

E-governance in India: A Strategic Framework

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E-governance in India has been a focus area recently. Some of the success stories have also been publicized. While the implementations are praiseworthy, they are effort-centered rather than being result-centric. Objective of this paper is to provide a strategic framework for the implementation of e-governance projects in Indian context, to achieve a result-centric implementation. An extensive literature survey is presented on the various aspects encountered in arriving at the strategic framework. This literature survey discusses about the need for transformation to e-governance from traditional governance. In addition, it discusses about the existing approaches, methodologies, technologies, factors and strategic frameworks. Further, literature on e-governance implementation in India is presented. Further to this, this paper analyses some of the successful Indian e-government projects and lists their strengths and weaknesses. This analysis leads to a conclusion on various factors contributing to success of e-governance and the strategic framework. This paper specifically addresses those e-government initiatives that have a direct impact on the citizens and in which the citizens derive benefit through direct transactions with the governmental services.

- e-governance
- digital divide
- process improvement
- e-governance framework.

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Introduction

1.1 Motivation

As e-governance uses ICT, as the dominant tool, it facilitates efficiency and transparency in the democracy thus opening new avenues for social and economic development and attracts investment and assistance (as in [18]). However, despite the best efforts by the governments, it is becoming difficult to bridge the gap between desired and achieved results. This is especially true in case of Indian government. As the following data shows, India lacks behind in the front of e-governance. In World Markets Research Centre's "Global E-Government Survey" [33], India got 60th rank for e-government with the overall score as 31.8% (U.S. was 1st). This survey measured the various features of e-government across 196 countries. Following table gives the comparison between India and U.S based on select features of e-government:

Our attempt in this paper will be to provide a strategic framework for implementing e-governance in India. This strategic framework will also take into account the features that are peculiar in Indian context.

1.2 Scope of the paper

The OECD E-government Task Force (2003) gives the follows three groupings of e-governance definition:

1. E-government is defined as Internet (online) service delivery and other Internet-based activity such as consultation
2. E-government is equated to the use of ICTs in government. While the focus is generally on the delivery of services and processing, the broadest definition encompasses all aspects of government activity
3. E-government is defined as capacity to transform public administration through the use of ICTs or indeed is used to describe a new form of government built around ICTs. This aspect is usually linked to Internet use.

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In this paper, we will follow the second definition when referring to e-government. However, the aim of this paper will be to achieve the third definition of e-government (thus stressing on the transformation of public administration). For this purpose, a strategic framework has been

proposed in this paper. The scope of this paper will be limited to the e-government project implementations in India, although quoting various concepts, technologies and methodologies from the rest of the world. Within the various e-government projects in India, this paper will specifically address those initiatives that have a direct impact on the citizens and in which the citizens derive benefit through direct transactions with the governmental services. Hence, this paper will not cover, say, the e-governance project implementation in police departments for effectively tracking the criminals. This paper will also not discuss the implications on the government policies due to the e-government projects. In addition, this paper does not address organizational culture aspects and G2B (Government-to-Business) aspects of e-governance.

Table 1. India and US (parameters of e-governance)

	Online Services	Publications	Databases	Privacy Policy	Security Policy	Handicap Accessibility
India	7	97	40	0	0	3
U.S.	34	98	90	81	56	37

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Literature Survey

2.1 E-Governance in global context

With the advent of ICT, many governments have taken steps to use this as a tool to modernize their workings and as a result, it has impacted both the service provider i.e. government and the recipient (the citizen). The government officials have adopted the tools and technologies like Internet, www, servers, browsers etc., as a normal part of their lexicon. The result of this impact has been that internal processes have been reengineered, delivery mechanisms have been streamlined and standardized, new approaches have been adopted for data privacy and security and unmanned delivery points have been accepted as normal, while validations have become automatic. It has ensured better transparency and efficiency thus encouraging the citizens to be enthusiastic participants instead of cynical users, thus making the complete process more democratic. New benchmarks have been created in all the changes mentioned.

- Gartner defines e-Government as “the transformation of public sector internal and external relationships through Net-enabled operations, information technology and communications, to optimize government service delivery, constituency participation and governance” (as in [29]).

ICT, especially Internet, being a powerful tool, provides immense potential for the government to improve its servicing of the citizens [19]. However, this potential can be converted into results provided the hurdles like low quality manpower, absence of reward mechanism for the efficient are removed, and ICT tools and strategies are used appropriately (as in [3], [4], [19]). For example, lack of efficient and structured process and resistance to change them, lack of coordination among various departments for providing single window facility, which ICT tools make easy, and improper monitoring methodology remain major challenges for the governments adopting e-governance [1]. In addition to this, other enablers of e-governance will be skilled and motivated manpower to move continuously along the learning curve, an environment that encourages research and innovation to improve the system and hardware of correct specification like servers, broadband network etc., to facilitate the research by the manpower of right quality [12].

2.2 E-Governance in India

The governments, both at the center and at the states, in India have taken the e-governance seriously and have been continuously endeavoring to provide citizen services in a better manner. There have been several successful initiatives and many noteworthy case studies have

been prepared on these. The M S Swaminathan Research Foundation Rural Tele-Centers in Southern India has been very successful by adopting participatory service delivery methods [24]. Some of the other successful initiatives are Gyandoot, e-seva, Bhoomi and CARD. Several projects in diverse places such as in the slums of New Delhi, in the fishermen's communities of Pondicherry and in the villages of Madhya Pradesh, have demonstrated the efficacy of IT in enlivening the living by improving the means of livelihood for the people on the other side of digital divide (poor and semi-literate people) who are normally excluded from such projects [28]. However, in the absence of up-scaling and augmentation of the projects, the novelty aspects of the projects have been lost and the focus on objective is getting lost. It has been observed that many of the successful e-government projects fail in long-term due to lack of financial stability, and technological suitability (lack of upgrading leading to obsolescence, which is a result of absence of financial self sustenance) of the project [24]. Other causes for failure are too much dependence on the vision and initiative of a single charismatic leader (sometime making them ego-centric), lack of adequate infrastructure viz., electricity, bandwidth, communication facilities like telephone etc. (a result of inadequate long term planning, dependence on donors for finance which is normally short-term and hence lack of long term financial sustainability). Ajit Maru, an ICT consultant in India says, "A large number of the not-for-profit NGO (non-governmental organization) ICT for development projects in South Asia are driven by publicity for 'donors' and are 'ego' centric, i.e., there is only one 'powerful' individual driving it [24]. Singla details implementation of various e-governance projects in India, various blockades that normally arise when implementing e-governance projects in India and ESIA (Eliminate, Simplify, Integrate, and Automate) framework for process re-engineering in government agencies [27]. Keniston discusses various propositions derived from a study of e-government projects in India [14]. We shall discuss below the initiation of various e-government projects in India, the impact they had, the reason for slowdown and a framework to move forward.

2.3 Components of Good E-Governance

2.3.1 Stakeholder Analysis. Various stakeholders in any e-government project could include a. Government, b. Citizen and c. Industry. Analysis of citizens' needs (alternatively, users' needs) is one of the important factors contributing to the success of e-government [2], OECD E-Government Task Force. While analyzing the needs of the users, adequate attention needs to be given on the skill set and the potential of the users in accessing the e-government websites. Marche and McNiven identify three types of digital divides based on the citizens' accessibility to Internet and the skill adequacy [17]. In India, digital divide is wide as the following data indicates Ashok Vardhan Shetty [26]:

Users should also find it easy to use the various e-government services [21], [32].

2.3.2 Organizational Structure. Top-level teams with authority and responsibility need to be created for guiding the e-government projects (as in [6], [30], [8]. Interdepartmental bureaucracy has to be reduced to facilitate smooth transactions for the citizens, and efficient and effective transactions between the departments [31], [2], OECD E-government Task Force; [22], [13].

2.3.3 Project Management. One of the success factors of the e-government projects is the availability of adequate project management skills and adequate project managers [23]. Project management skills include the ability to guide the projects under the given time and resource constraints. In addition, project managers should be able to communicate to the lower rung employees about the need and significance of e-government projects.

2.3.4 Process Streamlining. ICT managers should interact with e-government project managers often to streamline the process, keeping in mind the technological constraints and feasibility, and the environmental constraints and feasibility [31], [8]. Process could also be streamlined to provide "single point access" (or "one-stop access") to the users, by integrating

Table 2. ICT usage parameters across various countries

Country	PCs/100	Telelines/100	% of population online
India	0.45	3.20	1.2
USA	58.52	69.97	62.1
Canada	39.02	67.65	46.5
UK	33.78	67.65	55.3
Australia	46.46	52.41	52.5
New Zealand	36.02	49.57	46.1
Singapore	48.31	48.57	49.3

the functionalities of the various departments in the front-end of the e-government projects [32], [15].

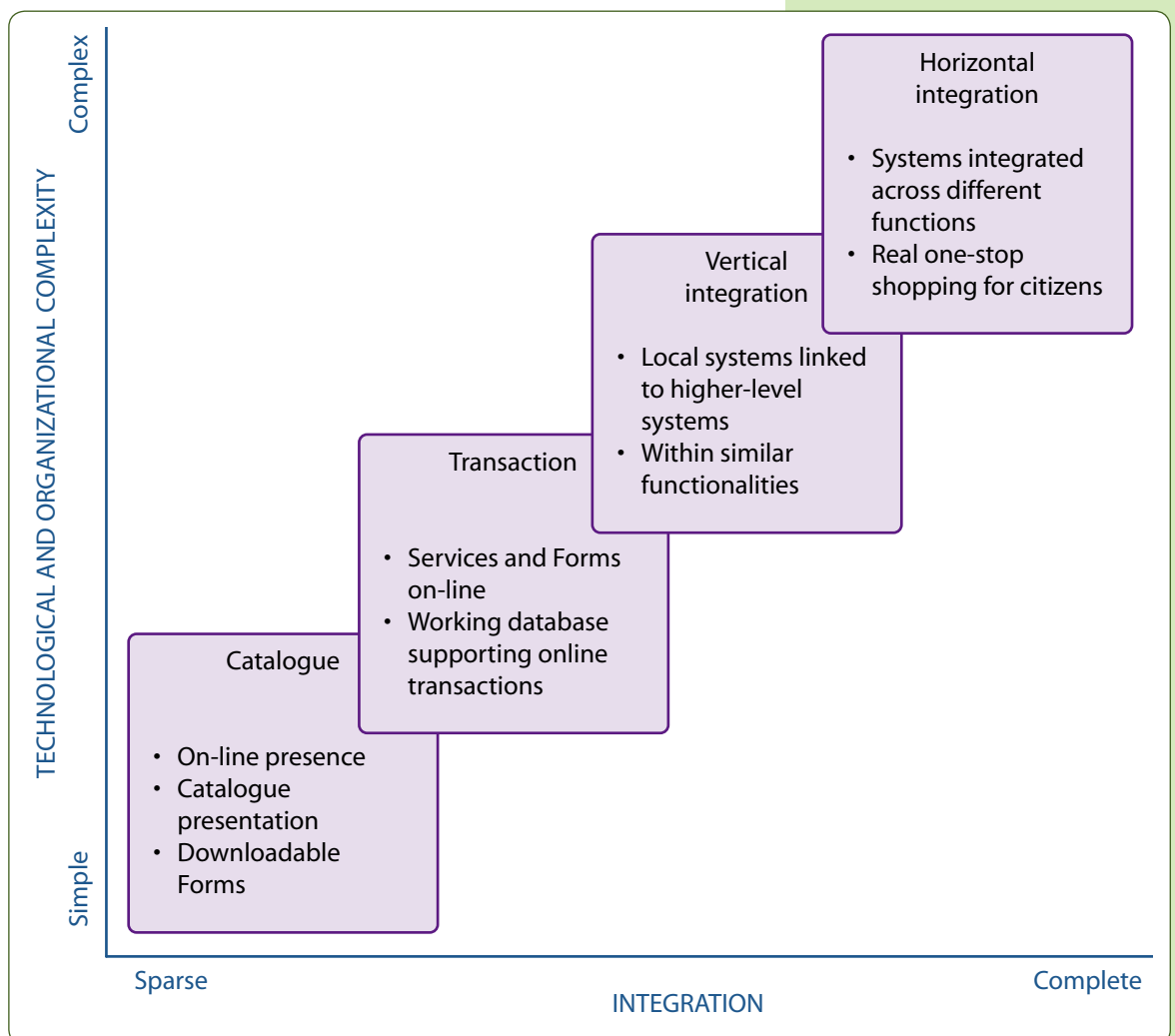
2.3.5 Technological Feasibility and Upgradation. Appropriate, cost-efficient (includes, capital cost and operational cost) and effective technology needs to be used for e-governance. Hakala states that the top 10 technologies that various states in U.S. are buying are [10]: Web services, Gigabit Ethernet, Voice-over-IP, Biometrics, Mobile computing and wireless networking, Java, Security services, Linux, Improved Storage Management and Disaster Recovery. Appropriate software and hardware should be used to provide security mechanisms for the citizen access [7], [33], [23], [32]. Privacy of the users should also be considered while building up the e-government websites, otherwise the users may be reluctant to access the services provided [33], [23], [32]. It is necessary that adequate IT skills are available for e-government project implementation [23]. One solution to the problems arising due to lack of skilled technological manpower and unavailability of resources is to use Application Service Providers [5]. Application Service Providers host the applications (software, hardware and in some cases, infrastructure as well) and are paid on a monthly basis or on a pay-as-per-use basis. Integration models like Message Brokers and XML Web Services could minimize interoperability issues that arise when different software components are integrated across departments and across geographies [9].

2.4 Existing strategic frameworks

Layne and Lee give the following framework for development of e-governance projects [15]:

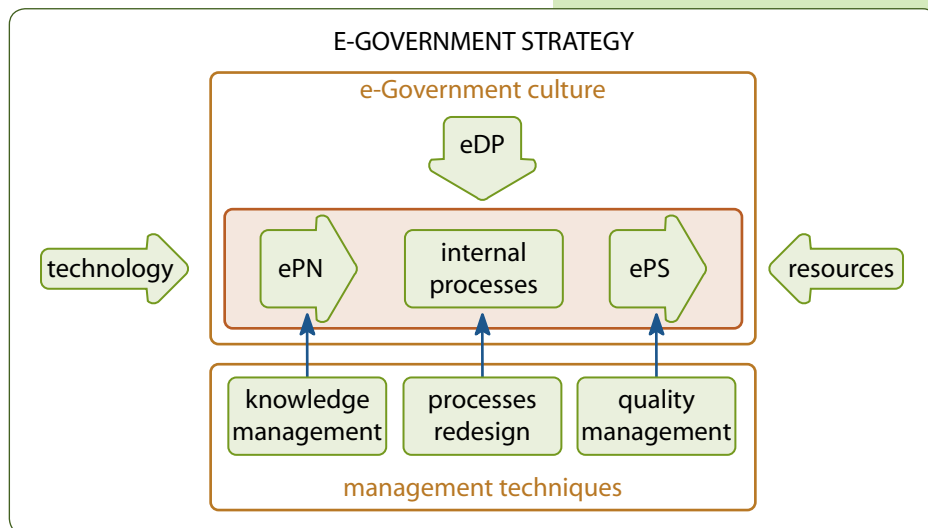
Figure 1 depicts the stages, taking into consideration the complexity in organization and technology, and the integration between various parts. Starting with the simplest that gives only presence and electronic alternative, it achieves one stop solution in four stages.

Figure 1. Dimensions and stages of e-government development



Framework for e-government, defined by Schedler and Scharf, [25], is given in **Figure 2**. In this figure, Electronic Democracy and Participation (eDP) stands for “political opinion-building and decision-making via electronic media”; Electronic Production Networks (ePN) are “forms of cooperation between public and private or public and public institutions via electronic media”; and Electronic Public Services (ePS) stands for “the delivery of public services to benefit recipients, to private individuals, or to companies through local, regional, or national portals”.

Figure 2. E-Government framework



3 E-governance initiatives in India

Several e-governance initiatives have been implemented in different states (A list of various projects is available at www.dqindia.com/content/top_stories/103101501.asp). These projects are at various stages of achievement. Authors have taken several projects for comparison and

arrived at a set of factors that contribute to the success of the projects, and lack of them has led to the partial success (An analysis of some of the e-government initiatives taken in developing/transitional countries is available in <http://www.egov4dev.org/topic1cases.htm>).

3.1 Gyandoot

The first such project to gain prominence is Gyandoot in the state of Madhya Pradesh. Gyandoot, arguably, has more services under its ambit than other projects (as shown in **Figure 3**). Gyandoot is an intranet connecting rural cybercafes catering to the needs of citizens. The website referred here is an extension of Gyandoot intranet, for giving global access.

The description on the intranet (<http://gyandoot.nic.in/gyandoot/intranet.html>) shows that the present scope of the project is limited to land records and the immediate needs of the citizens that can be fulfilled at local government level.

Most of the transactions in India are carried out in English language, which is alien to the rural population (constituting 70% of the Indian population). The government officials take advantage of this language barrier thus giving a sense of opacity. The procedural opacity and legislations like official secrets act provide the shield to the officials indulging in corruption as illustrated in **Figure 4**.

Lack of diligence in following the procedures adds to the problem. In addition, the government officials feel that “Administration is knowledge. Knowledge is Power. Administration is Power” [11].

Figure 3. Gyandoot services

1. Commodity/Mandi Marketing Information System
2. Income certificate
3. Domicile certificate (mool niwaci)
4. Castle certificate
5. Landholder’s passbook of lands rights and loans (Bhoo adhikar evam rin pustika)
6. Rural Hindi e-mail
7. Public Grievance Redressal (Shikayat Nivaran)
8. Forms of various government schemes
9. Below poverty line family list
10. Employment news
11. Rural matrimonial (Vivah Sambandh)
12. Rural market (Gaon ka Bazaar)
13. Rural news paper (Gram Samachar)
14. Advisory module (Salahkar)
15. E-education
16. Driving licence NEW
17. Khasra Nakal Avedan NEW
18. Varmi Compost Khad Booking NEW

Gyandoot used vernacular scripts and languages. This is done to explain the details given in English language. This way, though the understanding of the original material was not possible, it was not considered relevant for accessing the information and the facilities provided by the government.

The success of the Gyandoot project is reported to be due to the following factors,

- Single window facility for the citizens to avail the information
- A model for public – private partnership in providing the e-governance service to the citizens
- Empowerment of citizens
- Facilitating entrepreneurship among the rural mass through ownership of the information kiosks
- Reducing the digital divide and social exclusion

Other e-governance projects in India are detailed below.

3.2 E-seva

E-seva is an extension and renamed version of “Twin Cities Network Services Project” (TWINS), which was launched in November 1999 to focus on the twin cities of Hyderabad and Secunderabad. The extension is designed to cover other smaller towns and municipalities of Andhra Pradesh. Information about E-seva is available at <http://www.ap-it.com/eseva.html>.

E-seva, being conceptually innovative, has been able to attract the attention of customers and suppliers of services. Several public sector (ICICI Bank, housing finance company HDFC and UTI) and private organizations have tied up with e-seva to provide their services through e-seva centers. Other services of E-seva include payment of property tax, registration, electricity and other utility bills.

In terms of transactions recorded, E-seva has shown excellent growth rate. By September 2001, more than 500,000 citizens were served through E-seva centers. Before September 2001, Rs 5 (about 10 cents) was being charged for availing each service. The services were made free after this date, which has helped in significantly expanding the user base.

3.3 SETU

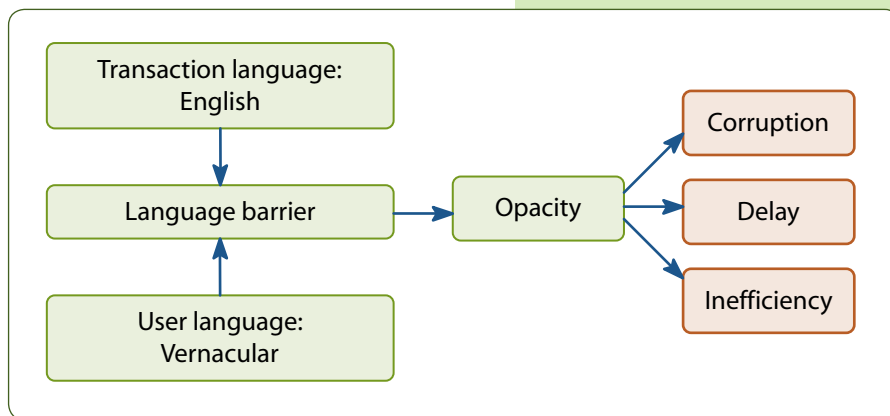
SETU (meaning “Bridge” in local language) or the Citizen Facilitation Centre has been set up by government of Maharashtra in the city of Aurangabad (population 1 million approx) as a one-stop service centre for citizens who have to visit government offices for certificates, permits, authentication, affidavits and other services. The Centre attempts, through the use of ICT, to reduce the visit of citizens from one office to another and prevent the functioning of touts while providing greater transparency, accessibility and efficiency to the procedures in decision-making. Information about SETU is available at <http://setu.maharashtra.gov.in/>.

The Centre has 15 computers, 10 printers and a staff of 28 persons including technical personnel, assistants and clerks. There are 10 counters for providing services to the citizens. In addition, it makes the information available on the Internet.

Key stakeholders are the general public, especially farmers, laborers, small entrepreneurs and students who require certificates and permits. Other stakeholders are the NGO, and government officials.

SETU can be adjudged a partial success at present. The Centre has been successful in introducing transparency into official procedures, and in increasing the efficiency of the delivery

Figure 4. Gyandoot services



mechanism for completed applications. However, the constraint is in preparing a complete application, since it requires the support of many documents that are issued by other offices at lower (sub-district or block or village) level and these offices still have the old procedures. It is not possible to comment on the efficacy of SETU since only the top end of the process chain has been impacted.

3.4 FRIENDS

In the state of Kerala in South India, FRIENDS (Fast, Reliable, Instant, Efficient Network for Disbursement of Services) centers provide a one-stop, front-end, IT-enabled payment counter facility for the government payments to be made by citizens.

FRIENDS is a front-end solution now i.e., it is a counter automation as opposed to a process improvement project, since the back-end computerization is yet to be completed. The counters are equipped to handle approximately 1,000 types of payments due to public sector departments/agencies viz., utility payments for electricity and water, revenue taxes, license fees, motor vehicle taxes, university fees, etc.

The project can be considered successful, considering the direct and indirect benefits and win-win situation provided to both government and citizens. The front-end first approach has been proven as a method of providing the services to citizens without waiting for the complete chain to be complete. However, this will not be real e-governance if the internal systems are structured to make the system smooth. Seen in this light, FRIENDS is not a complete success as e-governance project since it is not yet addressing the governance issues.

3.5 Information Kiosks in Warana Cooperatives

Warana, in the state of Maharashtra is a well-developed rural area where about 50,000 farmers live in 100 villages spread in the 25,000 sq. kilometer area covered by the sugar cooperatives (with a total annual turnover of USD 130 million), since the main economic activity of the region is growing and processing sugar cane. The e-governance project here is a combination of MIS (management information system), and delivery of services to citizens, via the Internet.

Information kiosks having a PC with a printer have been setup in each village and use wireless telephony to connect to Central Administrative Building (CAB) for online transaction. Some of them, though, use the off-line method of saving information on floppy disks and transferring them to the CAB as the wireless telephones are not economically viable. Additional features like Internet access and email facility are available in the kiosks, although connections, provided by local internet service provider (ISP) are often very slow or unreliable.

A total of 54 village information kiosks facilitate sugar cane production process at three stages:

1. Yearly registration for plantation, when any changes to the land property are recorded.
2. Harvesting permits are issued.
3. Payment information is provided to members.

This project can be termed as a partial success. Between 30 and 100 farmers use the facilities daily. However, some of the project's original plans are not implemented yet. These include distance learning for the farmers, the digitization of land records so that it can be GIS enabled, and inter-connection of all centers. At the same time, the farmers are using this for transactions, but are not using the information provided e.g., information on sugar cane growing methods and agricultural prices and hence the information is not being updated.

4

Analysis of E-Governance Projects in India

Analyzing the projects mentioned above and a few others (which do not have exhaustive details available), the authors have arrived at a set of success and failure factors that will contribute to the framework for success of the e-governance projects in India.

The common facets of all the e-governance projects in India are as below,

- They are geographically restricted, i.e. the access of citizens is limited to specific geographical locations.
- All of them are geared towards fulfilling the immediate needs of citizens e.g., filing application at the local office, getting the application forms etc.
- They are constrained by infrastructure adequacy viz., lack of bandwidth, storage space, etc., and by human factors viz., literacy, mindset, etc.

Despite the existence of intent and initiative to move forward, the trend indicates that there is a lack of sense of direction and commitment since the speed is not justifiable though the projects are supported by multilateral agencies like World Bank, ADB etc., and also top-level government officials.

We shall analyze the problems associated with the progress of these projects along with the factors making some of the projects successful or partially successful and present a framework to take it forward. The factors below are the result of experience from the implementation by authors and from existing published works.

4.1 Success inducing factors

- Strong human development leading to high level of stakeholder involvement.
- Good infrastructure viz., electricity, robust communication network thus ensuring availability and access.
- Phasing of the project and adhering to the implementation schedule. This ensured that interest level of users was maintained.
- Selecting the place (location) properly where kiosks were used for citizen access.
- Existence of complementary projects e.g., CARD (land registration), FAST (for transportation) and SKIMS (linking of secretariat with lower level administration) along with e-Seva in Andhra Pradesh.

4.2 Success inhibiting factors

- Lack of continuity thus leading to the lack of upgrading and subsequent deterioration in the infrastructure [24]
- Absence of proper financial modeling, thinking through and execution of the private participation in the e-governance project
- Lack of initiative and participation from the stakeholders e.g., lack of participation of government officials led to a delay in Warana Cooperative Case. Most projects being top-down driven, local stakeholders (the real users) are neither involved nor have enough sustaining interest
- Absence of fundamental ground rules, benchmarks for the model to adhere to
- Absence of scalability and adaptability in the structure and framework
- Absence of a brand image
- Too much of hype associated with the projects than what can be achieved
- Lapses in content upgradation.
- Pressure from vested interest groups, which continuously hampered the progress of SETU

Table 3 compares and analyzes the projects mentioned above, using these factors.

To make a project self-sustaining in the long run, it is important to identify and manage the stakeholders' involvement and a scalable framework of working is laid down followed by appropriate technology provided to take it forward. Most of the projects have failed in these aspects. Without proper management of stakeholders, public private partnership is not a tenable proposition.

For example, the stakeholders for any e-governance project are the citizens, the government officials and the entrepreneurs in that order. However, in most of the projects, the citizens and their needs were not considered properly. This led to preparation of a system that catered to the immediate needs. Once those needs were fulfilled, the system did not have any attraction for

Table 3. Comparison of e-governance projects in India

Factors/projects	Gyandoot	E-Seva	SETU	Warana	FRIENDS
Existence of strong and committed leadership	Strong	Strong	Strong	Strong	Strong
Detailed project management	Moderate	Strong	Strong	Strong	Strong
Involvement of stakeholders	Weak	Weak	Weak	Strong	Strong
Internal process efficiency	Weak	Strong	Weak	Strong	Weak
Inter-departmental coordination/integration	Weak	Strong	Weak	Strong	Weak
Easy access for citizens	Strong, through kiosks	Strong	Strong	Strong	Strong
Established standards	Weak	Strong	Weak	Weak	Weak
Scaling up	Weak	Strong	Weak	Moderate, specific purpose	Weak
Financial viability ensured	Moderate, efforts made but not successful	Weak, has been made free	Weak	Moderate	Weak
Privacy aspects taken care of	Weak	Weak	Weak	Weak	Weak
Data security taken care of	Weak	Weak	Weak	Weak	Weak

Figure 5. Strategic framework

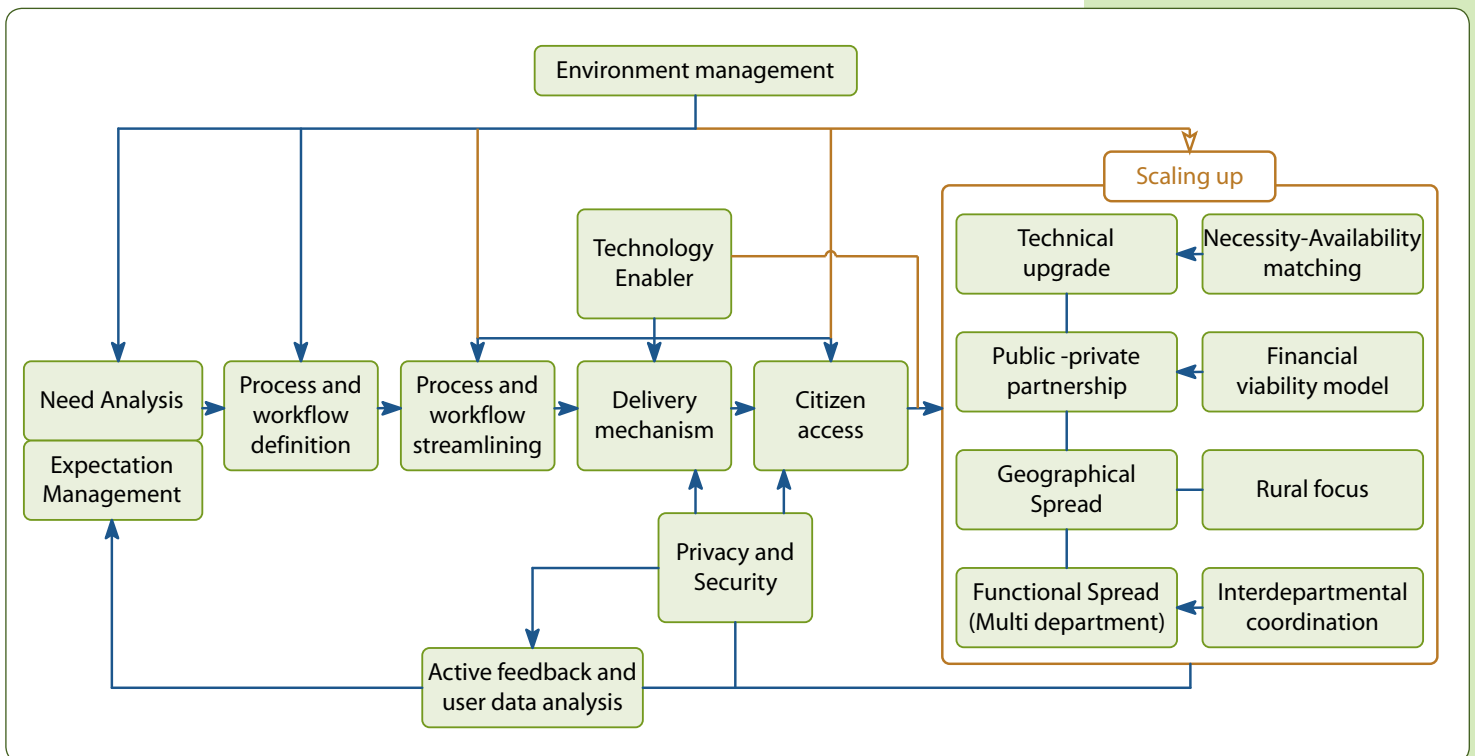
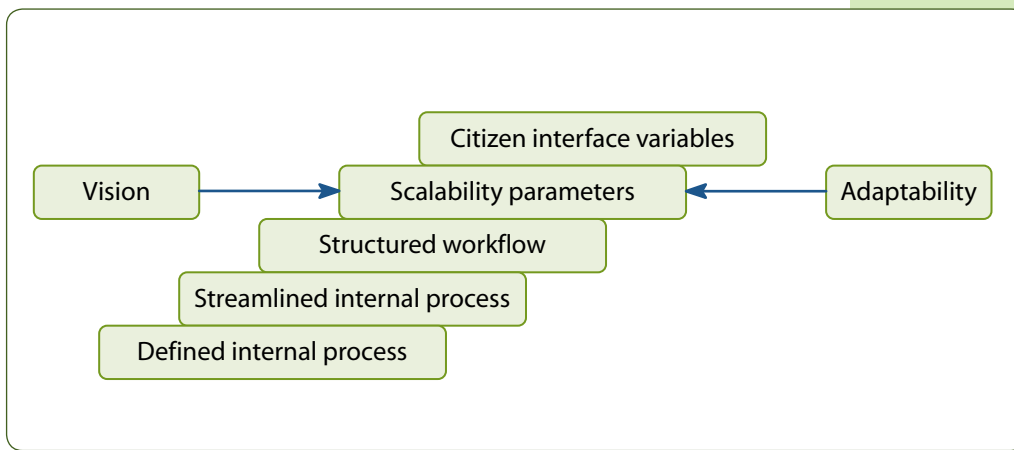


Figure 6. Process improvement and workflow



the citizens to access. The entrepreneurs, in an effort to sustain the cash flow, started offering non-core facilities like marriage bureau facilities, which were not attractive enough to attract the customers. With the core functionalities not being attractive to customers, the entrepreneurs, saddled with the responsibility of making it viable, lost interest in them.

The other important stakeholder is the government represented by the officials. In the initial phase, change agents from within the government were identified to take charge of these initiatives. However, the following factors contributed the waning of their interest,

- The rigidity in the system and consequent lack of modified framework for workflow for them to follow the implementation and guide others.
- Lack of stability in their career and the organization for them to remain enthusiastic through the course of implementation and beyond. The change agents were identified based on the assessment done internally by the senior level functionaries. When they were moved, as normal for bureaucrats, the new in-charge did not have the inclination or the clear picture for taking the process forward, leading to demoralization.
- Lack of incentive to remain the change agents.
- Reluctance on the part of other government official to believe that the citizens can be active participants.

In addition, the procedural inefficiencies and attitudinal deficiencies in the government departments [16], further aggravates the problem.

This led to the continuity in disempowerment of citizens and the change agents. Hence need and expectation management of the citizens is an essential part of the strategic framework for the success.

5 Framework proposed

A strategic framework (Figure 5) is used to take a holistic approach and cover the major aspects that will lead to success of the project. As depicted in the framework, the following factors will help meet the objectives of an e-government project:

- Need analysis and expectation management
- Process and workflow definition
- Process and workflow streamlining
- Appropriate delivery mechanism (dependent on smooth workflow)
- Appropriate facility for citizen access.
- Scaling up provisions
 - Technical upgrading
 - Public-private partnership for long term ownership and financial viability
 - Geographical spread (more locations and special focus on rural areas)

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- Functional spread (more functions at same location)

5.1 Need Analysis and expectation management

The needs and expectations of citizens as well as other stakeholders should be assessed and documented to create the list of deliverables from the project. Other factors should be modeled to cater to these needs.

5.2 Process Improvement and Work flow definition and streamlining

Government processes are definitively structured with the roles and responsibilities defined and work delegated and allotted according to the place in a hierarchic structure. These are available through a series of internal documents. Most of these methods have outlived their usefulness and are not amenable to digital processing of information. Hence, a fresh set of process parameters and related workflow should be created, without creating unmanageable and chaotic changes, to maintain the consistency and sustainability of the process.

Internal process streamlining and structuring is one of the most important contingent variable in the success of e-governance initiatives. A structured and consistent workflow definition is the next layer of the process improvement. The scalability parameters will form the next layer that will work following structured workflow definition. This is depicted in the schematic below ([Figure 6](#)).

5.3 Delivery mechanism and access facilities

With properly structured process and workflow parameters, the delivery mechanism and access facilities should be designed to provide smooth and hassle-free service delivery to the citizens. Use of ICT as the enabler can help in this as well as in ensuring the security of data and privacy issues. The present projects in India are very weak in these aspects. Some of the examples of technology enablers are records (data) management system, Internet, broadband, touch-screen kiosks, etc.

5.4 Scaling up

For the project to be self-sustaining in the long run, it needs to be scaled up on a continuous basis. For scaling up, a technological upgrading might not be required always, but periodic review of the requirements should be done based on other factors and if required then it should be upgraded. However, linkages like spreading geographically to serve more, functionally to provide more features and expanding on the public-private partners will be essential. For functional spread, interdepartmental coordination (through preparation of a common foundation), standardizing processes, identifying congruencies and redundancies, and preparing the rules for data sharing, along with responsibility, security and privacy, and a strong MIS, will be vital.

5.5 Rural focus

In India, rural population constitutes 70% of total. However, the initial phases of e-governance initiatives should be in urban areas for ease of environment management and moving up the learning curve towards stability in the framework. Rural India faces the problems of severe lack of infrastructure, patronizing attitude of government officials, low human content (illiteracy, rigid social structure, etc.) and low financial capacity of the users (to pay for the services). Environment management, technological enablers like Unicode to use vernacular languages, use of low bandwidth consuming protocols like XML, development and use of specific purpose and low cost (as opposed to general purpose and expensive) computer hardware, among others, will be necessary to make the facilities available in rural areas.

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Conclusion

As discussed in the paper, while the initiatives of the governments (both center and state) in India in the field of e-governance have been praiseworthy, continuing and augmenting them have not been addressed. The authors carried out a literature survey to lay the theoretical ground for similar research done before and collated the viewpoints. They further analyzed information from several projects in India, successful and partially successful, and from authors' own experience in implementing e-governance projects to arrive at a set of factors that induce or inhibit success in e-governance projects. Using these factors, the authors present a workable strategic framework to provide a roadmap for the projects to be sustainable in long-term.

The framework looks at the stakeholders, environment, technology enablers, internal processes and delivery mechanisms along with the factors that should be taken care of for progressive scaling up of the projects and making it self sustainable.

A country like India needs e-governance to provide the facilities to its citizens. Most of the project are fulfilling limited needs properly, but they need a holistic approach to progress this to make it self-sustainable in the long-term. The authors have attempted to provide a framework to make this possible.

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