the technical institutions very well depends upon the “NOC” issued by the state Govt. The affiliating University has the following role to play in the conduct of these institutions to safeguard the interest of students, teachers, parents/guardians, society as a whole (Priyanka Mahindru et al., 2011):

a) Students

- i) To conduct entrance examination at the state level to ensure fair and smooth admission of students as per the statutes and ordinances of the University. This is being done meticulously by most of the Universities in the country.
- ii) To fix reasonable fees for each course per semester. This is not being done honestly. There are certain loopholes/loose ends that are yet to be plugged. The present fee structure hardly has any place for the poor student. This aberration needs to be corrected.
- iii) To safeguard the interest of the students so as to ensure that they are being provided with promised facilities/teaching infrastructure.
- iv) To conduct the fair/ smooth examination in time and as per the laid down rules and regulation of the University.
- v) Declaration of results in time.
- vi) Distribution of mark sheets.
- vii) Conduct of convocation to distribute degrees in time.

All the above activities are being done by most of the Universities in time except the fixation of fees. There is lack of transparency in this activity. It will not be wise to pass any judgment on this aspect except to suggest more transparency in this activity.

b) Faculty/Staff

They are worst sufferers. As per the commitment of these institutions, they are supposed to be managed as per the AICTE/UGC norms. But nothing is followed by any institution except a few.

They are being hired/fired like casual labourers (AddaLabors). There is unbearable suffering through which these people are passing. In most of the institutions there are:

- i) No Leave rules.
- ii) No service rules of their own as the statutory norms of the AICTE/UGC are not followed.
- iii) No salary rules (All discretionary)
- iv) No security of service.
- v) No terminal benefits.
- vi) No norms of workload.
- vii) No dignity of teachers
- viii) Lack of proper seating arrangement for teachers.

All these sufferings are to be addressed by none other than the statutory bodies of the state Governments concerned without loss of time. It is practically not possible for the ill equipped state technical Universities. They hardly have any permanent machinery/staff to ensure implementation and monitoring the progress. The concerned state Governments who are supposed to provide the necessary infrastructure are hand in glove with the managements /promoters of these technical institutions. Most of the Universities hardly have any staff of their own. They are depending upon

casual/temporary staff working from camp /rented offices. They are just helpless personalities entrusted with the task for which they have:

I. All the “authority” but no resources.

II. Ability but no machinery to act.

It is not that state governments have no power/facilities/capability to do this gigantic task; the fact is there is “NO WILL” to do this. They have developed vested interests to maintain “Status Quo”, keep the situation like this because there is hardly any politician who does not have one or group of technical institutions /Universities owned by him irrespective of political affiliation. As such nothing can be expected from the change of guard at state government level or change of political governors because no purpose will be served by changing the “bottle when the liquor is same”. The state Governments have very accurately controlled the system of revenue collection like Electric billing/water Tax/house Tax etc. There is absolutely no corruption in collection of revenues in this head. The implementation of e-Governance in revenue collection by the state machinery is almost total, then why not in technical education. Ultimately every state government has to go for this. There is no substitute for this. It can be delayed but not avoided because management of such vast and important wing of our economy cannot be left at the mercy of destiny.

What we “NEED IS POLITICAL WILL AND SINCERITY OF PURPOSE” on the part of the state Government- Everything cannot be controlled by e-Governance. The task is gigantic and the state governments are engaged in various pitched battles to tackle with poverty, unemployment, corruption, nepotism, favouritism and political compulsions. Added to this is the “uncontrollable growth of institutions” producing an army of non-employable technocrats year after year. The task is “Huge” but not lacking solution. There is a hope in e-Governance.

3.Responsibility of the Institutes

The governing bodies and the management have the most crucial role to play in success of the e-Governance model. Governing bodies are the keepers of the values, purpose and mission of institutions and as such, also of institutional autonomy and accountability. Academic, financial and managerial autonomy with accountability can effectively empower institutions. This has been the case internationally for many years – though to different degrees and in different ways in different countries. But it continues to be one of the main driving forces for change in many countries, in both the advanced and developing economies (World bank working paper no 190).

As per TEQUIP Good Governance guide, the primary accountabilities of governing bodies are:

- a) To approve the mission and strategic vision of the institution, long-term business plans and annual

budgets; ensuring that these meet the interests of stakeholders, including students, employers, local communities, government and others representing public interests.

- b) To ensure the establishment and monitoring of proper, effective and efficient systems of control and accountability (including financial and operational controls, risk assessment and management, clear procedures for managing physical and human resources including for example, handling internal grievances and for managing conflicts of interest).
- c) To monitor institutional performance and quality assurance arrangements, which should be, where possible and appropriate, benchmarked against other institutions nationally and internationally (including accreditation and alignment with national and international quality assurance systems).
- d) To put in place suitable arrangements for monitoring the head of the institution's performance.

e-Governance can be a game changer in points b and c above. Managements of many private institutes of technical education have achieved phenomenal growth in the last two decades. They have managed to implement a fully transparent governance and operation system in place and developed a global brand image. Birla Institute of technology (BITS), Galgotias and Amity are a few of them. They have managed to develop world class infrastructure and put in place processes that enable to produce graduates, who are capable of meeting stringent requirements of the global industry. They have made optimum use of available Information technology to speed up the growth.

Off the shelf packaged software solutions are available from a large number of vendors. These cover the whole spectrum from providing solutions for single institutes to enterprise solutions for groups of institutions. Managements also have a choice of getting a customized solution specially developed for their use.

The functionalities listed below are generally available in all these solutions (Priyanka Mahindru et al., 2011)

Student perspective

- i) Admission process right from counselling to enrolment.
- ii) Attendance record.
- iii) Lecture schedule
- iv) Course curriculum.
- v) Assignment/Tutorial/Quiz Schedule//Lab/Work shop record
- vi) Fee record
- vii) Internal Assessment record (Marks Record)
- viii) Feedback about teacher's performance in the class.
- ix) Student's default record.
- x) Achievement record.

xi) Digital Library/ Library feedback using Libsys/web-opac software.

- xii) Academic Calendar
- xiii) Extracurricular activities
- xiv) Facilities for Research & Development.
- xv) Hobby Club like photography.
- xvi) Sports
- xvii) Awards for Academic Excellence
- xviii) Scholarships for meritorious students
- xix) Innovation awards.
- xx) Various types of Leaves.
- xxi) Financial support to encourage Innovative Projects.
- xxii) Sponsoring the students to attend seminars, inter college competitions.
- xxiii) Arranging and involving students in International/National seminars.
- xxiv) Stores
- xxv) Purchase of items.

Faculty/Staff

- i) Appointment letter with terms and conditions.
- ii) Leave rules (Various types of Leaves).
- iii) Duty hours.
- iv) Attendance records.
- v) Gratuity rules.
- vi) Terminal benefits.
- viii) Salary Slip.
- ix) Leave Record.
- x) Leave Encashment.
- xi) Student's feedback about the faculty.
- xii) Alternative arrangement during leave.
- xiii) Course Plan.
- xiv) Lecture Schedule.
- xv) Attendance record of Tutorials/Lectures/Labs/workshops.
- xvi) Assessment record of students (Quiz, Tests, Surprise Quiz Test, Mid-sem. Exam)
- xvii) Defaulters List giving details about the latest status of academic commitments.
- xviii) Teaching plan and the performance report.
- xix) Promotion rules

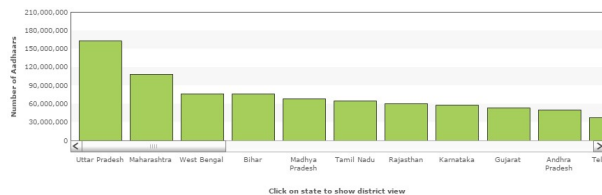
Many solutions also provide for Outcome based education (OBE) and conducting exams for autonomous institutes. The responsibility of the management is to identify the right solution for their needs and ensure adequate support for the successful implementation of the solution. Once the solution is implemented, information becomes accessible to all the stakeholders according to their roles and needs. Mechanisms for grievance resolution are built implicitly in these and the processes ensure that all the grievances are resolved.

The complete success of this e-Governance model depends upon the following factors; positive attitude of one and all especially the Governing Councils of the Institutions, right selection of the e-tools, the "across the board" whole hearted cooperation of one and all i.e. at the institution level. There cannot be just one panacea or remedy to deal with it but a system of transparency and accountability put in place at various levels and then enforced.

4. Case Studies

1. UIDAI

India, being the second most populous country in the world, faces an enormous challenge of dealing with great transformation of economic and healthy regulatory structures. Though the inclusion of the great efforts, poor people are unable to access basic services like- getting a job, receiving government subsidies, opening a bank account or obtaining a phone connection. Indian citizen has number of identification documents as a ration card, a passport ID, a per permanent account number (PAN) for tax payers, voter ID card when registering to vote in elections. The databases having these identity proofs made it difficult for anyone to identify each citizen because of fake document or identities. So India thought of providing a unique identification for each and every resident of the country and the Aadhaar card has come into sight as the world's largest biometric identification programme with the Unique Identification Authority of India (UIDAI) which proposes to provide online authentication using demographic and biometric data issuing nearly 105,98,44,975 cards as on date. (<http://uidai.gov.in/>)



Benefits of Aadhaar

- Easily verifiable in an online cost effective way.
- It is unique and robust enough to eliminate the large number of duplicate and fake identities in government and private databases.
- Aadhaar's guarantee of uniqueness and centralized, online identity verification would be the basis for building these multiple services and applications, and facilitating greater connectivity to markets.
- It would give any resident the ability to access the government services and resources, anytime, anywhere in the country.
- Aadhaar card can be used for opening Bank account, Gas connection, Ration card, Phone connection, PAN card, Passport.
- It would also be a foundation for the effective enforcement of individual rights.
- AEPS is a new payment service offered by the National Payments Corporation of India to banks, financial institutions using 'Aadhaar' number and online UIDAI authentication through their respective Business correspondent service centers. This shall be

known as 'Aadhaar Enabled Payment System' and may also be referred to as "AEPS".

Benefits of AEPS:

- conduct transactions
- banking services like Cash Withdrawal, CashDeposit, Balance Enquiry and Fund Transfer
- AEPS only supports real time online biometric verification using the Aadhaar number.

Some of the potential services that can be built around UID authentication are listed as follows (UIDAI, 2012)[5]

1. Government Welfare Programs and Public Distribution System: the peoples will have direct access to the services offered by the government for example- issue of food grains, subsidies in cash, employment wages, education, health benefits, or LPG (cooking fuel) distribution. The role of middlemen can be eliminated and activities like fraud and theft in government distribution system can be prevented.

2. Financial Inclusion and Electronic Payments: UID enabled authentication will enable access to services offered by banks, insurance companies and securities market. The people will be able to open bank accounts and will get included in the modern economy. This also opens up new business and employment opportunities in the form of MicroATMs and Business Correspondents

3. Telecom Services: UID can be used as an identity proof for obtaining mobile phone connections.

4. Passports and National Register of Citizens: To deal with the issue of illegal migrants UID will be linked to the national register of citizens (database of Indian citizens). The government has also announced that UID can be used for issuing passports to Indian citizens (Gupta, 2012).

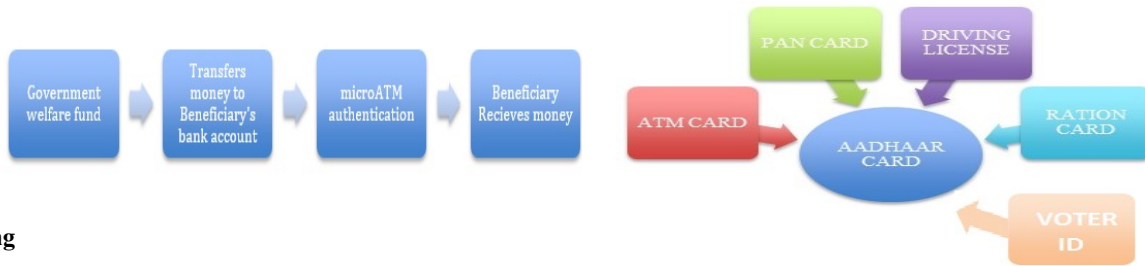
5. e-Commerce and m-Commerce Services: can be delivered in remote locations using cash-on-delivery, online identity verification and electronic payments using mobile phones or computers. Embedding UID in services like VISA can facilitatesuch transactions.

6. New Entrepreneurial Opportunities: UID's open API platform and cloud based authentication can enable banks, insurance companies, telecom companies, hospitals, educational institutions, government and non-government organizations and new entrepreneurial firms to offer multitude of services to people in India. UID has opened up a new opportunity window forentrepreneurs who can explore new business models that can exploit the authentication services offered by UID.

UID and its applications

Government benefits

Government can transfer the benefit amount directly to the bank account of the beneficiaries to which their Aadhaar card is linked. In this way we can avoid middlemen interference. For the rural people if the bank branches are not there in their village we can provide them the microATM facility where he need to verify his identity by making a thumb impression on the microATM.



Voting

Using Aadhaar card as Voter's ID and implementing a technology at election counter where voter can either type his Aadhaar number or swipe his card, we can eliminate duplicates thereby reducing rigging in elections.

Criminal acts

In a huge country like India it is always difficult to capture culprits. In some criminal acts if we get the fingerprints of the criminal, we can try to match them with the database and easily catch the culprit.

Corruption:

As Aadhaar card number is linked to a bank account, instead of ATM's we can use Aadhaar card to withdraw cash, pay bills, cash transfer etc. Corruption, a major issue in India can be solved by this approach as we use the card for every transaction that we make, so it is easy to find the persons who transact in large amounts or who transact or spend more than their income. By this, illegal transactions can be controlled and corruption can be easily controlled.

LPG Distribution

LPG for Domestic Cooking is heavily subsidized. So people are using fake connections and misusing the benefits. If Aadhaar card is integrated with the customer database of LPG we can eliminate illegal diversion of cylinders.

Mobile connections

Mobile connections are widespread and these connections can be used for anti-national activities. If we authenticate all the mobile connections of a person by linking them to his Aadhaar number, we can have a control on the fake connections.

Ecommerce

Due to cash on delivery payment system offered by various e-commerce players there is a risk of a fake customer order or a customer denying that he didn't order it. To avoid this, we can authenticate the customer by asking his UID and the mobile number, which is linked to the Aadhaar.

One card for all

If the Aadhaar card consists of all the information including address, photo, PAN card number, license details, Voter ID, ration card we can remove all the cards and use only Aadhaar card for all purposes thereby reduce large amount of paper. Link all vehicle registrations to Aadhaar card, all PAN card details to Aadhaar card. So Aadhaar card will be the only card providing Unique Identification.

2, Income Tax

An **income tax** is a tax, imposed on individuals or entities (taxpayers), that varies with the income or profits (taxable income) of the taxpayer. The Indian Income Tax Department is governed by CBDT (Central Board of Direct Taxes) and is part of the Department of Revenue under the, Ministry of Finance, Govt. of India. Income tax is a key source of funds that the government uses to fund its activities and serve the public. The Income Tax Department is the biggest revenue mobilizer for the Government[9].

Need:

The Income Tax department needed a wide ranging system for e-filing, processing and refunding of income tax returns with reduction in time for these processes.

• Challenges in front of Income Tax Department:

- Measures for disposal of assessments, collection of taxes, prevention and detection of tax evasion and tax avoidance.
- To speed up the processing of returns and issue of refunds, thereby encouraging tax payers to e-file returns.
- Recruitment, training and all other matters relating to service conditions and career prospects of all personnel of the Income-tax Department.
- Laying down of targets and fixing of priorities for disposal of assessments and collection of taxes and other related matters.
- Write off of tax demand exceeding Rs.25 lakhs in each case.
- Policy regarding grant of rewards and appreciation certificates.

Benefits of e-filing:

- E- filing and E-verification process is simple and saving a time and efforts.
- Paperless work has been carried out as peoples are filling details of I-Tax online.
- The Income tax portal is equipped with the latest technological advances, more user-friendly and easy to understand along with the quick and helping guidance from the Help Desk Team.

5. Conclusion

In the last decade, there has been tremendous progress in usage Information technology and penetration of communications in India. There has been a clarion call from central as well as state governments for e-governance projects. MHRD is also pushing for reforms in technical education particularly in governance and leadership. As seen from the case studies like UIDAI, Income Tax and examples of many private technical Institutions, e-Governance can be a game changer for transforming technical education in India. What is imperative is a coordinated effort the key stakeholders; UGC, AICTE, State technical education department and the governing councils of technical institutions. It is safe to conclude that e-Governance, if implemented in proper spirit, will drastically improve the quality of technical education and ultimately benefit the society as a whole. At this point in time, it is an unfinished journey, but the roadmap is clear.

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