E-Government Adoption and Diffusion

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ABSTRACT

This paper presents the current scenario of e-Governance, the hurdles like culture, appreciation, scope, technology and many other factors being encountered and unearths the underlying reasons while adopting and diffusing e-Governance applications in Government offices in general. The issues pertaining to E-Government to be addressed are also presented here. A probable model for successful adoption and diffusion of any E-Governance programme is also suggested in this paper. Finally, it concludes with a list of challenges and a few suggestions for making e-Government dream into reality.

Keywords: actors, concept, Organizational Transformation, Policy, G2B, G2G, G2C, e-Government, Attribute-Class, Panchayat

1. Introduction

The concept, the introduction and the usage of electronic media in the governance are relatively newer in transitional democracies like India although it has already revolutionized in several parts of the globe. Since the governance usually refers to the process of decision making and implementing (or not implementing) the decisions and thereby the participation by all actors like the society, various agencies, the Government is involved, the electronic media should be capable of incorporating the prime characteristics of governance. These are commonly identified as harmony, accountability, responsiveness, efficiency and effectiveness, equitability and inclusiveness, rule of law and finally transparency. It is imperative that all the inherent pillars of any democratic system at all levels need to act in connivance, in order to incorporate these characteristics for leading E-governance to a success. In fact, the idea of E-governance or e-Government came into Indian society with the expanding knowledge of ICT based events and developments happening in several Governments abroad. Since the inception of the idea of e-Governance in the Government of India, turmoil is being observed in several departments while fixing the periphery, the technology and the mode of execution for any e-Governance program though the prime objective of the associated policy is to derive, deliver and extend the benefits of E-Government to the rural masses, which is commonly known as citizen-centric services.

As a matter of fact, poverty and thereby illiteracy are two of the key reasons for which dissemination vis-à-vis acceptability of the deliverables of E-Government is indeed a setback. Again, available technologies are yet to be matured enough to adopt and diffuse the E-Government paybacks to the poorest of the poor. In this context, I must share that the available technologies are still driving several nations of the globe. In fact, it should have been otherwise, i.e., the society should have driven the technology to cater to its needs.

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Mindset, Inertia, interests and changeability to the tune of e-Governance are of course, the unavoidable constraints that come in the way of executing E-Government programs. All the more, fixing the scope for any e-Governance program is one of the chief difficulties since it is directly associated with the appropriate understanding and the funding as well. As an outcome, perhaps, several computers can be seen now also in the Secretariats which are again not more than centerpieces or at most as the efficient typewriters in the name of e-Governance. Although the overall situation of the responsiveness and usage of computers has undeniably improved that can be substantiated by naming Indian Railways electronic Reservation and Enquiry System, it is still a very long way that India needs to traverse in order to fulfill its e-governance dreams into reality for all governmental systems that the developing countries like India have been pursuing.

Undoubtedly, India has vast scope for development and implementation of e-governance systems in several arena of the governance system(s) and more specifically, in the service delivery areas of the Government and the related governmental systems. On the other hand, there are a lot of Information and Communication Technology (ICT) oriented systems existing or in use in several pockets of the Government domains. These are serving our society autonomously although many of them cannot talk or refer to each other. In sections 2.0 – 2.6, I have explained the current issues and the limitations relating to e-Government adoption and diffusion. In sections 3.0 – 5.1 the issues to be taken care for successful implementation of any e-Governance system are discussed. In the concluding section i.e, 6.0 the challenges that are to be met and the suggestions that may be considered for planning and designing an E-Government system are listed.

2. Hurdles of e-Governance Adoption & diffusion

There is no doubt that it is the need of the hour (better late than never) to plan and implement the e-Governance activities, but there are some definite hurdles observed while implementing or rolling out e-Governance applications in the Government departments or organizations. These confines are so fundamental in nature that any initiative for adopting and diffusing e-Governance application cannot avoid these boundaries. In the subsequent subsections endeavor has been taken to highlight the limitations of E-Government adoption and diffusion followed by a charter of suggestions for leading e-Governance a success.

2.1 Cultural Inertia

It is unquestionably a culture to set and use computer instead of pen and paper. Although it is being practiced in several corporate sectors, Government departments are far away from the expectations. Quite a lot of Computer systems and peripherals sitting on the Government desks can be seen collecting dusts. I feel, it is nothing but the result of computer trauma. Therefore, it is important to appreciate that the legislators setting the policies or rules or even those implementing the same should first set examples of such culture before any decision is taken for such paradigm shift. According to the present scenario, although a few e-Governance applications are in use as on date, but extension of the services to the receivers of all levels of the society has not yet been made possible, perhaps because of non-uniform accessibility of ICT culture across different levels of the Government departments.

2.2 Appreciation

Awareness**,** consciousness, responsiveness etc are the most critical components for rolling out E-Government programme for the stakeholders of the given domain since building wakefulness is the first step and the steps following awareness cannot be executed productively unless it is absolute and triumphant. Therefore, it is imperative that the users or operators and the top management including the policy makers in particular, fully understand and appreciate the prime issues (Seifert, Bonham) of e-Governance such as the need of legal and procedural changes in management in the Government

processes, privacy and authenticity of information for secure transactions, interoperability in integrated service delivery systems, technology, usage of local language and introducing standards for all these issues. Even after organizing series of seminars and summits both at the National and State level, it is observed in several domains that the authorities concerned sometimes dictate development of macro or micro level independent applications and term them together as e-Government applications.

It is about twenty-five years the computer technology has been introduced in India and ICT is in use in the Government offices since several years. Still it is disheartening to see that very often the technologists are told to build the requisite computer application for the dictator's domain in a month or 15 days or even in seven days sometimes. This is basically, as understood the outcome of having fuzzy or limited idea on the system being proposed and the extent of the underlying effort that is required to build it. It is, therefore, yet crucial to raise the level of awareness and commitment among the Government employees and the senior officials in particular. Besides seminars and summits, some other mechanisms must be developed to create drivers to e-Governance from among the Government and Civil Society leaders both within and outside the Government.

2.3 Scope & Requirements

Defining scope and detailing the requirements are important factors of e-Governance since these are directly liked to funding while planning for adoption and diffusion of any e-Governance programme**.** The scope basically indicates the broad area **of concern** representing the boundary of work**.** While attempting to computerize several applications of the Governments department(s) it has been observed that either the scope is framed to serve the limited purpose or the scope remains blurry. Sometimes adequate opportunity is also not given to explore the possible extent of the scope of e-Governance. The reasons behind all these are mostly found to be either inappropriate perception or lack of willingness for the proposed change or imprecise directive(s) from the competent authority. Therefore, the resulting services from the proposed e-Governance under the limited scope get limited causing the stakeholders suffer from not receiving the desired benefits.

Perhaps, it will not be out of place to mention here that different sorts of non-cooperation could be observed at different levels of Government hierarchy while making lessons for preparing requirements for a given e-Governance application in spite of the availability of highly responsive top management leadership. As a consequence, neither the interest of the stakeholders nor that of the Government is served. At the same time, the investment in such initiatives goes unprotected. Making the scope for implementation or even diffusion of e-Governance application(s) is often limited by capricious decision of the competent authority. Such decision at times severely influences the related investment. It is a fact that the sectional heads of the Government departments are often not in a position to specify or even estimate their requirements as to what is to be done for computerization even on several interactive sessions with ICT experts.

Such specification on the users' part is commonly called user interface and it is worth mentioning here that such user interfaces along with business logic are prepared and handed over to the ICT developers. The reason behind all these is mostly due to lack of knowledge and obscure understanding in the domain, communication gap among the people in the sections and the decision-making authorities and etc. The consequence is the production of incompetent and incapable system for the beneficiaries or stakeholders, thus defeating the whole objective of e-Governance. A little analysis and / or effort can justify how inept such application systems are and how are they failing to meet the prime characteristics (as stated above) of e-Governance or Governance at all.

2.4 Issues of Sustenance

It has been observed over and over again that inappropriate planning while procuring ICT components fail to take care of the obsolescence of equipments when these are procured at the verge of their technological

transition to next higher-grade. The growing needs of the users is the another parameter, if not taken care at the planning stage, may cause sheer failure of an e-Governance application or a diffusion programme within a very short period of time which is time and again proved to be unacceptable to the Government. It is also worth mentioning here that due to lack of adequate importance for the maintenance or AMC of ICT components and / or the up-gradation of the installed set of equipments, may be due to obsolescence or the growing needs of the users, the necessary provision in the budget is not consistently maintained.

Since most of the e-Governance applications are customizable products, due provision of incorporating the addition and / or changed requirements is of utmost importance. Several departments have been seen using software products that have been built to suit their custom needs but no provision has been held in reserve to customize further perhaps due to lack of appropriate vision. Even if the necessary provision is available, improper coordination and management may lead to obsolescence with the passage of time. It will not be out of context to mention here that such provision of up gradation should also be made available for the software tools such as middle tire application servers, database management systems etc that are in vogue keeping in pace with the fast changing technology.

Besides these, there are several other boundaries like dedicated maintenance of the technological components, the hardware or software of the e-Governance application, which if not provisioned appropriately, even an application that is adopted and diffused cannot survive for long.

2.5 Choice of Technology
Choice of Technology is definitely another major factor that has been creating problems in the Government departments by its intrinsic limitations. It has already been mentioned that our real life applications have the only choice to use and exploit the benefits that can be derived out of the available technological outputs. As the technology is moving ahead in its own pace, our expectations are also getting doubled up. But the fact remains that the Government departments need to absorb the intrinsic confines in terms of the features and options offered by the technological products and make adoption plans accordingly.

Again, the products and the options of their selection (e.g. DBMS, Application Servers, Report Writers, Integrated Development tools etc) are so bundled that the application designers and planners often find it very difficult to come out with any optimal and cost effective solution. In consequence, the organizations are gradually getting aligned to one line of products offered by one (giant) market player. In many cases, it has been observed or found that products of similar functionality (ies) from multiple vendors do not have desired recognition (lack of sufficient openness) by each other thus, leading to incompatibility and cost overrun. At the same time, justifying the growth path of a given technology or a group of products is so important that in case due consideration is not taken into account while choosing a particular technology; the choice may lead to a unsuccessful venture in terms of adoption, diffusion and even loss of many currencies without even utilizing the products for a stipulated period of time as usually required by the Government departments. Again, the present speed of decision making and / or inappropriate decision, procurement and absorption of a selected technology in many governmental systems of India limits the expected duration of usage or invites the early obsolescence of technological products leading to considerable loss of currencies.

2.6 Designing Architecture
Designing the architecture of any ICT system for any e-Governance programme is very much crucial since there is an existing multi-tier governmental system from central to panchayat or municipality. In this system most of the services, e-Government services in particular, that are delivered are linked directly or indirectly to the governmental hierarchy. Therefore, such activity, if not viewed or taken up seriously, adoption and diffusion of any e-Government programmme may lead to an utter failure. As per the current trend, whenever we talk of the delivery of services, especially the citizen-centric services, we should

immediately plan how and where the data will be stored, especially the transactional data that grows along with the growth of the organization or department, how the stored data will be accessed, maintained and protected from any disaster and its management, how the application software will be designed (service oriented or department oriented or any other), may be in terms of 3 or many tiers, what will be required interfaces both for the system and the user) and etc. Therefore, keeping the hurdles of adoption and diffusion of any e-Governance programme and considering the existing hierarchical system in totality the overall architecture may be evolved based on the domain of services, the geographical area, topology, and degree of concurrency, local and remote connectivity among the stakeholders, availability and redundancy for increased reliability. For an integrated or one-stop-service system successful communication among applications or the systems on several tiers, popularly known as interoperability, is one of the important constraints to be well thought-out while evolving the architecture for a e-Governance system. Since the governmental system vis-à-vis any E-Governance programme is truly hefty, evolving the appropriate architecture and implementing the same for such system(s) is inescapable and in absence of which the system may not deliver desired performance in the long run leading to an unsuccessful adoption and diffusion. While detailing the architectural components, setting the appropriate configuration vis-à-vis technology for each component, keeping the long-term operation and upgradeability in view is also very significant. It is commonly known that reliable delivery of e-Governance services for a stated period of time (may be even 24 x 7) is the ultimate choice of any e-Governance application. Therefore, it is also imperative to bring in or make room for sufficient redundancy in the overall architectural level in order to achieve high availability, which is one of the prime requirements of citizen-centric services under the e-Government programme.

2.7 Motivating Forces

There is diversity of motivations that may force a Government embracing e-Government as an approach to governmental transformation. Although there are several instances (Donnell, and Timonen) of Governments where officials tried to break with past practices and develop new processes and organizational cultures, in India the motivation mostly has come from outside forces, such as the demands of citizens, businesses, other actors and countries who interact with the Government. Usually, the developing countries like India, do perceive a need to improve openness and citizen opportunities to solidify their legitimacy, emphasize reforms such as transparency and thus, attract economic development. Indisputably, the motivating forces reflect country's both current state of political and economic development.

It has been observed that adoption and diffusion of e-Government depends heavily on the will and wish of the political leadership, their promotion, participation and especially, their integrated vision on ICT. Therefore, the views of leaders and senior management are absolutely critical on the awareness of benefits, confidence and the commitment to an e-Government. Where there is little or no commitment on the part of the political leadership and the bureaucracy who are working for any local interest(s), all attempts to adopt and diffuse e-Government will be subverted.

3. Assessment

The time has come to assess the existing ICT applications in the Government departments in terms of their entirety in required functionalities, reach-ability, integrity, and of course, the quality and reliability of services that are being rendered. Therefore, it is crucial that adopting, i.e., taking up and diffusing, i.e., disseminating any e-Governance activity or service through applications like G2G, G2B, G2C, etc call for pre-assessment of the overall organizational or departmental situation in terms of e-readiness. Such assessment is required to ascertain the level of acceptability of employees about the proposed change, if at all being planned and the available skill. In practice, it didn't or doesn't happen in most of the Government

departments and in stead, a straightforward policy is adopted for development and implementation of ICT-based activities in the organization or department.

There is no doubt that this is very much required as the first step but it should be preceded and followed by consistent accomplishment of pre-defined steps in order to successfully bring the policy, may be called as the dream, into reality.

4. Reengineering
The word 'Reengineering' is the term applicable to many, especially the product development but, when the adoption and diffusion of e-Governance applications is thought of, the words 'Business Process' should be added to it making a new name as BPR. It is the redesign of business processes and the associated systems and organizational structures to achieve a dramatic and radical improvement in business performance. The business reasons for making such changes could include poor financial performance, external competition, and erosion of market share or emerging market opportunities. Since Reengineering remains an effective tool for organizations striving to operate as effectively and efficiently as possible, it is the examination and change of five components of the business namely, Strategy, Processes, Technology, Organization and Culture that are anyway described. Such design process also includes continuous process improvement for achieving total quality management (TQM).

4.1 BPR for adoption and diffusion of e-Governance
The Government departments in question are yet to fully understand or appreciate the methodology and approach in BPR although it has a tarnished history, as a term and a practice for improving the working efficiency of her employees or of the system as a whole. Naturally, the initiatives in this direction and the introduction of practices are still a remote possibility as long as the Government does not frame and enforce the required Acts and rules of Law considering all those components together. If such change is brought into the Government scenario, it will be certainly a paradigm shift since it requires a great deal of changes in the working procedure where huge numbers of Government users still lack awareness and appreciation. Therefore, the Government reengineering at all levels is one of the prime requirements while it is considering adoption and diffusion of e-Governance systems. Once the Government employees accept the requirement of such change, the other related issues can be implemented at almost no extra cost.

5. Private Participation
The old argument, as to whether public ownership was always best or whether privatization was the only answer, is simply outdated. Now-a-days, perhaps our Government now believes that it will deliver the modern, high quality public services that the public want and increasingly expect if it draws on the best of both public and private sectors. The PPP is basically (Public Private Partnerships, The Government's Approach) to purchase high performing quality services on a long-term basis so as to take advantage of private sector management skills. The objective of such schemes is to sell Government services into wider markets and other partnership arrangements through the exploitation of commercial potential of Government assets.

5.1 Adoption and Diffusion using Private Partnership Programs
Considering the present scenario of Government and their way of functioning PPP may be one of the best choices for diffusing e-Governance applications at all levels of our society while monitoring the delivery of e-services up to required objectives and standards, and ensuring the safeguard of wider public interests. Since PPP has the scope to involve private sectors in constructing, enhancing and maintaining the infrastructure requirements and the contracts are usually on long-term basis, it is definitely safer to offer them with adoption of technology also. Such venture is even much less risky in terms of compatibility, bandwidth congestion and technology obsolescence (Public Private Partnerships, The Government's Approach). Again, it is well known that the private entrepreneurs are normally far more skilled in running

business activities and some elements of service delivery, including managing complex investment projects to time and budget, and assessing the commercial opportunities of new business ventures, which can very well be seen recently in the state of west Bengal.

All the more, the staffs should be dedicated and professionally motivated by a desire to continually improve the delivery of services in the given domain. Therefore, any commercially viable proposal for adoption and diffusion of e-Governance services using PPP model will certainly create genuine economic benefits for all stakeholders, be it public or private, involved. In a PPP scenario, usually there may be replication of e-Governance services through huge number of outlets or counters or kiosks, which may be spread across the state, districts and even the rural areas. In such state of affairs, there is involvement of large number of people as stakeholders, which naturally necessitate establishment of e-democracy and citizen empowerment by enforcing required policy and Law. However, the role of Government for ensuring desired services for the recipient and the related monitoring cannot be avoided in order to successfully continue with PPP model for e-Governance systems.

6. The proposed Model

A probable model for successful E-Government adoption and diffusion is suggested in this section as depicted in the Fig. 1. The policy makers and the decision makers may take help of one or many advisory committees for framing policies and taking decisions in technical and administrative matters. The implementing agencies / groups and the development agencies / groups may consult with one or many consulting agencies for BPR, architecture, technology, security etc. The progress Monitoring Committee (PMC) will continue to monitor and evaluate the progress, find the gap with the pre-defined goal(s) and feed it to the Implementing Agency or the Decision Maker with analysis results in order to minimize or control the said gap.

Table 1: Attribute Class

Attribute Class	Max Score suggested by EAF ver 2.0 as per the Project category				Score to be assigned by PMC	Gap
	G2C-R	G2C-U	G2B	G2G		
Service Orientation	40	40	30	20	O	G-O
Technology	20	20	20	20	T	G-T
Sustainability	20	20	20	20	S	G-S
Cost-Effectiveness	10	10	20	20	C	G-C
Replicability	10	10	10	20	R	G-R

Any e-Governance programme initiated by the Government such as Central, State, District or Panchayat can adopt this model for its successful adoption and diffusion. However, each of these authorities may form one or many sub-groups depending on the nature and size of the e-Governance programme for effective adoption and diffusion. In his context, it is very important to note here that unless the roles as defined in 6.1, 6.2 and 6.3 for the authorities concerned, E-Government adoption and diffusion may not meet the desired goals.

The model also suggests that the Progress Monitoring Committee (PMC) may assign a score against each of the attribute classes and the Max Scores (EAF version 2.0) as prescribed in Table 1 for the given category of the E-Governance project and find it's difference with the max score(G) where the value of G will be either of the given values in Table 1 against each attribute class, for example, (20-S) is the gap for the Sustainability under any project category and this is the gap between the suggested 'Max Score' i.e. 20 and the assigned score, i.e. S. It is also proposed that the. PMC may find out and analyze the reasons for any gap while adopting and diffusing any programme. The ultimate objective of this model is to endeavor for reducing such gaps to as minimum as possible, ideally zero. Therefore, PMC should also suggest the

corrective action to the competent authority as suggested in the model.
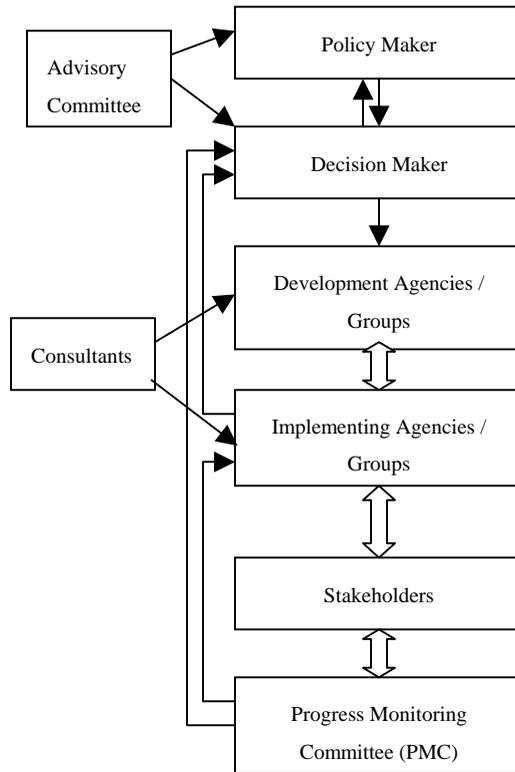
Figure 1: Model 1

6.1. *Roles of Decision making authorities*
- Conceive the e-Governance programme into a project and define the scope or boundary judiciously.
- Decide upon the mode of execution and divide the entire projects into a number of feasible and self-determining components.
- Make a comprehensive schedule of execution for all such components.
- Plan for availability of project resources and ensure the same as per schedule.
- Decide upon setting in the standards for Architecture, Technology, Business Process, and Interfaces etc.
- Make clear guidelines for execution of components at all levels.
- Define the appropriate roles and responsibilities for all the authorities / committees / the bodies reporting to along with the reporting authorities and schedule of reporting.
- Communicate the decisions immediately to all concerned authorities.
- Hold meetings as per schedule with the reporting authorities for collecting related feedbacks and appreciating the bottlenecks.

6.2 *Roles of the implementing groups / agencies-*
- Determine the level of awareness and appreciation of through several meetings and discussions with the stakeholders.

- Coordinate with the authorities concerned for readiness and availability of all necessary resources.
- Plan for holding workshops, seminars and training programmes periodically and execute accordingly.
- Install, integrate and commission all ICT components of the e-Governance system as per plan.
- Publicize and involve designated stakeholders into operation of the system on trial.
- Diagnose and remove operational bottlenecks and interface with the concerned authorities, if required. Check and compare the correct, reliable and consistent operation of the entire system with the existing system.
- Collect the periodic data for all employees of each site corresponding to the participation and level of contribution in terms of man-month/man-day/man-hour or as per the prescribed format of the appropriate authority.

6.3 Roles of the PMC
- Make Periodic visits, pre-informed or uninformed at the sites of implementation as per the prescription of the competent authority.
- Make frequent meetings / discussions and / or collect feedbacks from related stakeholders.
- Hold periodic meetings with the Implementing agencies or groups to collect and clarify different parameters of implementation.
- Analyze the available data pertaining to involvement, participation and / or access to the e-Governance programme, evaluate and consolidate the performance for each site.
- Summarize the non-participating or non-performing stakeholders and find the reasons for such non-performance.
- Provide the abovementioned reports as feedbacks to the decision making authorities or the implementing groups/agencies as per nature of the feedback.

7. Conclusion
Electronic government offers the potential to discover the way citizens and businesses like to interact with the Government. The benefits of this new form of government are enormous and the challenges are profound. In India, there is a huge momentum to create several electronic government-to-citizen programs vis-à-vis G2B, G2G and etc. However, the task that still remains is to educate lawmakers, large number of Government employees including senior management about e-government and especially, appreciation of the need of e-Governance. " Truly speaking, e-Governance in our country is still in the infant stage in which our Government is keen to shift their perspective to citizen-centric services and are just beginning to move towards the real potential of e-Government. Since the Government is moving to the Internet for basic transactional services, online procurement, and interactive communication and dissemination of information quite a few challenges in such transition could be visualized and these are follows:
- Need to understand the usefulness of Computer Applications at the decision making level : It is known to many that there are lots of executives including policy makers at different levels are required to be fully convinced about the necessity of computers and computer applications and its usefulness. Without this e-Governace may not be a successful venture.
- Leadership and management at the Executive Level: The change or transition requires effective leadership at the top management, responsive management processes and focused decision-making. Such leadership and interactive processes should be continued until the process of implementation reaches the desired functionalties or services.
- Focus of citizen as customer: Interactive customers demand more as they grow accustomed to the efficiency of many online companies. A standard for policies and practices is needed to ensure effective design, development, implementation and delivery of such growing needs of customer e-services.

- Security and privacy: Electronic government will only succeed when all who participate feel comfortable develop mutual trust using electronic means to carry out private and sensitive transactions. Therefore, private and public-key infrastructure should be the integral components to that success while digital certificate is an application pertaining to privacy of documents and its transfer.
- The technology: The Government must provide and ensure adequate bandwidth, reliable platform and software applications, interoperability, technical roadmaps and scope for introducing alternative technologies towards improving the system as a whole.
- Technical expertise: Since many areas in India are continuing with manual or semi-automatic systems, it has to go long way and therefore, the demand for IT workers is large and getting larger. Naturally, employers will attempt to create and fill millions of new IT jobs in the years to come with the largest skill gaps in several systems and the enterprise systems in particular. Changing the ways the Government intends to go an IT- literate generation would help the government meet these challenges needs the power to implement its recommendations across departments, he said. emphasized Any Government, may be Central, State or Panchayat should not separate its own policies from IT.
- Critical Process(es) for Sustenance
- If the the model as suggested in Fig. 1 is critically analyzed for E-Government adoption and diffusion in the developing countries, the most critical processes in the said model may be derived as the 'Motivation', collecting 'Feedbacks' periodically and resolve or implement the differences as briefly depicted in Fig 2. It has been observed in several occasions that e-Governanace system(s) do fail for either or all of the following reasons :-
  o Not seriously monitoring the progress
  o Not implementing the differences or not resolving the bottlenecks as found from the feedbacks and
  o Partial or No provision of required resources for sustenance of an e-Governance system that might have been already adopted and diffused.

At the end, it has become imperative to suggest that we should essentially assess (EAF version 2.0) the existing services being rendered in terms of the following while adopting and diffusing a new or re-defined e-Governance programme in terms of the following: -
- Employees' preparedness for the required or desired (cultural) change for ICT.
- Suitability of available ICT components in regard to the proposed programme
- Speed of delivery, compliance to committed services, user friendliness.

Ease of access to the service, single window access to several services, exception handling, suitability of service locations, especially to the economically and socially backward users, 24 x 7 availability etc.
- Coverage of functional requirements, interfacing of local language or even voice, attach-ability of new services and reduction in user visits.
- Totality of Architecture, inter-operability, compliance to open standards, security compliance to IS/ISO/IEC 17799, degree of scalability in terms of handling large number of users and transactions, degree of accuracy, degree of availability, consistency of response times, alternative(s) to disaster.
- Sustainability – Employees' comfort level, sense of ownership, ability to review for incorporating users' feedbacks and degree of replicability at multiple sites.
- Strength of PPP, if any, scalability, expertise and commitment to services, level of economic benefits extended to the users and the simplicity of business process.
- Cost Effectiveness – % reduction in direct and indirect costs, recovery of capital cost and %increase in Government revenue.
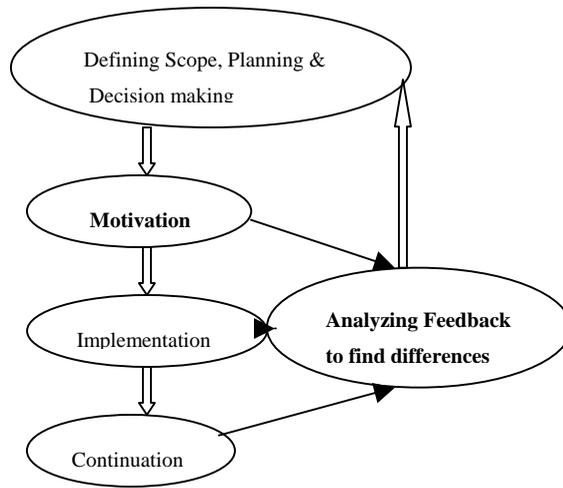
Figure 3: Model 2

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