

## Structural Analysis of e-Government in India

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e-Government is an innovative phenomenon around the globe for refurbishing public administration. Research to date, however, has been deficient in empirical studies of the factors that emerge out of the interplay of structure and human interactions responsible for successful implementation of e-Government projects. From the perspective of structuration theory, this study examines and explains the impact of this interplay in the implementation of an e-Government system, eSeva for local administration at one of the Indian state. The results suggest that the success of implementation of e-Government projects can be conceptualized as the outcome of persisting constructive interrelationships among the human, programmatic and institutional elements of e-Government and the critical learning and adaptation as a result of efforts at the structuration level.

**Keywords :** E-Government, Structural Analysis, Citizen Services, Interpretive Case study, Interrelationships

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## 1. Introduction

One way to conceptualize e-Government is through a 'one-stop service' portal to allow citizens to access government information and services. e-Government is an important channel to renovate public administration through information technology (IT) [Wimmer, 2002] and a facilitator of more responsive and effective client orientation [Moose and Whitley, 2009; Sullen, 2002]. e-Government has been termed an 'arena' for public administrators to shape and frame their way into the information society [Wimmer, 2002]. As Fountain [2002] has noted, an early emphasis on information and communications technology (ICT) for internal organizational restructuring has shifted, and governments are now spending at various levels to enhance the benefits of e-Government for citizens [Gil-Garcia, 2005]. Many e-Government ventures focus on refining citizen-government cooperation as well as on administrative reform and improved competency [Heeks, 2002].

Most contemporary studies provide a positive picture of e-Government, and some of them identify managerial, political, financial, and temporal variables [Bannister, 2001; Bolgherini, 2007; Hackney and Jones, 2002; Horst *et al.*, 2007; Shim and Eom, 2008; Siddiquee, 2008] as imperatives driving e-Government projects. They appear more explanatory about a range of ICT deployed with more emphasis on technology [Bolgherini, 2007; Horst *et al.*, 2007; Hung *et al.*, 2006]. Although technology is instrumental for e-Government, 'technological' approach alone fails to acknowledge its role in renovating the social setting [Montealegre, 1997] of government. At a deeper level, e-Govern-

ment involves important and substantial interactions among human actors, structures, technology and other organizational elements. The influence of these interactive elements and their relative association, through time, are critical for understanding the functioning of e-Government [Helbig *et al.*, 2009; Yildiz, 2007]. Yet, little emphasis has been placed in previous studies on the role and influence of these reciprocal interactions. This gap is the motivation for the comprehensive study, presented in this paper, of the role of structuration in the development of successful e-Government systems.

This study employs the structuration model of Giddens [1984] to identify how interrelationships among institutional elements and human actors, and the critical learning that emerges out of these interactions at every stage either facilitate or impede implementation of e-Government. Analysis using the structuration theory is meant to discover the progression of events that develops over a period of time and to explain the end result through the series of structuring events [Jones and Karsten, 2008; Robey and Newman, 1996]. Specifically, while studying e-Government, structuration theory illuminates the interplay of structure and human interaction mediated by a host of elements and how these interactions translate each event into a succession of meaningful actions that modify traditional government. The case analysis presented in this paper seeks to demonstrate the incidence and importance of these interactive elements in the development of e-Government. This includes the interactions among citizens, government, policy makers, politicians, and project contractors; the willingness of policy makers to engage in change efforts; the devel-

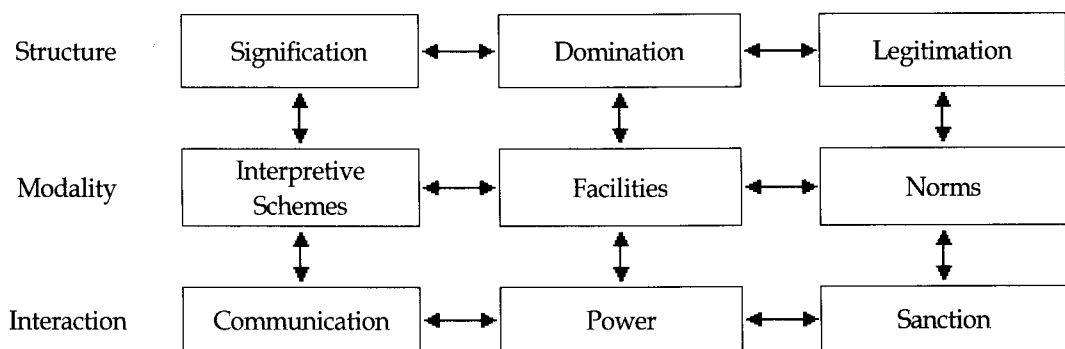
opment and deployment of technology; structural elements including legislation and change management as critical factors in the implementation of e-Government.

## II. Structuration Theory

We employ Giddens' [1984] structuration model for the case analysis (see <Figure 1>). Structuration is a process involving reciprocal interactions of human actors and structural features in organizations. The underlying rule in Giddens's theory is the interdependency of human action and social structure. Structuration theory avoids splitting the analysis of structure from that of agency [Giddens, 1984]. The structuration model includes three realms: structure, modality, and interaction. That is, a social system can be understood by its structure, modality, and interaction. Giddens [1984] explains that three dimensions of structures (i.e., signification, domination, and legitimation) interact through the modalities (i.e., interpretive schemes, resources, and norms) with human actions such as communication, power, and sanction. The separation of the dimensions in each realm is mainly for analytical convenience.

Structure is constituted by rules and resources governing and available to agents. Rules are patterns people may follow in social life. Resources relate to what is created by human action. The theory employs a recursive notion of actions constrained and enabled by structures which are produced and reproduced by those actions. The modality of a structural system is the means by which structures are translated into action. Interaction is the activity instantiated by the agent acting within the social system. As a social process model, the structuration model, thus, represents interactions of actors involved over a time frame and identifies the subsequent events, providing a linkage between them and positions in their occurrences across the three realms.

As for the realm of structure, there are three types of structure in social systems: signification, domination, and legitimation. These are analytical distinctions rather than distinct ideal types. Signification means producing meaning through organized webs of language such as semantic codes, interpretive schemes and discursive practices. Domination means producing power originating from the control of resources. Legitimation means producing a mo-



<Figure 1> Giddens's Structuration Model

ral order via naturalization in social norms, values and standards.

As for the realm of modality, there are three types of modalities: interpretive schemes, facilities, and norms. Interpretive schemes mean shared stocks of knowledge that are drawn through human communication in order to make sense of interactions. Facilities mean ability to allocate material and human resources that are drawn through the endorsement of power exercised by human actors. Norms mean moral codes that are drawn through sanction of human actions. As for the realm of human action or interaction, there are three types of interactions: communication, power, and sanction.

e-Government implies a social change process that is aligned by the roles of several components in the implementation process. Collaborative e-Government efforts demand emphasis on institutional coordination and cooperation. The success of e-Government initiatives will be enhanced when government takes account of social interactions with institutional structures involved in the process of implementation. This needs a sound conceptual foundation to explain its development and to explore the key elements that are proactive as its facilitators and inhibitors. Therefore, structuration theory, due to its intrinsic feature of offering sound insights, facilitates the ability of researchers to portray the manner in which these proactive elements [Creswell, 1994; Markus, 1988; Robey and Newman, 1996] serve in an implementation process. Structuration theory helps researchers to discover the prototypical associations between human actions and structure as actors experience these associations

[Jones and Nandakumar, 1993]. The data gathered for this study implies the presence of constant interactions between structures and human actors during the development of the e-Government system.

### III. Research Methodology

The interpretive case study approach employed in this study provides a platform to extract insights from data analysis, and facilitates the exploration of issues pertaining to the system under study [Yin, 1994]. It allows us to examine complex, dynamic phenomena in the natural setting of a case. This method also offers flexibility to choose multiple data and to assimilate various interpretive techniques to strengthen the potentiality of research findings [Yin, 1994].

The empirical focus of this paper is the implementation of an e-Government system named 'eSeva.' eSeva is a portal for delivery of integrated and information technology (IT)-enabling citizen services in the state of Andhra Pradesh in India. It is also an ideal illustration of citizen-centric administration in a developing nation. As a venue for multiple services, it demonstrates sustainability and counters the perception that government IT projects are unsustainable, poorly conceived, and consume huge funds [Nidumolu, 1996].

A single case of IT that had enabled e-Government implementation was chosen, and data was assimilated from different sources. In-depth interviews with respondents <Table 1> were conducted from June 2003 to January 2004, recorded and transcribed with specific and open-ended questions. The discussion with key

&lt;Table 1&gt; Summary of Data Collection

Outline of the interviews		
Correspondents	Source	Respondents
Key officials	ITC Department	10
eSeva officials	eSeva central office	4
Engineers	CMS computers Ltd., RAM Infomatics	4
Regional sales manager	CMS Computers Ltd.	1
Project leader	CMS Computers Ltd.	1
Commissioners	Municipal corporation	2
Executive staff	Municipal corporation	5
Senior staff	Municipal corporation Hyderabad	6
News correspondent	Times of India, Newspaper	1
Citizens	eSeva centers	100
Academicians	University of Hyderabad, Administrative Staff College of India (ASCI)	6
Outline of additional data		
Name of the data	Date/Period	Source
Information and Communication Technology (ICT) policy	2002-2009	ITC Department
Status of major e-Government projects in Andhra Pradesh	2002~2009	Andhra Pradesh (AP) web portal
Profiles of e-Government projects in Andhra Pradesh	2002~2009	ITC Department
Government orders on IT infrastructure, Architecture, Functions, Promotion, IT services, Telecommunications, Private Partnerships, and Budget.	1996~2009	eSeva, Municipal corporation, ITC Department
Minutes of the pre-bid conference on establishment of TWINS centers	26 June, 2000	State government Website
IT policies and implementation	13 October, 2001	Proceedings of the National Workshop, ASCI, Hyderabad
<ul style="list-style-type: none"> <li>◦ MCH to hold opinion polls on website</li> <li>◦ MCH short listed for Stockholm award</li> <li>◦ CM for online system in secretariat</li> <li>◦ eSeva centers becoming popular</li> <li>◦ Tax payers urged to avail eSeva</li> <li>◦ Web sites of AP, eSeva and other internet Sources</li> </ul>	2002~2009	The Hindu (National newspaper)

Note) Abbreviations used: MCH: Municipal Corporation of Hyderabad, AP: State Government of Andhra Pradesh, CM: Chief Minister of the state of Andhra Pradesh, ITC: Information technology and communications, CMS: CMS computers limited, RAM info: RAM Informatics Limited.

officials imparted an overview of implementation process and useful insights on the system and also provided further reference of contacts for selecting other relevant respondents. To substantiate this data, the information was also incorporated from the newspaper clippings, state IT policies (2002~2009), concerned minutes of the meetings; official presentations; government orders; status of various e-government projects; information on eSeva centers and transactions. Thus, the information gained from various sources allowed for triangulating the data.

## IV. CASE STUDY

### 4.1 Case Overview: eSeva

The Ministry of IT in India decides to perform 25% of its dealings and services electronically. Based on this, a multitude of e-Government projects are initiated nationwide. The state of Andhra Pradesh is a key adopter and test-bed for several e-Government initiatives. Andhra Pradesh is a state in southern India with a population of 75 million people driven by the chief minister's political agenda for an IT-enabled social transformation. The state has been in the news for its innovative approach to designing and implementing ICT-enabled strategy for e-Government. Hyderabad is the capital of Andhra Pradesh with a population 3.14 millions where the most of e-Government projects are initiated for the state.

The focus of this study is 'eSeva' ('e' stands for 'electronic', and 'Seva' for 'service', a native Indian term), which was designed and developed to provide integrated electronic citizen

services of various departments at Hyderabad in Andhra Pradesh. Services that were delivered by several government departments were identified, integrated, and provided at centralized counters in eSeva units with a facility of electronic queuing system and well furnished offices in contrast to inadequate waiting facilities in conventional state government offices. The eSeva pilot project, Twin Cities Networking Services (TWINS), began in December 1999. The actual project was renamed 'eSeva' and initiated on August 25, 2001. eSeva is based on the Public Private Partnership (PPP) model.

The connectivity among the central office of eSeva, departments and eSeva centers is incorporated using leased communication lines from Bharat Sanchar Nigam Limited (BSNL), the largest public sector telecom undertaking in India. The leased lines are backed up with Integrated Services Digital Network (ISDN) digital phone connections which permit simultaneous data transmission using end-to-end connectivity with a digital network of high speed and quality voice, data and image transfer. They are linked with a networked architecture technology at three tiers to incorporate high levels of security. eSeva is an ISO certified organization, won the Commonwealth Association for Public Administration (CAPAM) award, and the Computer World Honors medallion.

The services provided by eSeva range from facilitating payment for utility services to birth and death registrations. At the time of our data collection, 28 eSeva units were operational in the city providing 33 government services, three services from private agencies, three internet services networked with private and

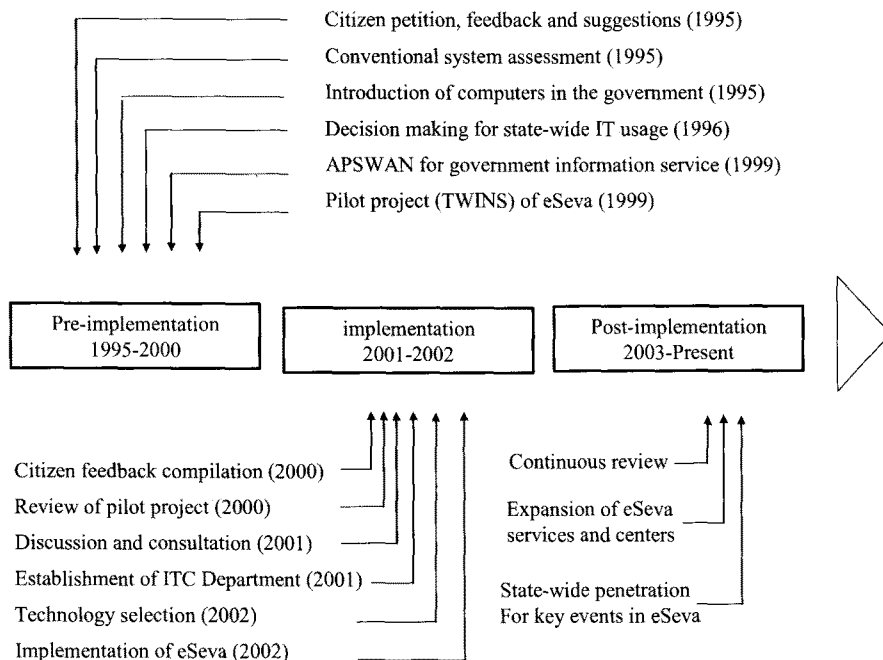
public sector banks/ATMs; and plans were in progress for statewide expansion. Transactions in eSeva services increased during the period from 1999 to 2003 from approximately 27,000 per month to 20,000 per day (which includes transactions from the pilot project). eSeva services were often used for payment of utility bills amounting to 20% of electricity, 20% of water and 24% of telephone bills.

Still, eSeva services were under-utilized due to the existence of other modes (manual counters, ATM, internet, banks) for transactions. Citizens suggested that the number of eSeva centers and services should be increased in addition to extending services for filing complaints to restore and reconnect utility services, providing explicit instructions about how to use eSeva services, introducing a centralized billing system to prevent multiple visits to

eSeva units, and expanding eSeva units to other urban, suburban and rural areas of the state of Andhra Pradesh.

## 4.2 Structural Analysis

The intent of eSeva is to provide time and cost effective integrated services of several departments at a single window. The services at eSeva were designed with a notion that its performance will meet the citizens' perception of a channel for their service needs. The implementation process is categorized (see <Figure 2>) into pre-implementation, implementation and post-implementation phases as the system evolved out of multiple iterations of different phases. The data analysis was done based on these three phases from the structural perspective under each structural realm of eSeva.



<Figure 2> Timeline for Key Events in eSeva

#### 4.2.1 Analysis of Social Structure and Human Interactions in eSeva at the Domain of Signification

This section addresses the beginning of interaction between social structure and human actors, how human actors constrain development of new structures and at the same time facilitate building new structures. In case of eSeva, this process of interaction was set in motion when citizens transformed themselves from passive to active human actors. They expressed their dissatisfaction about ineffectiveness of public service delivery by submitting petitions to the government. This was an implicit demand for channeling a better mechanism for service delivery (*communication*). As the director of eSeva mentioned, "We attribute the impetus provided for developing an e-Government system to the citizens who started disapproving the incompetence of our paper-based administration." Citizens' frustration with various departments was an apparent indicator that they were no longer prepared to endure the hassle of incompetent public services. Therefore, the government first evaluated the petitions submitted and later conducted a study to collect citizens' opinions about existing structures and their expectations in the service delivery system. It was discovered that rules, regulations, policies, and culture inherent to each department were the major constraints in improving service quality. In addition, public awareness about IT and its usage was learnt, and suggestions on how IT could be utilized as a tool for improving public services delivery were considered (*interpretive schemes*). As a result, the government initiated to

computerize the work process in key departments to enhance service delivery (*signification*).

Further, the government decided to extend and encourage wider usage of IT in the state and conceptualized APVAN (Andhra Pradesh Value-Added Network) and APSWAN (Andhra Pradesh State Wide Area Network) of which APVAN failed to materialize. As informed by the Special Secretary to the Chief Minister of Andhra Pradesh, APVAN was a proposed venture with a consortium of Singapore companies that promised to provide efficient routine services for the common people. The extent of APVAN's connectivity showed a significant potential to boost the state's attempts in digitalizing the government processes for more transparency in the government. The proposed agreement of APVAN was to hand over six key services for seven years with exclusive rights for the first five years to the partnering overseas companies. Had it existed, APVAN would have monopolized all the transactions pertaining to these six services. But the proposed APVAN failed to influence government officials, who threatened with an agitation. Political leaders, labor unions and NGO's also protested against it. The issues raised against APVAN were that it would lead to privatization of government services and apprehension that APVAN would result in large-scale retrenchment.

However, the government stated that computerization of government departments would continue to facilitate efficient services to citizens. The government launched APSWAN on November 1, 1999, which connects the state capital with district headquarters for exchange of information within the government. APSWAN



serves as the backbone for all state government intranets with its data, voice and video communications facilities and also as an essential component for installing an electronic government. It performs as a closed network spread over the entire state, operationally providing data linkage by connecting the local area network of the district headquarters to the local area network at the state secretariat. In addition, it also facilitates for direct online audio-visual and digital conferencing from any of the 42 departments at the state secretariat to any of the district level officers on a one-to-one basis and on a broadcast mode from one-to-many (*signification*).

The concept of 'citizen needs' has gained importance in the public sector in contrast to perceiving all developments through the lens of technology (*signification*). In fact, successful IT implementation is influenced by technical and social variables [Curtis, 1988]. Citizen expectations, lack of support from officials and other organizations for APVAN, and the technical infrastructure made available through APSWAN boosted the development of a concept, 'TWINS', anticipating its acceptance from all those involved. The Principal Secretary of the ITC Department and a pioneer in developing the eSeva initiative noted, "The lessons learnt from initiating earlier IT projects imparted an insight that a new IT initiative must consider the requirements of the targeted group and convince them, and importantly, the government needs to develop them in phases rather than implementing at one go." This is much applicable to e-Government and entails a radical change in the government perspectives while renovat-

ing conventional structures [Sprecher, 2000]. After a careful evaluation of future consequences, a project titled 'Twin Cities Network Services' (TWINS) was initiated in December 1999 (*signification*). A single centre was set up initially at the premises of a government department. TWINS was an automated integrated 'one-stop' citizen service center for simplified service delivery. It initially provided 18 services: from birth certificates to death certificates, and from building-permits to trade-licenses.

The issues elaborated above are illustrations for how structures and constraints promote the operations of an organization and cause impact on the societal needs. The events at this domain led to significant outcomes [Robey and Newman, 1996] which turn into further episodes, promoting diverse events in developing an e-Government system. Firstly, structural constraints prompted citizens to resist shortcomings, which eventually transpired into establishing a new structure. The example of APVAN, APSWAN and TWINS illustrates that human actors are both change agents and change constraints and are responsible for reproducing a social system. On the other hand, the government was ready to accept the challenge of improving the services and to begin to communicate by adopting IT. It initially started mediating through IT with a moderate computerization which was accepted and tried to speed up presuming the user's acceptance afterwards. However, the lack of clear vision on users' expectations eventually failed the initiative. This clearly indicates that the new structure always requires significant reengineering, configuration, and cooperation among various author-

ities to develop a consistent process. The developmental process at this domain entails an understanding that an e-Government interface for the convenience of users is acceptable, subject to the requirements. Hence, the challenges for e-Government are beyond technology, and managing government in hierarchical ways is no longer pertinent [Heimer, 1996]. The pilot initiative evolved as "TWINS" which combined the determined efforts of policy makers to use IT for improvement to offset structural inadequacies pointed out by its users that prevailed in the existing system, and to sufficiently reflect user expectations.

#### 4.2.2 Analysis of Social Structure and Human Interactions in eSeva at Domain of Domination

This section addresses the constraints in the pilot project: how government communicates with citizens using resources and technology as modalities and how guidelines provided by users help in designing a more acceptable system. The government wanted to increase the number of TWINS units, which was tested initially at one unit. This required a strategic planning and approach. First of all, expansion of e-Government initiatives such as TWINS required rules and regulations to manage IT activities involved. No statutory body of this capacity had existed in the government. As stated by the special secretary to the Chief Minister for the state of Andhra Pradesh, "It was recommended that the state should have an individual institution to lay out IT related policies and supervise the IT projects in the state." Hence, the ITC department was established

and empowered to regulate, monitor and legitimize all IT activities in the state (*domination*). With this, all IT related activities started to take shape with more emphasis on public service delivery.

The extension of TWINS required a huge funding for establishing new units, technology and maintenance (*facilities*). There was no funding available in the government exclusively for this. ITC department looked for the support and commitment from top management and officials in the government who could comprehend the implications of existing situations and offer practical solutions. As one of our informant noted, "The future prospects of TWINS were very much dependent on the involvement, drive and commitment and mutual understanding among key officials." And in conditions as of TWINS, top executives' perseverance and commitment to renovate the system made a profound difference in adopting or rejecting projects [Berry, 1998]. This was very essential as the IT projects in the public sector are often, but not always, either partial or total failures [Heeks, 2002], particularly when they lack willingness and commitment of policy makers. In our case, the mutual interest and agreement on a common objective was not conflicting each others' interest. Politicians and bureaucrats teamed up to achieve a common intent although technologies are usually not interesting to politicians but useful for bureaucrats.

In order to expedite the process of availing funding and suitable technology for expanding TWINS, the ITC department called for tenders and received an overwhelming response from many local private agencies. The private agencies (CMS and RAM Info) were selected on a

contract of five years to provide funding, technology and maintenance of the project, based on the Public Private Partnership (PPP) model (*facilities*). The government funded physical infrastructure of eSeva units. The head of the state, key officials in ITC departments, senior staff at the concerned departments extended required support (*power*). A common view of the informants to this study highlights that the success of eSeva is credited to the Chief Minister of the state who perceived the situations from the view of citizen and significantly to the key officials who spent ample time in understanding various facets of the problems, and there were many incidents where the officers stretched beyond their working hours to understand the technical aspects of the project. Integrating a change into a work system also demands a change in the mindset of employees, and this is feasible with encouragement by the senior management [Berry, 1998]. The ITC department and committed policy makers generated swift momentum for expanding eSeva (*power*).

The development of any e-Government initiative with an objective of integrating multiple services needs cooperation for acceptance and usage of the system. In the case of eSeva, this entailed a comprehensive study of customer and departmental needs before adopting a technology. Although IT has a remarkable potential for connectivity, communicative inabilities impede and complicate information sharing and incorporation [Fountain, 2002] and constrain the reengineering of business processes in the government. In case of eSeva, the departments understood the objectives that eSeva initiative intended to achieve and even-

tually extended their cooperation and acceded to share the information required to build the system more efficiently. Vendors also extended cooperation. The events that occurred in this process illustrated that human actors (i.e., policy makers) actively communicated through modalities (i.e., funding and technology) to reproduce a new system (i.e., ITC Department) which later adds to the process of reproducing another new structure (i.e., eSeva). Although the change process is slow in public sector and requires motivation, right kind of leadership and willingness certainly helps the process, and particularly in e-Government. The integration that occurs behind the citizen interface is equally important for consolidating service delivery and aligning it with organizational structure and processes.

#### 4.2.3 Analysis of Social Structure and Human Interactions in eSeva at Domain of Legitimation

This section deals with requirements of users to accept the extension of pilot project and how it was communicated, and how this communication helped to develop eSeva as an institution. After having accumulated the required funding and technology, the government decided to accelerate the process of expanding TWINS. The government also felt the need to institutionalize its new structure. Institutionalizing was important as the director of eSeva indicated, "The public as tax payers anticipate the government to reciprocate to their needs and in-tandem require a legal protection for all their transactions." He further added, "Departments also expected that they need recognition

and legal binding for their collaborations since our ideas first appeared to them as privatization of their business process." Legitimizing eSeva was essential since collaborations that stretch across the boundaries of distinct organizations necessitates to establish a new institutional legitimacy [Fountain, 2002]. The institutionalized project was renamed as eSeva and started operating as an independent government organization with all responsibilities related to citizen services and essentially gave a legal status to all activities performed under its name (*legitimation*). It was also essential to convince citizens and agencies to agree on a common venture and to acquire accountability. This is significant because inter-organizational alliances entail an institutional framework [Dawes, 2003] to obtain recognition and acceptance in the society. As noted by the technical director of eSeva, "Service delivery was not the sole objective of eSeva; it also operates in multiple capacities including project uptime, network monitoring, identifying backlogs in various departments, conflict resolution and coordination across departments, and site selection for urban and state-wide expansion of eSeva."

Institutionalizing eSeva materialized since the departments and users had acceded to this new arrangement. Before embarking on expanding eSeva units, the government gathered information about the requirements of departments and citizens (*norms*). While doing this, the government found that nearly 400 citizens visited TWINS centre everyday for their service needs. Citizens further expected addition of more services and units in other parts of the city. As one official noted, "The government was initially apprehensive about the accept-

ance of TWINS project by the citizens, but it was well received despite some of its shortcomings." When citizens were asked about the reason for choosing eSeva for their transactions, there were several responses: "it is cost and time effective", "has no area jurisdiction," "gives easy access to information," "no intermediaries are required," "the staffs are responsive and helpful," "involves minimal errors" and "requires minimal or no revisits." About the legality of the transactions, one citizen informed, "We are issued a bill and a receipt for payment with same identification number which serves as an authentic proof for completing the transaction and also to claim against any errors." An official from one of the departments said, "To avoid any possible errors, every new transaction is updated at service centers, departmental servers and eSeva central offices." This indicates that the prospects of eSeva are better compared to those of the conventional system.

The departments of government were concerned about the changes that the new system would place on their organizational structures. A high degree of disagreement persisted about conducting all their business processes under the new system. Related to this disagreement, one official explained, "The government had selected the most problem-logged services, and initiated discussions to explain the operational benefits, enhancement in service quality and savings on cost and time, and also made it clear that eSeva will not intervene in their administrative process." It was also agreed that the departments would post some of its staffs in eSeva centers to monitor the concerned department's dealings and get some help from

eSeva staffs because eSeva staffs were mostly hired from outside the government. The agreement on financial terms was also made very clearly with partnering agencies (*sanction*). These detailed communications with the various departments finally succeeded in getting their approval. As the deputy director of eSeva said, "The knowledge gained and shared between the government and people from previous experiences prompted to define the goals and objectives clearly and to align them along the needs of the users and the requirements of the departments." This was necessary as e-Government project essentially requires a cautious replacement of traditional structures.

A departmental staff posted at the eSeva unit said, "They have less work load and like to work in eSeva units and are also paid incentives for working overtime." The eSeva operates beyond office hours on weekends and public holidays to facilitate the working community. Some of the eSeva staffs informed that the departments and technical staffs were cooperative. The vendors were also compatible with the government, departments, and the staffs working at eSeva. They had posted a technical staff at every eSeva unit to deal with technical problems. According to the technical team, "Initially the departments were reluctant to share the information required to develop the system. It took time to build trust and understand that we work in line with the government's specifications and will not intervene in their organizational practices." The departments now completely agree with the benefits of eSeva and its legality (*norms*). Like these, there were several contributing factors for the acceptance of eSeva: reduced manual work, de-

cline in work backlog and public complaints, and optimal utilization of employee skills.

Furthermore, as remarked by an official, it was an enormous step, but the government was confident about its success. It is a functional payback system and the most successful among other IT initiatives in the state. It is very likely to sustain in future. Organizational alignment is important in the public sector [Swain, 1995], and incorporating a suitable structure is a stumbling block in executing e-Government. The government was aware of this and worked in such a way that eSeva organization aligns its structures to the needs of users and their receptiveness, rather than focusing on internal requirements. According to the current information available from the websites of eSeva (<http://www.esevaonline.com>) and the state government of Andhra Pradesh (<http://www.aponline.gov.in>), the eSeva services have been expanded to various locations in the state and several online services are available on eSeva web portal.

### 4.3 Summary of Structural Analysis Results

The data analysis confirms the presence of ongoing, repeated reciprocal interactions among all the stakeholders (participating departments, citizens, project contractors, policy makers, officials and staff) with institutional structures (policies and guidelines, infrastructure and technology, funding and institutional culture), and their influence on the preceding events during the entire process of implementation.

<Table 2> summarizes the structural analysis results. The social structure in our analy-

&lt;Table 2&gt; Summary of Analysis Results

Realm	Type	Analysis result
Structure	Signification	<ul style="list-style-type: none"> <li>◦ Significance of citizen services               <ul style="list-style-type: none"> <li>- Institutionalizing an organization for enhanced citizen services (eSeva)</li> </ul> </li> </ul>
	Domination	<ul style="list-style-type: none"> <li>◦ ITC department for authority and control               <ul style="list-style-type: none"> <li>- Appending diverse services</li> <li>- Plans for state wide dissemination</li> </ul> </li> </ul>
	Legitimation	<ul style="list-style-type: none"> <li>◦ Legal endorsement               <ul style="list-style-type: none"> <li>- Legal recognition by forming IT policies</li> <li>- Authorizing ITC department for authenticating the system implementation</li> </ul> </li> </ul>
Modality	Interpretive schemes	<ul style="list-style-type: none"> <li>◦ Shared knowledge               <ul style="list-style-type: none"> <li>- Knowledge and guidance from expert committee members</li> <li>- Shared knowledge by governmental departments and public</li> </ul> </li> </ul>
	Facility	<ul style="list-style-type: none"> <li>◦ Financing and Technology               <ul style="list-style-type: none"> <li>- A suitable technology to fill in the shortage of pilot project</li> <li>- Internal fund allocation and external contribution</li> <li>- A PPP model for technical and financial collaboration</li> </ul> </li> </ul>
	Norms	<ul style="list-style-type: none"> <li>◦ Needs and requirements for eSeva               <ul style="list-style-type: none"> <li>- Citizen feedback and departmental requirements</li> </ul> </li> </ul>
Interaction	Communication	<ul style="list-style-type: none"> <li>◦ Communications among citizens, officials, and politicians               <ul style="list-style-type: none"> <li>- Establishment of ITC department</li> <li>- Designating a head for ITC department for over all control and responsibility</li> </ul> </li> </ul>
	Power	<ul style="list-style-type: none"> <li>◦ Policy maker's willingness               <ul style="list-style-type: none"> <li>- Head of the State's approval for the system and political acceptance</li> <li>- Acceptance and support by all key officials</li> </ul> </li> </ul>
	Sanction	<ul style="list-style-type: none"> <li>◦ Departmental and public approval               <ul style="list-style-type: none"> <li>- Citizen acceptance for the pilot project</li> <li>- Public demand for appending the service counters</li> <li>- Enhancement in departmental participation</li> </ul> </li> </ul>

sis is the environment in which the government operates and those factors which influence or constrain its functioning. The human interactions are those actions which contributed in motivating the government to place an efficient system for service delivery, acceptance of eSeva by the departments, cooperation of

technical partners, staff who accepted the new working environment, efforts by policy makers to coordinate the departments to integrate services, and petitions from staff, officials, politicians and external organizations. Data analysis also discusses the important factors that surfaced out of human interaction and structures.

## V. Discussion and Implications

### 5.1 Structural Process in eSeva

The implementation of eSeva entails a substantial number of activities advocating a succession of events in its three domains (see <Table 2> for detail analysis results). This process of sequential action is significant since they lead to significant outcomes [Robey and Newman, 1996] which turns into further episodes of diverse events. Further, the government essentially has to pair novel forms, by prospectively consolidating the approaches [Allen *et al.*, 2001] because communication channels in most public bureaucracies are strangled [Heimer, 1996]. In this context, eSeva gained impetus with an attitudinal change at concerned segments of the government. The ITC department granted a swift momentum to steer the activities. These processes were instigated by the events under interpretive schemes with obliging policy makers. The positive acceptance of pilot project motivated for extending a new structure. The solution is to cautiously replace traditional structures by horizontal network structure, one-stop services, citizen-orientation, and transparency.

The events at realms, structure, and interaction were concurrently supported by the realm of modalities. This displays a certainty that interrelations at each dimension were reciprocal and proactive as contributors to the entire success of implementation. The profuse activities at each domain serve as passage for the consequential action as a source of multitude of social actions in an e-Government setting. Basic

segments in a social institution enabled e-Government system to be matched with social consequences such as user needs, the interaction of organizations with technical teams, attitude of staff, management, and human actors as all these modify the organizations. This becomes more critical in e-Government in an effort of making information available to the public. Such intention and effort appear to be relatively strong in the efforts to build eSeva as a useful electronic means for service delivery.

### 5.2 Structural Factors in eSeva

The structural factors are either enablers or inhibitors for foundation of successful e-government system. A number of IT projects in government are futile due to inapt correspondence among various parameters. Further IT implementation turns out to be complicated owing to the intrinsic customary structures of public authorities and the multiplicity of the services accessible. Consequently, for e-government as a medium to modulate conventional structures, it is imperative to consider other pertinent segments as the entire process of reinstatement unfolds out of prolific interactions of all the participants involved in the entire implementation process. Rest of this section discusses the critical factors that emerged out of interrelationships of structural process of eSeva. We have identified four critical structural factors: *willingness of the policy makers* from the interactions among domination, facility, and power; *departmental collaboration* from the interactions among legitimation, norms, and sanction; *alignment between technical and social factors* from the interactions among signifi-

tion, interpretive schems, and communication; and *change management* from the interactions among communication, power, and snaction.

### 5.2.1 Willingness of the Policy Makers (Domination-Facility-Power)

The augmented number of transactions from the inception of eSeva until early 2007 indicates the underlying efforts of the policy makers to restructure the traditional system for bringing in more functional effects. IT projects in public sector are either partial or total failures [Heeks, 2002]. In such conditions, superior executives' perseverance and commitment to use an innovative system makes a profound difference in adopting or rejecting a renovation of a system [Berry *et al.*, 1998]. While the technologies are not very interesting to the politicians but found useful for bureaucrats, it is likely to abate the influence of the former in favor of the latter [Sullen, 2002]. In the case of eSeva, it is contributing rather than conflicting each others' interest and both team up to play a role mutually indulgent towards a common intent. From this perspective, delegating a commitment of leadership and political will has undoubtedly steered the impetus of eSeva to propel it further, and also this was agreed by many in the entire span of our data collection.

### 5.2.2 Departmental Collaboration (Legitimation-Norms-Sanction)

The organizational alignment is important in the public sector [Swain, 1995]. The most important facet expounded through observation of eSeva was its sustainable and robust struc-

ture to intervene a coalition of multiple tasks. Interorganizational alliances entail an institutional framework [Dawes and Prefontaine, 2003] and require sizeable reengineering that synchronizes information among various authorities to develop a consistent process. Incorporating a structure is the stumbling block in executing expansive and comprehensive e-government infrastructures. As eSeva structure was anticipated to discharge the potential of promoting legal recognition, it was required to convince diverse departments to agree on a common venture and intercede coordination. Therefore, the government instigated a new structure to acquire accountability encompassing entire implementation process as the collaborations stretch across the boundaries of distinct organizations and necessities to establish a new institutional legitimacy [Fountain, 2002].

### 5.2.3 Alignment between Technical and Social Factors (Signification -Interpretive Schemes- Communications)

Successful IS implementation is influenced by both technical and social facets [Curtis *et al.*, 1988]. This is significantly applicable to e-government as an IS development entails a radical change in the government [Sprecher, 2000]. Although IT has a remarkable potential for connectivity, the communicative inabilities exist among bureaucratic institutions due to lack of interoperability among various issues and impede the information sharing and incorporation complicated [Fountain, 2002]. In the case of



eSeva, this imposed to explore a mechanism that furnishes the requisites of all involved. It was necessary to match the technology that suits the objectives and user requirements, be simple for citizens to understand, and use and apposite for staffs to perform the routine services. After a detailed evaluation, the current technology for eSeva was chosen because it is more pertinent and adaptable for diverse requirements such as local availability and structural and social needs.

#### **5.2.4 Change Management (Communication-Power-Sanction)**

Challenges for e-government are beyond technology. The implementation of e-government demands new organizational skills such as efficient leadership and requires several changes in structures and redefining the entire purpose [Allen *et al.*, 2001]. In the case of eSeva, the government staffs were apprehensive for employing computers in their routine work processes. They also aspired align IT with their tasks for effective work practice. Integrating an innovation into a work system demands a change in the mind-set of employees and this is doable with the encouragement of senior management [Berry *et al.*, 1998]. With the strong leadership from the policy makers, the eSeva project team could resolve conflicts and build confidence among the departments and citizens for eSeva as part of change management. For the change management, the project team have leveraged strong leadership, communication, advertisements, demonstrations and awareness programs, and incentive schemes for public to exploit the eSeva services.

### **5.3 Implications for Research and Practice**

This study has several implications for research and practice. From the research perspective, process models like structuration could serve apposite for e-Government for their ability to recognize the association of reciprocal interrelationships that perform key functions in the implementation process. e-Government implementation is a complicated process due to diverse interactions among the participants at different levels and also due the citizen's involvement. It is, therefore, more appropriate for the government to look into the structural, technical, political, managerial issues and the manner how these parameters mediate with each other, which might impede the ultimate objective and counter the needs of citizens. In line with this, we address the issues in the implementation of e-Government from the structural perspective. This study contributes to the literature by analyzing the major structural elements and the relevant structural process in the e-Government implementation based on the e-Seva case.

From the practice perspective, the structural factors for building e-Government enfold the concerted and collaborative efforts of all involved entities with a due consideration to the interactive relationships of various agents. The interweaving IT into routine work process is rather a complex issue in a conventional public setting. Further, the adaptation of IT into usage environment implies a meticulous change process due to its multifarious impact. It is however possible with the willingness and strong commitment of policy makers to pull

the initiative together, prioritize it and navigate it towards more optimistic outcomes. Further, alignment between services and needs are optimized when service delivery models are designed around citizen's perception, rather than curtailing the needs of departmental structures. This entails an effective infrastructure which could be resolved through private-public partnership to avoid lack of skilled resources and to lower investment and maintenance costs as established in the e-Seva case.

## 6. Conclusion

This study has analyzed e-Government as an IS development for public administration from the social process perspective based on the structuration theory rather than from the technological perspective although the technology is the nucleus in the implementation process. We emphasize that technological benefits are augmented when its application is implanted along with the perceptive of the repercussion of other parameters and their mutual interactions. Further, the most encompassing challenge in government is its permeation into a wider user base as most IT projects are always perilous. However, using a methodology sug-

gested in this study can allow them to proactively amplify the prospects of success as it addresses the virtue of understanding the interactive relationships of the constituents involved in implementing e-Government in an urban environment. This offers an avenue to attempt the same to test its scalability across the nation and other national venues.

The findings in this study also suggest that government must suspend conventional technology-oriented methods. Government needs to reposition e-government to shape new patterns and frameworks as the demand for enhanced services may move in accordance with citizens' awareness of IT innovations, eventually demanding better linkage between emerging IT tools and service provision. Finally, although this study does not represent the overall picture of building an e-government, it provides essential imperatives by highlighting the issues associated with interactive elements and a need to understand how these mediate with each other for better prospects from e-government initiatives. In this context, models like structuration are useful for researchers and e-government practitioners to recognize the association of reciprocal inter-relationships among several factors in the implementation process.

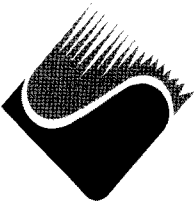
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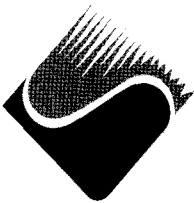
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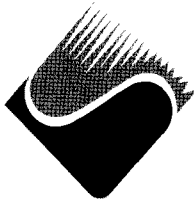
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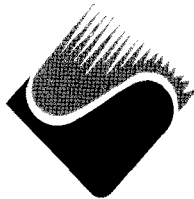
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