Chapter 7

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Findings

Information and communication technology play an important role in the administration of activities in every organization. In the higher education institutions it plays a vital role in their e-governance. Using ICT for e-governance reduces human labour. It also provides speedy, reliable, easy, secured and systematic work process in the institution. The colleges/institutes of North Maharashtra University and University of Pune also use ICT for e-governance.

It is observed beyond doubt that every organisation can’t do without ICT, especially in the higher education; ICT is the front runner and a driver of e-governance. Human labour is greatly reduced by e-governance and a majority of colleges/institutes under North Maharashtra University and University of Pune use ICT for e-governance.

The study highlights the effects of use of this technology.

The institutional work is greatly impacted due to many reasons under areas of both PU and NMU and one of the major reasons for difference in work culture is due to IT.

The problems were interpreted through the perception of teaching and non-teaching staff as well as the heads of the institutions. The empirical evidence helped to find out the benefits and limitations of the use of the technology.

Therefore, for the findings a questionnaire was prepared and collected from 70 HEIs for non-teaching staff including office staff and librarian, teaching staff and directors/principals each covering the functional areas like student admission, personnel, accounts, purchase and inventory, library, examination system and general administration.
The Usage of ICT differs in colleges and institutes offering traditional and professional courses and it also depends on what different functional areas the focus is on.

7.1 Findings from non-teaching staff

7.1.1 Extent of use of different ICT tools

Various ICT tools were identified that can be used for e-administration and communication between the various functional areas of the colleges/institutes. It is observed that MS-Office (97.71%), Email (95.71%) and phones (82.86%) are used mostly in institutions for e-governance. Wikis (52.86%), blogs (45.71%), video messaging (57.14%), newsgroups (55.71%) and twitter (72.86%) are used to very less extent in HEIs. Social networking sites such as Facebook is not used much for e-governance. Only few colleges use customized software (37.14%) for this purpose.

All colleges/institutions undertaken for research are aware of ICT which is a good sign for the progress for the institutions. The implementation of the technology plays an important role for the development of individual, institution, university and country.

7.1.2 Student Admission Module

It is observed that the admission process of the student in the higher education institutions of both the universities use the traditional way. The colleges that offer the professional courses such as engineering courses (governed by AICTE) use centralized method for the admission process. NMU has started with the first step for the centralized admission for some other professional courses such as BCA, BBM, BBS, BBA, MCM, MPM etc. This way many students those who are willing to take admissions from remote, rural and urban areas are able to fill the forms of CET from their place through university website.
Students are also exposed to ICT due to fairly good use of software for admission process, scholarships, library, attendance, assignments, and results. The entire range of activities is thus simplified and made easy as the data is stored centrally in institutional database. Data is retrieved from it.

The integrated system helps in faster decision making at critical situations. The conclusions made by the researcher are as follows:

1. The information and communication technology is used to same extent in the institutions of NMU and PU for the student admission purpose. It is used by 91.43% and 94.48% HEIs of NMU and PU respectively.

2. ICT tools used in different processes for student admission are MS-Office, Custom Software, and ERP. It was found that 51.43% institutions use MS-Office for storing enquiry and admission details each. Most of the processes are carried out manually, such as 54.29% for discount notification, 60% for checking the testimonials and 55.88% HEIs for clearance process after completion. Only 2.86% colleges/institutes use ERP system for these processes in the colleges on NMU.

Similarly for the above processes for the institutions of university of Pune it is found that for storing enquiry 60% and 48.57% colleges/institutes for student admission details use MS-Office. Most of the processes are carried out manually such as 54.29% HEIs for discount notification 48.48% for checking the testimonials. Few use customized software and very few colleges use ERP system for these processes in the colleges/institutes of PU.

3. The admitted student are allotted the roll numbers and thus if the attendance system is linked with the admission system, the roll number is automatically generated with the
confirmation of admission. It reduces the time for this process. The findings from the data collected show that about 60% colleges/institutes (NMU 60% and Pune 64.71%) in both the universities each uses the technology for the linking of student admission and student attendance system.

7.1.3 Human Resource Management

The Human Resource Management System in institutions is used only for salary calculations and is not integrated with the other processes such as performance of the employee, his participation details in institution, University, state level, national level and international level projects. Hence the same records of personal performance are to be entered again and again whenever required.

In most of the institutions records of the teaching staff is managed by office staff by conventional method. Salary and job upgradation needs all the performance details of the staff to be updated regularly. It is seen that the office staff has to reconstruct the profile many times because they are not using any computer based information system. Hence sometimes it results in lost information or wrong information.

4. It has been found out that only 34.29% colleges/institutes from NMU and 20% of institutions from PU uses information technology for the personnel management. Most of the institutions manage the data of personnel manually.

5. Many processes are involved in payroll management of the teaching and non-teaching staff such as storage of personal details, calculations of incentives and deductions, paysheet generation and service book maintenance. From the data collected it is found that nearly 89% colleges/institutes affiliated to NMU uses technology for the maintenance of personnel details, 71% for pay calculations, 91% for generation of
paysheet. It is found that the service books are maintained manually by nearly 94% institutions.

It is found that nearly 91% colleges/institutes affiliated to PU uses technology for the maintenance of personnel details, 88% for pay calculations, 91% for generation of paysheet. It is found that only 20% institutions use the technology for the maintenance of the service books.

6. Usually the payment of the staff is linked with the attendance and leaves of the staff. It is found that the technology is used by 54.29% colleges/institutes affiliated to the universities. Though most of institutions use biometric technology for the attendance of the staff still nearly 42% does the process of checking the attendance and calculating the salary manually.

7.1.4 Accounts Management

The accounts system is not integrated with other functional areas in the HEIs. Actually the accounts system needs the information about student admission, purchase, personnel, library systems etc. If all these subsystems are not integrated with accounts system then the data needs to re-keyed which may sometimes create wrong records and thus may provide wrong output.

7. It is found that accounts department use information technology to more extent as compared to other functional areas of e-governance in educational institutions. The values from the data collected shows that 74.29% and 88.67% colleges/institutes of NMU and PU respectively use technology in the accounts system.

8. Apart of filling the forms in the admission process, one of the important part is payment of fees. All the pay related transactions are recorded in the accounts system.
Thus if technology is used for the linking of admission and accounts system the chances of error becomes less. It is found that 48.57% and 68.57% HEIs of NMU and PU respectively make use of the system that links both of these systems.

9. It is found that 34.29% and 45.71% of institutions affiliated to NMU and PU respectively has linking system with staff attendance and the accounts system.

7.1.5 Purchase and Inventory Management

Regarding the purchase and inventory management processes it is found that the tools are used to very less extent. In most of the small institutions there is no separate purchase department. With the help of t-test it found that there is significant difference in the use of ICT tools for the processes of purchase and inventory between the colleges/institutes of both the universities.

The large institutions with campuses spread over large areas integration of systems amongst campuses will result in sharing of resources such as books, computers, cupboards, chairs etc. this will enable avoiding multiple purchase of the same item for different campuses under one organization.

10. It is found that 68.51% and 62.86% colleges and institutes affiliated to NMU use technology for the storage and management of data in the purchase and inventory functional area of the institutions.

11. Various processes are involved in purchase and inventory system. It is found that ICT applications are used for these processes for transparent, smooth and fast functioning of the system. The processes involved are generation of purchase order, stock maintenance etc. It is found that 76% colleges and institutes of NMU and 66% of PU use technology for the generation of purchase order. 48% and 64% institutions of NMU and PU
respectively use information technology for the maintenance of stock records whereas 64% and 53% HEIs maintain the details of dead stock manually of NMU and PU.

12. When asked for comfortable level with the system used in the purchase and inventory system it was found that more than 80% colleges/institutes affiliated to NMU and PU responded positively. 82.86% in NMU and 85.71% in PU HEIs are comfortable with the technology usage in the system.

7.1.6 Library Management

Library management includes many processes such as the accession of books, issue and return of books transactions, fine collection process, and reports generation. E-resources are also used by the students and teachers for the enrichment of knowledge. The institutions also subscribe such e-material resources. The record management for the use of e-resources and reading room details are also managed by the librarian with the help of ICT. It is also noticed that the library system is not integrated with other systems like student admission, inventory and purchase system. It is found that the libraries of the institutions of both the universities use ICT for its governance to some extent.

13. Nowadays many e-sources are available for getting the information. Traditionally books are the main source. For this each educational institution has at least one library. It is found that for the management of library technology is used by 71% colleges and institutes of both NMU and PU.

14. It is found that only 48% institutions affiliated to NMU use ICT technology for accession of books where as it is 83% of institutions affiliated to university of Pune. Usually the technology used for accession is barcodes and RFID. It is also found that 42% institutions of NMU still use manual system for management of library system.
15. The ICT tools generally need computer systems for their functioning. Thus it is found from the data collected that the libraries of about 50% institutions of both the institutions use less than 5 computers, 20% use between 6 and 10 computers. It is also found that 25% institutions of University of Pune have more than 10 computers in their libraries. There is not a single college/institute that has no computers.

16. The technology that is used for the management of system should be secured. It is found that the technology implemented is secured in 83% institutions affiliated to NMU and 91% of PU.

17. More than 80% of colleges in both the universities make use of technology in the library system. It is found from the data collected from the librarian that 85.71% HEIs in NMU and 94.12% in PU are comfortable with the system they use.
7.2 Findings from teaching staff

7.2.1 Exam Management

Regarding the examination system responded by the teaching staff of the institutions of these universities, communication among the staff and students are not using the technology to much extent. It is observed that irrespective of the areas such as PU and NMU the examination system still functions in traditional way. The teachers have not exposed to the students the usage of technology in this area, thus impacting the culture of students.

Cloud based software are being used by some colleges in Pune very recently. This software provides study material according to the syllabi. It also provides the facilities such as assignment submission, online exams, result analysis etc. Much time and efforts are saved using this software which is available at very cheaper rate as Rs. 100/year/student for purchase of 600 students.

1. Examination system in higher educational institutions is very important system related to evaluation of students. It needs lots of data related to students. Teachers need technology for teaching and it is expected by the organizations that they should use technology to maximum extent. But it is found that only 40% colleges/institutes affiliated to NMU and 42.86% of PU makes use of information technology and also communication technology as required for communication with other system.

2. Student attendance is required for getting the permission for attempting the exam. So if some information technology is used to mark the attendance of the students then it becomes easier to find out the eligible and regular students. Different tools can be used to mark the attendance. It is found that 83% institutions affiliated to NMU and 63% to PU
still use traditional i.e. manual method for marking the attendance of students. Only 17% and 27% HEIs of NMU and PU use some technological tools for attendance of students.

20. It is found that ICT can be 48% colleges/institutions affiliated to NMU and 30% to PU uses communication technology to link between attendance and exam system.

3. It is found that 86% in NMU and 77% in colleges of PU conduct exam traditionally. The remaining colleges/institutes use technology or both the ways to conduct the exams of the students.

4. Evaluation of students is done by marks and results. Marks calculation, result generation and result analysis are the important processes of exam system. These processes are carried out often in every year/semester. With the help of technology this can automated and communicated to the students and others with the help of ICT tools. It is found that 57% colleges/institutes of NMU use technology for marks evaluation process and nearly 65% for result analysis. From the colleges/institutes of PU nearly 82% use technology for evaluation and 76% for result analysis purpose. More than 30% from both the universities still does these processes manually.

5. Very often notices and information is to be spread among students and staff. ICT tools are used for this purpose. But it is found that still official notices are communicated by putting the notices on the notice boards in traditional way. It is found that nearly 97% colleges/institutes of both the universities use traditional methods for communicating notices. Nowadays it has been noticed that newly developed ICT tool What’sApp is widely used in informal way for communicating messages among students and staff of institutions.
6. Feedback of students is sometimes linked with the appraisal and performance system of the teaching staff. It is found that technology is not widely used for taking the feedback of the student. 88% from NMU and 82% colleges/institutes from PU use traditional method for feedback. Only 12% and 18% institutions from NMU and PU respectively use some technology for this process.

7. It is found that 80% institutions affiliated to NMU and 88% HEI from PU are comfortable with the system that is utilized either using technology or not. 20% and 12% HEIs from NMU and PU are not comfortable with the current system that is used in examination functional area.
7.3 Findings from Director/Principal of HEI

1. In current scenario, due to globalization every institute or college needs a website. Most of the areas need internet and many ICT tools are based on internet. To store and communicate the information fast and to wide area or globally website of organization is very much useful. From the data collected it is found that professional and non-professional colleges affiliated to PU has their websites. There are more than 90% colleges and institutes affiliated to NMU with websites. All the remaining colleges are getting their websites developed. Nearly all the HEIs that has their websites also update them regularly.

2. It is found that video conferencing and teleconferencing is not used much for e-governance of institutions. From the traditional colleges of NMU only 24% and 28% use video and teleconferencing whereas it comes to 13% and 22% respectively in the colleges of PU. In professional colleges of Pune video and teleconferencing is used by 53% and 46% respectively whereas only 30% of NMU uses these tools.

3. Most ICT tools require internet and it is found that 76% and 96% traditional colleges of NMU and PU respectively have at least one internet connection in their campus. For professional institutes the finding is 80% and 8% respectively.

4. Wi-fi is used widely in the organizations. It is found that 44% traditional colleges of NMU and 100% of PU use wi-fi and for professional institutes it is 60% and 85% in NMU and PU respectively.

5. For interdepartmental communication intercom facility is used by institutions. It is found that 82% traditional colleges from PU and 68% from NMU has intercom facility
whereas for professional institutes it comes to 92% and 70% from PU and NMU respectively.

6. Mostly for e-governance communication among functional areas is needed and for internet also telephones are required. It is found that 43% HEIs from NMU has less than 3 telephone lines and more than 8 lines each. 54% colleges/institutes of NMU has 1-3 telephone lines and 26% has more than 8 lines for communication. Not a single college/institute are without a single telephone line.

7. To use most of the ICT tools internet connections are required. It is found that 17% and 23% institutions of NMU and PU have one internet connection. 23% HEIs of NMU and 40% of PU have two internet connections and 60% and 37% institutions from NMU and PU respectively have more than 2 internet connections in their campus. There is no single institution without any internet connection in both the universities.

8. Sometimes the technology may fail due to certain reasons such as hardware failure, power failure, software problems and may be due to improper handling by the users. It is found that all the colleges/institutes agree that the system do sometimes breakdown. It is found that the breakdown never occurs due to hardware problems by 3% HEIs from PU and 6% from NMU. Few colleges/institutes believe power failure is never responsible for breakdown.

9. It is found that in student admission system ICT is used for e-governance mostly by 68% institutions affiliated to NMU and 83% to PU. 26% HEIs of NMU and 11% of PU sometimes use ICT for e-governance for student admission process. Only 3% and 6% from NMU and PU use technology sometimes.
10. It is found that in accounts system ICT is used for e-governance mostly by 54% institutions affiliated to NMU and 71% to PU. 29% HEIs of NMU and 13% of PU sometimes use ICT for e-governance for accounts system. Only 11% and 3% from NMU and PU use technology sometimes.

11. It is found that in Personnel functional area ICT is used for e-governance mostly by 51% institutions affiliated to NMU and 49% to PU. 34% HEIs of NMU and 40% of PU sometimes use ICT for e-governance for personnel management system. Only 9% and 11% from NMU and PU use technology sometimes.

12. It is found that in Purchase system ICT is used for e-governance mostly by 37% institutions affiliated to NMU and 29% to PU. 37% HEIs of NMU and 40% of PU sometimes use ICT for e-governance for purchase system. Only 11% and 23% from NMU and PU use technology sometimes. 9% institutions from both the universities use ICT tool to very less extent.

13. It is found that in stores functional area ICT is used for e-governance mostly by 37% institutions affiliated to NMU and 29% to PU. 40% HEIs of NMU and 37% of PU sometimes use ICT for e-governance for stores system. 91% and 20% from NMU and PU use technology sometimes. 9% institutions from NMU and 11% from PU use ICT tool to very less extent.

14. It is found that in stores functional area ICT is used for e-governance mostly by 63% institutions affiliated to NMU and 77% to PU. 26% HEIs of NMU and 14% of PU sometimes use ICT for e-governance for library system. Only 3% and 6% from NMU and PU use technology sometimes. 3% institutions from both the universities use ICT tool to very less extent.
15. It is found that 91% of the traditional colleges affiliated to NMU and 87% of PU are comfortable with the systems and technology they use. 83% professional colleges of NMU and 100% of PU are comfortable with the system.

16. Management’s support and willingness is required for the implementation and use of technology in the organization. From the data collected it is found that the governing body of 83% professional institutions of NMU, 91% of PU and 93% traditional colleges of NMU and 91% of PU support institutions for installing ICT tools and provide training to staff to use these tools.

17. It is found that 57% institutions of NMU has hostel facility and 20% of them use technology for governance but only 14% are linked with the student admission system and 77% institutions of PU has hostel facility and 25% of them use technology for governance but only 31% are linked with the student admission system.

18. It is found that 62% institutions of NMU has canteen facility and 11% of them use technology for governance but only 9% are linked with the accounts system and 80% institutions of PU has hostel facility and 9% of them use technology for governance but only 6% are linked with the accounts system.

19. It is found that 69% institutions of NMU has Gym facility and 3% of them use technology for governance but only 11% are linked with the accounts system and 63% institutions of PU has hostel facility and 14% of them use technology for governance but only 11% are linked with the accounts system.

20. It is found that 319% institutions of NMU has transportation facility and 6% of them use technology for governance but only 3% are linked with the accounts system and 43%
institutions of PU has hostel facility and 11% of them use technology for governance but only 9% are linked with the accounts system.

7.3.1 Perceptions and effects of HEIs on governance by the use of Technology

21. Using ICT makes the e-governance processes of higher education institutions easy. It is found that 78% institutions feel that using ICT for e-governance is always easy, 20% feels sometimes easy and only 2% institutions feel it easy rarely.

22. It is found that 71% institutions feel that using ICT for e-governance is always secured, 26% feels sometimes secured and only 3% institutions feel it secured rarely.

23. It is found that 66% institutions feel that using ICT for e-governance is always relevant, 23% feels sometimes relevant, 6% institutions feel it relevant rarely and 4% HEIs feels that it never relevant.

24. It is found that 57% institutions feel that using ICT for e-governance is always speedy, 34% feels sometimes speedy, only 3% institutions feel that it is speedy rarely and 6% HEIs feels that using ICT is never speedy.

25. It is found that 59% institutions feel that using ICT for e-governance is always operable, 33% feels sometimes operable and 4% institutions feel it rarely and never operable.

26. It is found that 53% institutions feel that using ICT for e-governance is always transparent, 31% feels sometimes transparent, 11% institutions feel it transparent rarely and 4% HEIs feel that it is never transparent.

27. It is found that 30% institutions feel that using ICT for e-governance is always costly, 51% feels sometimes easy, 10% institutions feel it costly rarely and 9% HEIs feel that it is never costly.
28. It is found that only 11% institutions feel that using ICT for e-governance is always time consuming, 36% feels sometimes and rarely time consuming and 17% institutions feel that using ICT is never time consuming.

29. It shows that only 13% institutions feel that using ICT for e-governance is always done by untrained staff, 26% feels sometimes, 33% institutions feel it rarely and 28% feels that untrained staff is not responsible for the effectiveness.

30. There are certain effects on usage of ICT for e-governance of institution. It is found that 80% colleges believe that ICT is best for faster decision making. 57% HEIs of NMU and PU feel that ICT is best for providing better efficiency. 47% institutions believe that using ICT saves the cost required in the processes of e-governance and 61% college/institutes of NMU and PU believe that using ICT for e-governance creates brand image of the institution.

31. The problems stated by the respondents in the open ended questions of the questionnaire, it is found from in that the colleges of rural area face problems due to low internet connectivity and power load shedding schedules. Due to such problems it takes time to complete the work.

32. Institutions believe that using technology for administration in purchase system it causes delay due to late indent and requisition approval. Use of technology is also human dependent and thus the human lethargy may consume more time for processing.

33. While using ICT for admission process it was found that most of the students are aware of the admission process but they find it hard and tedious due of lack of knowledge about online system.
34. The colleges/institutes that are established long back stated that the non-teaching staff was recruited long back and hence they are not familiar with ICT. They are afraid of adapting the technology instead of traditional working.

35. It was found that colleges/institutes those are using traditional method for attendance are planning to apply biometric system for student’s attendance and implement ERP so that e-governance of all the functional areas could be integrated.

36. Most of the institutes affiliated to university of Pune are planning to convert website into web portal and make it interactive.

   It was good to notice that almost all the institutions in both the universities have their websites. But few institutions don’t have updated sites. It is also observed that the people concerned are irresponsible when breakdown of the system occurs. The attributes such as hardware failure, software failure, handling problems and power failure were found to be responsible for the breakdown of the system. The breakdown mostly occurs due to power failure and hardware failure.

The management of most of the institutions supports the implementation of ICT and provides help for suitable training to the staff for the use of ICT and adopts latest technologies for governance.

Few institutes use ERP system and enjoy the benefits of the integrated system. But it is found that very few colleges (2.86% in NMU and 17.4% in PU) have implemented ERP for e-administration of the institution. The positive effects of using integrated systems identified by the institutions are easy, secured, relevant, speedy, transparent and operable: Using technology for e-governance in institutions helps in making faster decision, increase efficiency, cost saving and creating brand image of the institution.
The institutions have started tasting the fruits of using ICT for governance activities. Using ICT integrates the system that effect fast, relevant and transparent results. The governance becomes easy and speedy by use of technology.

7.3.2 Interaction between the university and HEIs

The Universities have already implemented the technology for the examination system. The university sends the question paper online to the colleges/institutes and the institutions take the print of these papers for selected courses. This means the technology is used effectively and efficiently to communicate the information maintaining the confidentiality and security. It has reduced the laborious efforts, cost and time required for transportation.

The colleges/institutes send the internal marks and other personal information of staff to the universities. The e-suvidha software is used uniformly in the institutions of both the universities for this purpose. The institutions and the respective university are already using ICT effectively for communication between them. For fulfilling these requirements the integration of the different departments has become essential to provide the relevant and accurate information quickly to other departments and universities. It is observed that most of the institutions are positively and quickly moving towards this direction.