E-Governance: A Perspective in Health Domain

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Abstract: The current scenario of Governance in health domain is a serious issue for everybody. The diversity in hierarchy, command structure, difficult geographical area to reach, acute demand of healthcare services in public ,the life & death risk involvement in healthcare services, the awareness of health and patient right among public is making the Governance much more tougher than earlier. The situation now a day is meeting huge demand and supply of services in health sector is to be smoothened .The service should be prompt, accurate and free of cost as much as possible. The universal health coverage is also demanding the governance to be more effective. The E-Governance is better acceptable for employees and public also. It is also strengthening the effort of Govt. to make the programmes successful in health sector and target oriented. The E-Governance is changing the scenario in health sector and making the health domain more accessible by public. The aim of E-Governance is to give justice to the decisions taken by Govt. to be implemented in programmes. On the backdrop of this the present study is to assess the usage of ICT by patients and healthcare professionals, usability of e-governance models for different category of beneficiaries and impact and status of e-governance making health projects more accessible

Keywords: *E-Governance, Information, communication & technology, Universal health Coverage, Millennium health goal, health domain.*

1. Introduction

The E-Governance comprises two parts literally i.e. E means use of electronic media for dissemination of information and to send the communication and to take the help of technology to make the governance stronger. The second word Governance comprise the traditional and conventional Governance which means making the employees and customers (patients) informed regarding a decision of Govt. and making them participate in making decisions as per a standard guideline. E-Governance provides reliable and useful information in time. According to the World Bank- "E-Government refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/ or cost reductions."

2. Need and Rational of the study

The healthcare sector is a sector which

is linked with the economic condition of a country and the author felt that there should be genuine study on researches and data collections of e-governance and its integration in healthcare sector. The success of any implementation depends on the awareness and accessibility of an initiative. Thus it is important to understand the strategy, policies, components, type of services or models through which e-governance is operated. Also it is important to know challenges, bottlenecks that are faced by e-governance implementation in healthcare sector and success factors are required for its sustainability.

3. Objective: The objective of the study is to assess the usage of ICT by patients and healthcare professionals, usability of e-governance models for different category of beneficiaries and impact and status of e-governance making health projects more accessible. This is a descriptive study based on various research articles, journal and secondary data base.

4. Literature Review

4.1 Phases of e-governance
1. Information phase- This is the first phase of e-governance which disseminates the proper information inter or intradepartmental, information during an emergency situation and circulation of govt. notification and orders. In the era of ICT, the use of technology for information dissemination and official communication is very common and vital for implementation of e-governance.
2. Interaction phase- This is the second phase of e-governance which

helps officials to come to one platform to discuss the matter to find out the problem, bottleneck and come out with a solution. The issues are to be converged or diverged as per the need and delegation of power to be done to appropriate functionary.
3. Transaction phase- This is the third phase which determines the how to implement the decision taken so that the adopted strategy will be successful. The sustainability of strategy makes the transaction phase successful and repeated transaction occurs during forthcoming period.
4. Transformation Phase- This is the fourth phase where the strategies got implemented and the e-governance gives a positive output and shows the variation in decision making and its speedy accessibility. The repeated transactions comprises the transformation period.

4.2 Components of e-governance

1. Connectivity-The connectivity is very important as it connects the people with services. The stronger connectivity in a domain, the better governance is reflected.
2. Trained personnel- The setup should have knowledgeable and skillful personnel so that problems occurring in e-governance should be dealt as and when required and for smooth management and for dealing with advanced technology continuous training should be imparted.
3. Database management system- The e-governance should maintain the proper database which must be adequate, qualitative and accurate and the services related to the people can be documented and evidence based practices should be adopted.

4.   Budget approximation- The fund required for e-governance should be mobilized from public private partnership and should be used for better ICT infrastructure up gradation. The expenses should be analyzed so that benefits should maximum when compared to expenses.

4.3 Application of hi-end technology in e-governance

1.   Data Integrity:-To deal with large data over the years for E-Governance applications, data should be integrals and scalable at higher level.

2.   Security Auditing: - As corruption is increasing in government sector also, some mechanism is needed to keep track on e-governance worker so that no changes in personal data of individual which is on.

3.   Data recovery: - Hi-end applications provides an excellent way of data restoring facility which might be lost due to floods, earthquake or from any other disaster.

4.   Performance and Efficiency: - An efficient e-governance is that in which lakhs of access can be done easily without decreasing the performance.

5.   Systems Integration and Legacy Software:-The hi-end applications are already providing excellent services and solutions to the existing problems in a setup and also integrate with other applications so that a common solution can come up.

6.   Migration to New Technologies:-Technology migration is the biggest challenge. Moving to different versions of software, applying application and security patches is the key to maintaining a secure data center for E-Governance. The e-architecture efficiently enables these kinds of requirements, by co-existing and co-locating different versions and releases of the software at the same time.

7.   Environment Protection:-Air conditioner, power usage, heat generated by powerful machines and electronic wastage by different data centered up to the pollution. This pollution can be minimized to much extend by having centralized database.

4.4 Different service models of E-Governance

1.   E-governance services from government to citizens (G2C):

This model relates to the services provided by the government to the citizens. This model makes the strong interaction between government and citizens. Citizens use the desired services provided by the government. Citizens can interact with the government any time (24 hours a day, 7 days a week), any place (service centre, home/workplace) and with suitable medium (internet, fax, telephone, email etc.). The main objective is to enable the citizens to take benefits from efficient delivery of a large range of public services and to make government, citizens friendly.
a.   E-Citizen: E-Citizen creates many service platforms to address public grievances and to address quickly as healthcare sector is a sector which deals with life and death of a person. e.i. Sanyog helpline, kilkari services, toll-free number displayed for grievance redresses of public.

b. E-Medicine: It involves online availability of medicine at various hospitals and better medical services in different parts of country.

c. E-Education: With the help of E-Education, government takes many initiatives to educate the citizens and upgrade their knowledge with various information technologies.

d. E-Transport: E-Transport provides many facilities like online registration of vehicles or telephonic registration of vehicles like 108 ambulances and 102 ambulances.

e. E-Registration: E-Registration reduces the paper work for registration and maintains a proper database of patients in hospitals. It also enriches the electronic medical records. It reduces the duplication of entries and increases the transparency in work.

2. E-governance services from government to government (G2G):

It is also known as E-Administration. In this model, services are being shared between many governments. Information are shared among various government agencies, organizations and departments. The following are the services discussed in the G2G model. The success of G2G model is based on some important aspects like expenditure, establishment of network, planning, monitoring and controlling the performance of process resources like human and financial.

a. E-Secretariat: E-Secretariat provides huge, valuable and functional information of the state. In E-Secretariat, multiple departments are linked together on internet and exchange the information of various components. It also links all the governmental departments with their headquarters and state capitals.

b. E-Interdepartmental: E-interdepartmental involves communication and dissemination of information that involves multiple departments and cross departmental issues and convergence of different administration on one platform.

c. E-Intradepartmental: E-intradepartmental involves communication and dissemination of information within different section of one department.

3. E-governance services from government to employees (G2E):

Government to employee model increases a transparent connection between government and its employee. Employee can monitor the functioning of the government and government can also check the working and efficiency of its employees. With the help of this model, employees can aware of their benefits and responsibilities. This model enhances the strengths and accessibility of the employees in the governmental organization. This model share the important information like attendance record, employee record, complaints, employee salary, working record, service records and all kind of rules, regulations etc.

4. E-governance services from government to business (G2B):

Government to business model makes connection between private sector and government sector. Government and business organizations exchange important information like sharing rules and data, sharing the standard of services, sharing information of critical cases, leasing of a service platform, rejection and approval of patents.

4.5 E-Governance Initiative has this 12 point agenda by GoI by 2000:

1. Each Ministry/Department must provide PCs with necessary software up

to the Section Officer level. In addition, Local Area Network (LAN) must also be set up.

2. It should be ensured that all staff that have access to and need to use computer for their office work are provided with adequate training. To facilitate this, inter alia, Ministries/Departments should set up their own or share other's Learning Centres for decentralized training in computers as per the guidelines issued by the MIT.

3. Each Ministry/Department should start using the Office Procedure Automation software developed by NIC with a view to keeping a record of receipt of *dak*, issue of letters, as well as movement of files in the department.

4. Pay roll accounting and other house-keeping software should be put to use in day-to-day operations.

5. Notices for internal meetings should be sent by e-mail. Similarly, submission of applications for leave and for going on tour should also be done electronically. Ministries/Departments should also set up online notice board to display orders, circulars etc. as and when issued.

6. Ministries/Departments should use the web-enabled Grievance Redressal Software developed by the Department of Administrative Reforms and Public Grievances.

7. Each Ministry/Department should have its own website.

8. All Acts, Rules, Circulars must be converted into electronic form and, along with other published material of interest or relevance to the public, should be made available on the internet and be accessible from the Information and Facilitation Counter.

9. The websites of Ministries/Departments/Organizations should specifically contain a section in which various forms to be used by citizens/customers are available. The forms should be available for being printed or for being completed on the computer itself and then printed out for submission. Attempts should also be made to enable completion and submission of forms online.

10. The Hindi version of the content of the websites should as far as possible be developed simultaneously.

11. Each Ministry/Department would also make efforts to develop packages so as to begin electronic delivery of services to the public.

12. Each Ministry/Department should have an overall IT vision or strategy for a five year period, within which it could dovetail specific action plans and targets (including the minimum agenda) to be implemented within one year.

4.6 E-Governance in Health

There are special e-Governance initiatives of Ministry of Health and Family Welfare. Health Information Division of National Informatics Center (NIC) provides MIS and Information & Communication Technology (ICT) support to Ministry of Health & Family Welfare. More than 1800 PCs of the Ministry are connected to the Local Area Network (LAN) at Nirman Bhawan, which in turn, are connected to NICNET through RF link and leased line circuits. Salient features of important projects handled by NIC are as follows:

1. **Website of the Ministry of Health & Family Welfare & of various bodies under inistry :** The redesigned website of Ministry of Health & Family Welfare http://mohfw.gov.on and one new additional URL

(http://mohfw.gov.in) is in place. Various other websites under the ministry are updated on a regular basis, as and when required the information is provided by the users. Critical information such as notifications of the CGHS, tenders and advertisements under the Ministry, sanction orders, details of Principal Accounts Office & Public Expenditure Management, etc are uploaded in the website on regular basis. Many websites are using content management system i.e. website of sports injury center, website of NHM to name a few.

2. ICT Infrastructure Support

NIC provides new LAN connections; network based Anti-virus solution in addition to maintaining existing network users. At present over 1800 LAN nodes have been provided in the Department of Health & Family Welfare, Directorate General of Health Services and over 300 LAN nodes at Department of Ayush. NICNET Support is also provided at Department of AIDs Control(DAC).A number of organizations under MoHFW are under NICNET domain. An NKN node has also been provided in each Government Medical College across Country. The email and internet usage has grown significantly and official officials prefer email communication over other means. The network maintenance and desktops require constant updation from the operating system service providers and hence the unauthorized access is controlled effectively.

3. e-Office/FTS implementation in MoHFW

The File Tracking System (FTS) has been implemented successfully in the Department of Health & Family Welfare with over 1200 users. Now all the files and receipts are being diarized online and essentially move using online system, ensuring an easy for all the users to track the files and receipts anywhere in the network. The e-Office system, the Knowledge Management System (KMS), e-leave module, e-File, file tracking system (FTS) has been continued usage in different dept. of MoHFW.

4. e-tendering implementation in MOHFW

The Department of Expenditure, Ministry of Finance has vide office memorandum dated 30th Nov 2011 made e-publishing of all tenders mandatory, following which e-Procurement has also been made mandatory. For this purpose a Central Procurement Portal has been designed (http://eprocure.gov.in). e-publishing and e-tendering has also been implemented in certain Departments. Recently a new Autonomous Body under Ministry of Health and Family Welfare named Central Medical Services Society is being roped in for usage of e-procurement in a large scale for the Ministry of Health & Family Welfare.

5. Mother & Child tracking system(MCTS)

Mother and Child Tracking System (MCTS) facilitate to create the work plan, its execution and monitoring towards Ante natal CARE AND Post natal care of mother and child. It includes registrations; SMS based verification. Validation, the work plans for services through SMS to ANMs, ASHAs. Unstructured Supplementary Service Data (USSD) based service for MCTS Data, Direct benefit Scheme for Janani Surakhya Yozana (JSY) has been made operational through CPSMS. MCTS have been integrated with

Maternal Death (MDR) software. The URL is http://nrhm-mcts.nic.in.

6.   Nikshaya-Web based tracking of TB patients

Nikhsaya facilitates tracking of Normal TB patients, Multi Drug Resistant (MDR) TB patients and TB patients being treated by the private sector under Notification from Government of India.SMS is sent to central TB Division, state & District TB officer for monitoring purposes. More than 20 lakhs patients are monitored using Nikhsaya. This application has been implemented across India in all states. The URL is http://nikhsaya.gov.in.

7.   Computerization of Central Govt. Health Scheme(CGHS)

The computerized system is aimed at computerizing all functions of the dispensary such Registration, Doctor's prescription, Pharmacy Counter, Stores, Laboratory & Indent etc. The system has been successfully implemented for the last 5 years in all the 24 cities.

8.   National programme for control of Blindness(NPCB) MIS

Ministry of Health & Family Welfare had launched a website and online application in 2009 for their National Programme for control of blindness in India. This is a national level project where the users are different NGOs, Hospitals and DPM, DBCS. The URL of the site is http://npcb.nic.in

9.   E-Hospital @NIC-A Hospital Management System from NIC

The e-Hospital is a workflow based ICT solution for Hospitals specifically meant for the Hospitals in Government Sector. This is generic software which covers major functional area like patient care, laboratory services, workflow based document/information exchange, human resource and medical records management of a Hospital. Hospital OPD appointment system is adopted in Chandigarh Hospitals.

10.   All India Qouta Counselling for Medical & Dental Seats

In order to reduce the time span for counseling and facilitate students to take part in the counseling process from their homes or nearest internet access point, online system has been designed for allotment of seats. The URL is http://mcc.nic.in.

11.   National Eligibility cum Entrance Test(NEET)-UG

In order to conduct NEET for Medical Equipments, a web-based solution http://cbseneet.nic.nic.in was developed by NIC, which facilitates applying online by the candidates.

12.   MIS for National Organ and Tissue Transplant

The Transplantation of Human Organs (Amendment) Act (THOA),2011 is an Act, to provide the regulation of removal, storage and transplantation of Human Organs and tissues for therapeutic purposes. A web based facility is designed to facilitate donation of organs.

13.   MIS for Health Accounting System

A web-based application named as http://healthaccountscheme .nic.in has been hosted as a pilot project by Indian Council of Medical Research, Govt. of India, for online updating of Health Record.

14.   MIS for online Clinical Establishment Registration and Regulation

The Clinical Establishments (Registration and regulation) Act, 2010 has been enacted by Central Govt. to

provide for registration and regulation of all clinical establishments in the country with a view to prescribing. The web based system http://clinicalestablishments.nic.in provides easy mechanism for any clinical establishment to register for provisional certification online and get the same approval by the District Registering Authority.

15. Computerized & Internet based Inventory Management System

Odisha has adopted computerized & Internet based Inventory management system software for drug indenting, dispensing and procurement and governed by Odisha State Medical Corporation.

16. Hello doctor 24X7 at MKCG Medical College:

Hello doctor24x7 is a project extending e-health care service undertaken by 3 final yr medico of MKCG medical college using internet and mobile phones to provide health care information to rural people in form of tele consultation, tele-medicine, specialist referral, and emergency health care information to poor patients of remote area.

17. Tele medicine and tele referral services of NIC:

First Tele CMEs were started in north eastern states through community information centre (CIC) (Community Information Centre, 2008) of NIC in collaboration with SGIPGMS, Lucknow. Later the same started from Berhampur for KBK districts Orissa. Using the GRAMSAT network, Khariar Block of Nuapada Dist and Jeypore Block of Koraput district were added to the tele-referal (Das and Dash, 2007) services of NIC. Prof. S.K.Mishra of SGPGIMS explained on methodology and use of this service to all the doctors of dist. headquarter hospital, Orissa.

18. E-Grama:

Is an e-governance effort(Mishra, et. al. 2004) by NIC Berhampur, Dept of IT, Govt. of India, which started in December 2002, with the objectives of providing G2C services to common man through different Gram Panchayat and village level IT KIOSKS using Information and Communication Technology (ICT).

19. Orissa GRAMSAT project:

Is a satellite based communication network for conducting training programme, tele-education and tele- medicine etc. It operates on INSAT 3B using C band (DRS Network). The programes are transmitted from ORSAC (Orissa Remote Sensing Application Centre).

Conclusion

After going through all the articles, the author concludes the challenges and success factor in implementation of e-governance. The role and responsibility of senior management that shape strategic visions, culture, important decision making for plan of action and corrective actions to make processes viable are very important in e-governance. Organizational structure- The organizational structure and processes and form of relationships that supportive decision making, fostering of appropriate culture and mobilizing resources are necessary to make successful the adopted strategy of e-governance. Proper staffing is highly necessary. Adopting proper strategy and planning- Proper planning is highly necessary for making the e-governance successful. The strategy chosen by senior management makes a difference how the e-governance is getting implemented. The key strategy should be removing of communication barriers, breaking the organizational rigidity, making the organization and its staff

aware about the benefits of e-governance. Proper ICT infrastructure- Availability of proper ICT infrastructure and logistics are important for any set up to accept e-governance optimally. Proper training and empowerment- Even though the staffs are chosen as per technical knowledge requirement still knowledge management needs to be done and proper training and skill development should be ensured to make all the staff get involved in decision making and participation in each developmental activity should be encouraged. Technical challenges- The manpower should be competent enough to deal with technical problems and come out with an immediate solution so as not to hamper the service and should be directed to maintain the privacy and security of database and interpolability of the system. Economic factor- The cost-effectiveness, feasibility, reusability, portability, breakeven point analysis directly impacts the sustainability of the project.

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