Review Article

Application of Information Communication Technology (ICT) In the Management of Examination System – A Review

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Abstract

India is known for providing quality education to the world during the ancient times. The University of Nalanda was established in the 5th century AD by one of the Gupta emperors. The Chinese traveller Hieun Tsang had studied and wrote about the education system prevailing at that time in the university. The British Government made education a transferred subject in the constitutional Reforms in 1919. From then onwards education including university education became the responsibility of the States. Information Communication Technology (ICT) has become an important, valuable and critical resource for the university. ICT usage has become very common but its full potential is yet to be discovered. It is a helpful tool for creating good governance in the working of any organization. Recognizing the important fact that ICT (Information and Communication Technology) is a major vehicle for process change and an effective tool to transfer the entire governance, the policy makers are stressing hard for adoption of new technology. The interactive nature of ICT and its ability can help the citizen without wasting much time and money. With the introduction of Information Technology Act, 2000, transactions on the internet have got legal validity in India.

Keywords: Information Communication Technology, University examination system.

INTRODUCTION

India is known for providing quality education to the world during the ancient times. The University of Nalanda was established in the 5th century AD by one of the Gupta emperors. The Chinese traveller Hieun Tsang had studied and wrote about the education system prevailing at that time in the university. In the ancient time the education system started from Gurukul learning and with the urbanization it has changed a lot and society adopted its own norms. During the British period the country had adopted norms, regulations, guidelines and had a regulatory system. The British Government made education a transferred subject in the constitutional Reforms in 1919. From then onwards education including university education became the responsibility of the States. The British Government transferred education to the State Government out of political expediency especially with a view to raising money for education from the public. At the time of Independence in 1947, there were only 20 Universities. Now there are over 300 Universities and 45,000 Colleges of various types in the country. The number of enrollment in the universities has also increased from one lakh in 1950 to more than 112 lakhs in 2007. Most of these educational institutions are recognized by the competent bodies/regulatory authorities that are supported by the Government of India, State Governments or by the Societies. Though lakhs of students are receiving education every year yet in most of the universities, the management of examination system is still manual [1].

Information Communication Technology (ICT) has become an important, valuable and critical resource for the university. ICT usage has become very common but its full potential is yet to be discovered. It is a helpful tool for creating good governance in the working of any organization. Developing countries have now understood the importance of ICT and have started adapting to it as a basic tool for good governance. The ICT mediated governance is also known as "e-governance". In India at large, University examination systems are managed manually. The manual examination system faces problems of accuracy

and cause delay in timely declaration of results. ICT in shape of Campus Management System (CMS) is an effective tool for integrating and automating the activities of examination system to bring reliable, efficient, transparent and robust e-governance solutions for universities [2].

Role of Examination in Education System

Examination occupies a very significant place in our educational system. The whole edifice of formal education system is based on the tripod of teaching, research and examination. The aim and objectives of all these three, however, are different. The first two may be an end in itself but the last one is a means[1]. The examination makes the learner hardworking; it gives our education system a direction, a motivation, a purpose and a goal. Examination is always an effective instrument to evaluate the quality and quantity of knowledge or say learning in a specific field. Thus it is such an integral part of educational system that it cannot be dispensed with. University examination has stimulating effect on both the students and the teachers. To the students, the examination gives a goal towards which he is directed and stimulus which impels him to attain that goal within the prescribed period of time. In other words, examination may be used as a whip to make the pupil to do his work. The test is given to check up how carefully he has done it. For the teachers too, the examination gives a stimulus and a goal orientation to his work. Examination results may be used to guide the student in a specific field and may therefore be useful in a practical way [1].

The examination is essentially an instrument which has no substitute. The performance of student can be judged on the declaration of the result. The whole career of a student is based on the timely processing of results and which also reflects how fast and accurately the university/ institute declare the result. Examinations have been referred to as 'the central nervous system of education'. This is because examination has a determining effect on careers and hence causes a lot of emotional tension in the students and their parents. The flaws of our examination have become proverbial. It is generally maintained that the examination, is an instrument for measuring the quality and quantity of learning in specific field [1].

Information and Communication Technology (ICT) in Examination System

Information and Communication Technology (ICT) has become a valuable, decisive and critical resource for individuals, enterprises, societies and organizations. ICT has reached at every door step, but its use is not fully utilized. University examination system is facing many problems for declaring timely and accurate result. Information and Communication Technology (ICT) is a very helpful tool for providing good governance or E-Governance to the community which is bringing a sea-change in the working of organizations and institutions. Students spent their valuable time and money for getting accurate information, but students are not getting desired information. Students have to waste his time and money for getting the information by visiting the university and sometimes he has to give bribe for the same due to several reasons. One of the main reasons is that in most of the Indian Universities examination system is managed manually [1].

Many Universities are now embracing the use of Information and Communication Technologies (ICTs) in search for more efficient and competitive processes both in delivery of lectures as well as in administrative processes. The onset of Information and Communication Technologies (ICTs) is changing the way universities work. Customers (Students, parents, teachers and colleges) are demanding for more accurate information and faster services. Students, for example, would like to check for fee balances, enrolment and print their result on-line away from campus. The demand to automate university process is becoming important in line with university quality assurance [1].

Recognizing the important fact that ICT (Information and Communication Technology) is a major vehicle for process change and an effective tool to transfer the entire governance, the policy makers are stressing hard for adoption of new technology. It is a known fact that computer is a very sophisticated communication device. It can bring both authentic and logic to bear upon problems and can bring the same arithmetic and logic to the matter of communication. In such an event, communication becomes more efficient. ICT is growing all over the world and this technology has reached the common people by breaking all the geographical barriers. Thus it is vital for the people to have access to information at their door step with a minimum cost. The interactive nature of ICT and its ability can help the citizen without wasting much time and money. With the introduction of Information Technology Act, 2000, transactions on the internet have got legal validity in India [1].

Examination System in Universities of India

Examination plays a significant role in the university education system. Examination is an important tool to test the student cognitive skill and retention during course of study. University examinations have motivating effect on both students and teachers. It motivates the student to put in best efforts to attain his goals, Examination may be used as a tool to organize and integrate knowledge. It encourages student toward study and read various books and integrate ideas to respond to a given problem in a problem based learning system. For a teacher too, examination gives a stimulus and goal orientation to his work. We can say that the examinations become inevitable as students and teachers work will neither have precision nor any direction without it.

Examination mechanism is an effective tool to assess the quality and quantity of knowledge or say learning in a specific field. University examinations are conducted at various stages of learning till the end of the academic session. Examinations are conducted regularly & periodically throughout the session. Examinations also cause physical and mental stress for students. Declaration of results also takes very long time especially in manual system owing to which students remain idle for months. Moreover, the dates of examinations and those of notification of result vary between universities, so sometimes students miss the chance of getting admission to higher studies or academic fields of their choice [3].

Conduct and Phases of Examination System
Conduct of examination is a technical job involving different types of data managed within the examination branch of the university.

The Examination process will be carried out into three different phases as under:

Pre-Conduct Phase
The admission forms of the students are processed, prescribed fee payments, attendance and all the details of students like college code, registration number, course code, etc. are created. Any discrepancy in these forms is communicated to the student for correction. Examination Centers are earmarked for the conduct of the exam.

University Examinations conducted at various Theory Centres, it is mandatory for the respective Theory Centre to observe following guidelines/ directives of the University during Conduct of Theory Examinations for transparent & smooth conduct of examination:
a) There shall be a Strong Room with single door opening. Door must have safety door & window shall have grill facility. It must have CCTV camera with recording facility.
b) Computer (Latest Version) with High Speed Internet facility in Strong Room.
c) 01 Laser Printer (per 100 students.)
d) Photocopier Machine (approx. Min. 35 PPM)
e) 24 X 7 Uninterrupted Electricity/Generator
f) Telephone Line (Land Line Telephone connection)
g) 07 Class rooms with 30 benches (Big size on twin sharing basis) having CCTV camera with recording facility.

The Supervisory Staff like Centre In-charge, Centre Observer, Internal Vigilance Squad, Flying Squad, Sr. Supervisors and Invigilators are detailed at Theory Centre for smooth conduct of University examination. These Supervisory Staffs are identified from the colleges and appointed at exam centres. Their briefing sessions are conducted through Seminars and workshops at University level. Summary-sheets of

different sessions, different faculties and different subject code are notified. This is two time activity in a year carried out at least three to four months before the University Examination.

Conduct Phase
Conduct of Exam is a critical phase. Release of papers from secrecy, deployment of invigilator staff (replacements in case of absentees), issuance of pre-printed serial numbered answer sheets, arrangements of candidates according to the seating plan, verification of candidates, distribution of Question paper & Answer-books to the candidates & collecting back the written Answer-sheets, storage and collection of Answer-sheet bundles, disposal of cheating (Unfair-means) cases are the major components of this phase.

Post-Conduct Phase
This phase involves coding and decoding of the Answer-books, deciding Centres for Central Assessment Programme for sending answers sheets for marking, evaluation of Answer-books, collecting evaluated answer books, scanning of marks-slips, tabulation of marks obtained, declaration of results and final transcripts to the students etc. Processing student's request for retotaling of marks, Xerox copies of solved answer book, some processes can be carried out time and again like student can always ask for duplicate etc.

The student exam data is preserved for a specific period of time and some of the data like notification of results and degree records etc. need to be preserved permanently in order to ensure future verification or to settle disputes, if any. The Examination Section, Registration Section, conduct section, secrecy section work in harmony; therefore, all the sections are placed in the close vicinity. These sections are manned by different officials by clearly defining their jobs description and they are accountable for any breach or any foul play with the examination activities.

Manual Examination System
Manual examination system is structured in well-defined physical section, still the process is very slow due to the nature of the technical data required to be handled. The examination process in manual system takes longer times causing both physical and mental strains over the examinees & staff of the University. Declaration of results takes long time owing to which students remain idle for months together. Sometimes the delay in declaration of result cause losses to the students as they may lose chance of further studies to appear in competitive exams or join jobs due to the non-availability of examination result within time [4].

Abdallah Ziraba observed that Schools were much willing to use ICT facilities in financial management due to their accuracy and time saving aspect related to them. This implied that school

administrators knew the importance of using ICT but they were hindered by inadequate computer skills and inaccessibility to all the required ICT facilities such as relevant databases [5].

R. Krishnaveni identified a comprehensive set of functional areas of Information administration. It was found that current level of usage indicates a clear integration of ICT for managerial or information-based administration in higher education institutions. This study reveals that demographic factors do not have major impact on Information administration in higher education institutions [6].

The few limitations of manual examination system are as follows:
a) Students may have to correspond through mail or visit university for minor queries regarding examinations. At times due to increased paper work in the examination branches their mails may get delayed. The personal visit to Universities wastes student's valuable time, money and cause unnecessary harassment. We also observed that students jostling around university in various service windows for many reasons.
b) The manual examination system leads to arithmetical errors, more time consumption is inefficient and wastage of valuable resources.
c) There is repetition of work as the same data is handled in different section of the examination. Retrieval of students records through manual registers, maintenance of records and data reconciliation etc. are time consuming.
d) There remains possibility of tempering of students records in manual examination system. There is no online verification of the same. This leads to unfair practices and also affects the credibility of the university.

Automated Examination System
There is need to automate the existing examination system, because the manual examination system was used when the numbers of students registered were less and the numbers of courses taught were less.

In present scenario the increasing burden of examination due to increase in no. of students, number of courses and maximum faculties, most of states which provides education for different health related Undergraduate and Postgraduate courses like, Fellowship courses, Certificate courses, Superspeciality Courses, Ph.D. Courses, Diploma Courses of Medical, Dental, Ayurveda, Unani, Homoeopathy, Occupational Therapy, Physiotherapy and Nursing faculties are leading to inefficiencies.

Some of the tangible benefits of automation and integrating the examination systems will be as under:-

a) Use of ICT will facilitate integration of all section, though logically these sections may keep on working as before.
b) This will streamline the procedure for exam fee defaulters, short attendances and keeping a track of particular class. There will be centralized, secure and robust database of the candidates appearing in the examination without duplication of records.
c) The quality of services will improve to the stakeholders.
d) The automation of Examination System will lead to effective monitoring of examination processes and fraudulence will be minimized. The statistical analysis of data will enable to see trends in result at various levels and also to make strategic decisions.

Apart from these benefits, major impetus for change to an alternate approach of examination is the societal pull. Frauds and corrupt practices in the society are increasing in academic activities. The major factors causing academic fraud are expanding higher education, competition among students and institutions, globalization which is resulting in international mobility of students, use of traditional method of management of examination system, poor rules and regulation & lack of accountability.[2]

Drawbacks in the Existing Examination System:
Examination and problems associated with it is the main centre of focus in the field of education in Health University today. In the competitive world, there is hardly any month where there is no examination anywhere in the country. The examination continues for months causing both physical and mental strains over the examinees. Declaration of results also takes a very long time owing to which students remain idle for months together. Moreover, as the dates of the examination and those of the publication of results vary among the Universities of the state, students are generally not able to get admitted into professional courses like medicine, super-specialty courses and other certificate and diploma courses etc. or to sit at competitive examination conducted at state, national or international level. Some of the general drawbacks in the existing examination system of are as follows:
• Students from different areas have to visit university for every query regarding correction in names, submitting application forms, degree certificate and Xerox copy of Answer book, duplicate mark-sheet etc. are collected by the student personally, thus wasting his/her precious time and money.
• The manual examination system leads to errors, more time consumption, inefficient and wastage of valuable resources.
• There is repetition of work in the existing system, the same data is written again and again by different sections. In the manual system

universities have to spent lacs of rupees for preparing results.

- In existing system, managing of student record is very tedious. Searching of students' records in manual registers, maintaining of records and reconciliation etc. are very time consuming.
- In manual examination system, there is no check on the secrecy and tempering of students records. Sometime fake degrees are prepared thus degrading the image of university.

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