W.P.No. IT-12-10
March 2012

INDIAN INSTITUTE OF FOREIGN TRADE

Working Paper

Towards Validation of Key Success Factors of E-government Initiatives

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Printed and published by

Indian Institute of Foreign Trade

Delhi Centre

IIFT Bhawan, B-21, Qutab Institutional Area, New Delhi – 110016

Kolkata Centre

J1/14, EP & GP Block, Sector –V, Salt Lake, Kolkata - 700091

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Towards Validation of Key Success Factors of E-government Initiatives

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Abstract

One of the emerging areas on which researchers are trying to build some theoretical framework relates to realization of IT value in public sector in general and in the field of E-government in particular. As to what factors can generally be associated with success of E-government is not an easy job. Nevertheless, contemporary researches have been able to generate a framework of success factors for E-government initiatives. In this paper, an attempt has been made to capture the trend in research towards this end followed by an attempt to validate if such a framework is indeed capable of explaining success of E-government initiatives and if so what kind policy and operational insight can be derived for the benefit of decision makers and project managers responsible for formulating and implementing E-government initiatives.

Keywords: E-government, Key Success Factor, Key Success Strategy

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Towards Validation of Key Success Factors of E-government Initiatives

1. Introduction

E-government, as a technology, has an extraordinary agility to fit into any segment of governance and is capable of adding significant value by way of bringing improvement in work process and consequent managerial and administrative effectiveness, provisioning of public services, promotion of transparency and accountability thereby demystifying the decision-making process, rendering superior quality of decision making, better knowledge management etc. Initial apprehension over a variety of trade- offs namely, high-end vs. low-end E-government technology, fixed vs. evolving E-government (Hwang et al. 1999), top down vs. bottom-up E-government strategy etc (Fletcher 1997), all got resolved into one fundamental understanding: E-government is no longer an option, it is a compulsion. Technologically, E - government offers a wide spectrum of choices – low or high (Hwang et al. 1999), use-wise it may be intensive or generalized (Gil-Garcia and Pardo 2005), the common thread is a realization of the potential of E-government in creating value-no-matter at which end it is embraced at the beginning.

E-government is being perceived as a pre-requisite for good governance. The World Bank is spearheading the notion of e-governance in broader perspective encompassing all the key contributing factors to good governance- better delivery of govt. services to citizens, improved interactions with business and industry, citizen empowerment through access to information, and more efficient government management. This means that the various arms of government redefine their relationship with the common citizen, community interest groups and business, assisted by various facets of Information Technology (IT), networking, mobile computing, etc.

Malick and Murthy (2001), while agreeing with the World Bank perspective on e-government, observed that e-governance is more than e-government – it is a precondition for good and transparent administration. It eventually implies provision of quality services to the citizens and stakeholders with diverse interests, administrative independence and managerial autonomy. It also requires reduction in controls, recognition for individual and organizational performance, ready and easy availability of

all the resource through electronic media leading to open mindedness towards competition which would inculcate a sense of discipline among the public servants. It strives for a collaborative approach, in inter and intra-governmental interfaces and transactions, keeping in view the interests of all the stakeholders. It aims at making available and sharing information in a trusted environment of transparency in the conduct of business, translated into sharing of knowledge across the institutions, participating divisions, businesses, user groups and individuals.

The issue of governance has been addressed in great detail in the Tenth Five Year Plan 2002-2007 of the Government of India. It has categorically been mentioned that good governance is one of the most crucial factors for the fulfillment of the targets of the Tenth Plan.

Efficient governance requires efficient institutions. The efficiency and effectiveness of institutions, in turn, depends on their delivery mechanism and supportive framework of rules and procedures, each of which has to work in harmony with the other to discharge the functions for which the institutions have been created. Only then would one expect the institutions to fulfill their state objectives and carry out their assigned responsibilities in managing the affairs of the society. One of enablers of efficient governance is use to information and communication technology for bringing efficiency in institutions.

Given a global scenario where government departments are engaged in E-government way, a question arises, particularly in view of a rather high failure rate of E-government projects in public sector (Fountain and Osoria-urzua 2001), is it possible to delineate a set of key success factors and to hypothesize their direction and nature of impact on the success of E-government initiatives? This constitutes the main research inquiry of this paper. This is proposed to be accomplished first, by reviewing contemporary literature and presenting two import framework of success factors as emerged from current literature and then to see if these two independently developed and advocated frameworks can be integrated into one comprehensive framework and finally, an attempt will be made to validate the proposed integrated framework against some research findings on successful E-government initiatives in India.

2. Literature Review

It is not an easy task to identify key success factors of E-government initiatives, particularly because of complexity associated with discovering and defining business

value of IT in public sector. Business value of IT in private sector has remained a topic of great importance from the initial days of rise of IT/ITES but IT value proposition in public sector is more of a recent phenomenon (Chircu and Lee 2005). Due to relative infancy of government IT value concept, there are few IT value theories for public sector. While economic investment justification around cost reduction and increased efficiency is dominant in private sector, potential IT value is both economic and political for government departments. Political justification includes public accountability, fairness, accessibility etc. (Chircu and Lee 2005). Public sector is bound to have much different value proposition because of its non-profit nature and political agenda (Dufner et al.2002). The set of risk factors in public sector are quite different and unique in many senses (Rocheleau and Wu 2002, Dufner et al 2002, Guy 2000). Besides, IT applications in public sector have to be deliberated upon carefully since errors can damage social implication and divided authority and thereby may slow down the implementation of E-government initiatives (Ro Cheleau and Wu 2002).

3. Framework of Key Success Factors

Relying upon their basic thesis that the value of E- government initiatives needs to be managed by increasing the potential value of those initiatives and decreasing the associated risk factors, Chircu and Lee (2005) tried to identify key success factors that can help government organizations maximize this value. The methodology that was adopted was that of a Case Study, starting from 2001, over 30 semi-structured interviews with decision makers actively involved in successful E-government initiatives in the USA were conducted. Samples were so chosen so as not to be confined to few specific types of applications or government organizations. Sample consisted of both federal and state agencies implementing E-government initiatives for a variety of services. The study identified following key success factors:

1. Business Process Re-engineering as a preparation to E-government.
2. Breaking down specialized vertical system (stove piping) and providing integrated services to the people (Bannister, 2001)
3. A strong visionary change agent (Clemons et al, 1995)
4. Modularization of the IT initiatives and implementation of a piece at a time (Dufner et al 2002).

5. Building a prototype is an effective way to reduce the implementation risk. Building credibility is slow process (Peppard 2001). However, to display quick value to gain credibility, building a prototype and demonstrating its potential value may go a long way to minimize the risk.
6. Garnering support from top level including political leaders for E-government initiatives (Peppard 2001).

Apart from delineating key success factors, the authors (Chircu and Lee 205) also provided the direction of economic and political impact of each of the factors, certain boundary conditions indicating the level of significance of these factors to different agencies of governance viz. Federal/State etc., and finally certain generalization of findings by way of developing testable propositions.

Table I gives a snapshot of identified key success factors, their economic and political impact boundary condition and finally testable propositions.

Table 1: Identified key success factors, their economic and political impact, the boundary conditions testable propositions

Key Success Factors	Economic and political impacts	Boundary conditions: relevance to local state, and federal governments	Testable propositions
1.Conduct Business Process Reengineering (BPR) in Preparation for E-government	Not only this effort increases efficiency with E-government implementation (i.e., economic benefits), but also reduces the political risk of system not being adopted by involving potential users early	This factor is relevant at all levels of government in some degree. The adage," if you automate inefficient processes, they will become more inefficient" is applicable across the board.	**P1:** The higher the level of reengineering of processes, the higher is the success of E-government initiatives and business value realized from that initiative.

Table 1: Identified key success factors, their economic and political impact, the boundary conditions testable propositions (Contd)

Key Success Factors	Economic and political impacts	Boundary conditions: relevance to local state, and federal governments	Testable propositions
2.Offer one-stop E-governmen t solution	This effort aids in accomplishing a much discussed goal for government: government without wall (i.e., effectiveness and efficiency).In addition, it address the political importance of providing integrated services to the citizens.	Due to their limited resources, local government may not be able to or need to develop their own portal systems. They can be a part of state-wide portals, providing seamless and integrated government service to the citizens. First government is one example where the federal government provided a platform for one-stop solution and local state government participated as appropriate.	**P2a:** The higher the number of services offered by one E-government site, the higher the business value realized from that site. **P2b:** Agencies integrating E-government applications into a city sate/country-wide portal realize more business value than those developing independent applications.
3.Appoint visionary change agent	A strong visionary change agent is critical in balancing the trade-off between functionality risk (i.e., system not addressing the business needs) and political risk (i.e., system is too complex and difficult to use that users do not adopt the system).	Universal truth in all aspects of driving business value of IT	**P3:** E-government initiatives managed by a vision change agent will realize more business value than those without a visionary manager.

Table 1: Identified key success factors, their economic and political impact, the boundary conditions testable propositions (Contd)

Key Success Factors	Economic and political impacts	Boundary conditions: relevance to local state, and federal governments	Testable propositions
	Also vision commands what political value can be created by implementing a specific E-government application.		
4.Divide and conquer	This effort increases the probability that a proposed E-government application will demonstrate a quick economic and financial return. In additional ,this piece-by-piece approach allows public sector organization to display fiscal prudence of not haphazardly investing in applications that no one really needs or wants (i.e., accountability)	Adding functionalities at once (i.e., big bang approach) increase functionality and political risk at Federal, State and Local levels. Successful agencies start from their common launch pad and build their E-government application- one modularized component at a time.	**P4:** Agencies that implement E-government applications using a phased approach based on a common platform realize more business value than those attempting to deliver all services at once.
5. Build a prototype	Prototype often uncovers hidden demands and user requirements so that an eventual system can truly serve its purpose without wasting money (i.e., accountability). Further, the lessons learned through a pilot project can increase system and process efficiency through re-use and	While Federal government may have more resources than do State and Local governments, it can still benefit from doing this as much as its smaller counterparts. A prototype is the	**P5a:** Agencies that use a prototype to demonstrate the capabilities of E-government have more successful future E-government initiatives.

Table 1: Identified key success factors, their economic and political impact, the boundary conditions testable propositions (Contd)

Key Success Factors	Economic and political impacts	Boundary conditions: relevance to local state, and federal governments	Testable propositions
	customization.	first step in a Division and conquers strategy. Prototyping can be a useful State–wide strategy, where early adopter-agencies showcase e-government solutions to others.	**P5b:** States that demonstrate the value of E-government using a prototype implementation in one state agency have more successful future E-government initiatives in other agencies.
6. Mandate change	The value that government organizations attach to IT initiatives is often defined by their political mission (e.g., saving people's lives) and mandate is critical in capturing this value by positively mobilizing government resources for the E-government implementation. Also, this usage mandate increases the probability that an implemented system is used beyond the threshold level to reap cost savings.	Mandate is necessary to overcome resistance in the public sector which may be especially unresponsive to technology driven change. To be effective, mandate needs to come from higher-up. Therefore Federal and State governments need to provide overarching	**P 6a**. Federally and State–mandated E-government initiatives are more successful than voluntary ones. **P 6b.** Agencies mandating adoption of their E-government system will realize more

Table 1: Identified key success factors, their economic and political impact, the boundary conditions testable propositions (Contd)

Key Success Factors	Economic and political impacts	Boundary conditions: relevance to local state, and federal governments	Testable propositions
		mandates, while Local organizations can be at the fore-front in requiring systems adoption for business, government and citizen users. To this end, local organizations need to ensure the potential adopters have the required infrastructure and training to adopt E-government.	values than those who do not. **P 6c.** The level of agency support (in terms of E-government infrastructure, training and customer service) moderates the impact of mandating adoption on E-government.

Source: Chircu and Lee (2005)

The strength of the above framework lies not only in its ability to identify key success factors covering both hard and soft aspects of E-government implementation but also in projecting the direction of their economic and social impact and it is this strength which gives support to generalasibility of their findings, thereby developing a theoretical foundation of success of E-government. This has important implications for the decision makers responsible for formulation and promotion of E-government initiatives in the sense that they have a framework to begin with for management of value of E-government initiatives.

4. Framework of Key Success Strategy

There is another school of researchers who have approached the problem differently. They believe that by identifying challenges and their core aspects, it is possible to derive key success strategy (Chengalur-Smith and Duchessi 2000, DeLone and Mclean 2003, DeSanctis and Poole 1994, Daws and Pardo 2002).By focusing on technology, management, policy, information and organizational issues; it is possible to develop a knowledge base about challenges of E-government initiatives. Gil-Garcia and Pardo (2005) suggested five categories of challenges according to their core aspects:

i. Information and data

ii. Information Technology

iii. Organizational and managerial

iv. Legal and regulatory

v. Institutional and environmental

The methodology that was followed was, first, a review of current literature in information system research to identify factors found to have influenced the success of IT initiatives was conducted. This review included scanning of last 5 years (1999-2003) of five top journals in public administration. Articles with a focus on e- government success factors were selected. The challenge category, challenges and key success strategy as found during the review are summed up in Table 2.

Table 2: Challenges of E-government

Challenge category	Challenges	Key Success Strategy
Information and Data	Information and data quality	Overall plan Continuous feed back Quality assurances Training
Information Technology	Information needs Usability Security Issue Technological incompatibility Technological complexity Technical skill Technology newness	Ease of use Usefulness Demonstration and prototypes

Table 2: Challenges of E-government (Contd)

Challenge category	Challenges	Key Success Strategy
Organizational and managerial	Project size Manager's attitude and behavior organizational diversity Lack of alignment with organizational goals Resistance to change Turf and conflict	Project skill and expertise Respected IT leader Realistic goals Identification of stakeholders End- user involvement Planning Clear milestones and measurable deliverables Good communication Previous Business process improvement Adequate training Adequate and innovative funding Current or best practice review
Legal and regulatory	Restrictive laws One year budget Inter-government relationships	IT policies and standards
Institutional and environmental	Privacy concerns Autonomy Political pressures Environmental context	Executive leadership and sponsorship Legislative support Strategic outsourcing and public private partnership

Source: Gill-Garcia and Pardo (2005)

It may be seen from the above table (Table No. 2), the framework of key success strategy traces the success factors differently, mainly, through the 'challenges' that the

E-government initiatives confront and group them into three broad five categories. Once it is possible to pin-point a challenge, derivation of mitigation 'strategies' to control or minimize its inhibiting impact is comparatively easy task. A knowledge base of various types of challenges that an E-government initiative is likely to face helps the policy/decision makers responsible for its implementation to keep a strategy in place well in advance and operate strategically to minimize its adverse impact.

5. The Commonality and Integration

A simple comparison of the factors under both framework would reveal more or less similar kind and nature of stress on similar core areas with the only difference that categorization of factors has been differently suggested or stated. *Demonstration and prototypes* figure in both frameworks. Similarly, previous business process improvement/re-engineering is common factor in both the frameworks. *Leadership* under Gill-Garcia and Pardo framework is same as *visionary agent* under Chircu and Lee framework. It is not difficult to link a success factor and its corresponding strategy and thus, it is of research interest to see if one framework can be superimposed on the other.

Table 3 seeks to depict as to how both can be integrated into one comprehensive framework by linking success factors to success strategy. No testable proposition has been suggested as it is beyond the scope of the present study, although at the time of final validation against empirical findings, some broad trends have been indicated.

Table 3: An integrated framework

No.	Key strategy factors	Challenges category	Key success strategy
1.	Business Process Re-engineering (BPR)	➢ Information and data ➢ IT ➢ Organizational and managerial ➢ Legal ➢ Institutional and environmental	➢ Planning ➢ Feedback ➢ Training ➢ Usefulness ➢ Ease of use ➢ Project skill ➢ End-use involvement ➢ Realistic goals

Table 3: An integrated framework (Contd)

No.	Key strategy factors	Challenges category	Key success strategy
			➢ Current practice review ➢ Legal acceptability ➢ Strategic outsourcing
2.	One-Stop E-government solution	➢ Information Technology	➢ Technological compatibility /incompatibility ➢ Technological success ➢ Technical skill ➢ Security ➢ Clear milestones
3.	Appoint visionary change agent	➢ Environmental or institutional	➢ Executive leadership
4.	Divide and Conquer	➢ Organizational and managerial	➢ Realistic goals ➢ Measurable deliverables ➢ Demonstrations and prototypes
5.	Build a prototype	➢ Information technology	➢ Demonstrations and prototypes ➢ Project skill ➢ Planning
6.	Mandate	➢ Legal and regulatory ➢ Environmental or institutional	➢ Information technology policies and standards ➢ Legislative support

The idea behind integrating the two frameworks is strongly driven by a sincere belief that both the frameworks i.e., the framework of key success factors and the framework of key success strategy essentially seek to achieve a common objective: an objective to equip the policy/decision makers responsible for formulating and implementing E-government initiatives with necessary and adequate insight as to which factors in which manner need to be managed to ensure high business value of E-government initiatives. Speaking from risk management perspective, such a robust and comprehensive insight definitely helps to minimize the risk of E-government initiative in a much better and definite way. The other objective, which is served in the process, is to pin point if any specific success factor remains outside the ambit of the framework of the key success factors. The third objective is much more micro level concern. In the absence of an integrated framework, one has to refer back and forth to both the framework individually and may miss out the inherent linkage between a key success factor and its success strategy. De-linking the two may prove to be fatal to implementation of E-government initiatives and hence the decision policy makers of E-government can ill-afford to allow such a situation.

6. Validation

Validation of the proposed integrated framework is proposed to be done in the light of empirical findings of two very successful E-government initiatives in State Police administration in India.

6 a. E-government in India and in Indian Police: Introduction of the Domain

E-Government development in India can be broadly divided into two main phases. The first phase is from the 1960s to the 1990s and the second phase starts from the late 1990s. In the first phase, the government concentrated the use of IT, essentially for internal administration purposes of Central Government Departments such as defense, research, economic monitoring, and certain data intensive functions such as elections, national census and tax purposes. In 1975, the National Informatics Centre (NIC) was set up by the Government of India with an avowed objective to promote IT in managing the internal processes of government departments (Gupta et al. 2004). In the late 1990s, there was a significant shift in the thinking, and approach towards IT and its emphasis started evolving into using IT not only for internal functions but also for reaching out to the large number of rural and urban population. This phase was marked by the formation of the National IT Task Force and framing of IT policies of various

States. Government has since created a separate ministry of IT (in the year 1999) and legislated the IT Act in the year 2000 which had given legal recognition to electronic documents.

Indian police as a domain of governance could not remain insulated from E-government. As early as 1986, the Government of India created the National Crime Record Bureau (NCRB) and mandated it with the task of creating a computer network called the Crime Criminal Information System (CCIS). The CCIS was designed to create computerized storage, analysis and retrieval of crime criminal records. The Crime Criminal Information System today is in operation in all the States. The National Crime Record Bureau (NCRB) has also developed a number of E-government initiatives such as Police Station Management System, Prison Statistics. Jail Management Softwares, Prosecution Branch System, National Bomb Squad System and Forensic Science Laboratory System and the Motor Vehicle Information Counters (MVIC). The Directorate of Coordination Police Wireless (DCPW) is yet another agency connected with e-government in police. It is the nodal coordinating agency for Police Telecommunication both at State and National level in India. It is the nodal agency to design and implement the National Police Communication Network (POLNET). The implementation of National Police Communication Network (POLNET) is high on the list of priorities and it is believed that once this secured network which is exclusively for police is fully operational, e-government in the Indian police will receive a big boost.

6b. Police Computerization Initiative (PCI) and e-Cops: Cases of Two Successful E-government Initiatives in Indian Police

India is Federal in nature. At the Centre, there is Union Government and at the States, there are State Governments. The Constitution of India provides for clear cut distribution of subjects of responsibility for the Union Government and State Governments. 'Police' as a subject is allocated to States. Thus each State has raised its own police force in the State is the Director General of Police (DGP), who is responsible to the State government for the administration of the police force in the State and for advising the State government on police matters. States are divided territorially into administrative units known as Districts. An officer of the rank of Senior Superintendent of Police (SSP)/Superintendent of Police (SP) heads the district police force (District Police Chiefs). A group of Districts forms a range, which is looked after by an officer of the rank of Deputy Inspector General of Police (DIGP). Some States have zones

comprising two or more ranges under the charge of an officer of the rank of an Inspector General of Police (IGP). Every district is divided into sub-divisions. A sub-division is under the charges of an officer of the rank of Assistant Superintendent of Police (ASP)/Deputy Superintendent of Police (DSP). Every sub-division is further divided into a number of police stations, depending on its areas, population and volume of crime. Between the police station and the sub-division, there are police circles in some States each circle headed generally by an Inspector of Police. Depending upon size and population, a police station is headed by an Inspector of police or Sub-Inspector of Police (for smaller Police Stations). Assistant Sub-Inspectors, Police Head Constables and Police Constables which constitute the bulk of police force are the staff of Police Stations.

There is similar uniformity in duties and responsibilities of State police forces. This is because of a mother legislation called the Indian Police Act, 1861 which guide the duties and responsibilities of the police in general.

The cases which are proposed to be used for the purpose of validation of the framework belong to two such State Police administrations, namely, State Police of Madhya Pradesh and that of Andhra Pradesh. State of Madhya Pradesh is one of the biggest States in northern part of India, while the State of Andhra Pradesh is one of the important States in the southern part of India. Both the State Governments have embraced ICT in their own way. The State of Andhra Pradesh is in the global map of IT hubs. Its previous Chief Minister (Mr. Chandra Babu Naidu) is known as a visionary in embracing ICT in almost all facet of his administration. The State of Madhya Pradesh in general may not be known as the State of Andhra Pradesh is in the matter of ICT but 'Gyandoot', one of the earliest community based e-government initiatives, which got acclaim globally, was developed in one of the Districts (namely, Dhar) of the State of Madhya Pradesh. Thus, an environment conducive to E-government did and still now does exist in both the States.

7. Case Studies

The cases which are briefly discussed here and will be used for validating our framework in subsequent sections are part of a research project undertaken to study E-government in India police in general (Mitra 2004). The methodology adopted for the said research included questionnaire survey as well as Case studies. It was during Case studies on E-government initiatives in State Police administrations, the instant two cases, namely,

Police Computerization Initiatives (PCI) of State Police of Madhya Pradesh and e-Cops of the State Police of Andhra Pradesh were discovered and studied along with other cases of E-government initiatives in the given domain i.e., Indian police.

Case 1: Police Computerization Initiatives (PCI)

Police Computerization Initiatives (PCI) in the State of Madhya Pradesh was targeted to improve functioning of Police Stations (PS). Functionally and organizationally, a Police Station in India is the basic unit of police administration through which both crime (as enunciated in the Indian Police Act, 1861) and non-crime duties are discharged. Police Stations are the places where complaints and First Information Reports (FIRs) are lodged. Police Stations also serve as the window of 'citizen interface' for the police. Common people approach Police Stations for assistance. The Police Stations occupy the centre stage of attention from the top administrations. This being the importance of a Police Station, the Zonal Inspector General of Police (IGP), the executive head of a number of District Police forces under his jurisdiction decided to use ICT as a modernization strategy for improvement in police performance. A deep insight about the importance of a given organizational unit (Police Station in this case), of all the units in the structure, led him to focus on the right place i.e., Police Stations and on right people i.e. the Inspectors, Sub Inspector, Assistant Sub Inspectors, Head Constables and Constables who man Police Stations and constitute the largest ratio in police pyramid. PCI, at the initial stage, was targeted at two important PSs in Indore, one of the Districts in the Range. Looking into the grave constraint in the form of acute shortage of in-house IT skill, the Range IGP, the executive leader in this case, partnered with a local Application Service Provider (ASP) which a local technical education institute was called Indian Institute Professional Studies (IIPS). A system study of the Police Stations revealed a large chunk of redundant work processes in the activities, maintenance of a large number of manual registers, duplication of works. Once the system study brought into light the redundancies in the system, at the next stage, the objective set was to give a software solution for major activities of a Police Station.

The software named as Police Computerization Initiatives (PCI) offered following benefits:

- No interference with any procedure or norm of police functioning.

- Entire software was in vernacular (Hindi, a language spoken and understood in that part of the country).
- A strong in-built security feature
- Generation of reports of various types

The system was developed in the work station (PS) only with full involvement of all policemen at the Police Station. The project team members of the local Application Service Provider (ASP) interacted with the policemen at the Police Stations frequently, thereby ensuring full participation of the end-users from the day one of the development and also served to train the policemen to work on the new system. Installed initially at two Police Stations in 2002, the system was installed and made operational at all the 16 Police Stations of Indore District by the end of 2003.

Impact Measurement of PCI

To measure the impact of operation of PCI – both on police performance and public service dimensions, as set of parameters were identified. They were so chosen as to represent police efficiency (internal) at Police Stations and public satisfaction dimensions of police functioning.

Data was collected from the Chiefs of 16 Police Stations were PCI was uniformly in operation with effect from May 2003. The parameters used and the performance dimensions they represent along with statistical findings are shown in Table 4. Since the purpose was to see if there was any statistically significant difference between pre-PCI and Post PCI period, 't' test was applied.

Table No. 4: Test of Statistical Significance

Parameters	**Before**		**After**		**t-value**
	Mean	**Standard Deviation**	**Mean**	**Standard Deviation**	
Time taken in completing verification (like police verification for passport/domestic help verification/character verification (in days)	5.06	2.89	1.25	0.58	5.17**

Table No. 4: Test of Statistical Significance (contd)

Parameters	Before		After		t-value
	Mean	Standard Deviation	Mean	Standard Deviation	
Time taken in servicing warrants during the year (in days)	4.19	4.79	1.75	1.98	2.30*
Time taken in sending a requested Information from your Police Station to other Police Station (in days)	6.31	6.81	2.38	0.89	2.54*
Time taken in registering an FIR (in minutes)	30.44	6.32	16.50	4.13	15.79**
Number of favourable media report about your Police Station during the year (in numbers)	5.38	2.53	6.06	4.33	1.03
Number of adverse media report about your Police Station during the year (in numbers)	5.38	2.83	3.88	2.83	1.98
Number of complaints of inaction by your Police Station during the year (in numbers)	8.13	3.50	1.50	1.03	8.28**
Time taken in days for a complainant in getting information about status of his complaint lodged earlier (in days)	6.13	1.75	1.31	0.48	10.71**

Foot Note: * Significant at .05 levels

**Significant at .0001 level

Except for two parameters i.e., number of favourable media reports and number of adverse media report, the difference is found to be statistically significant with respect

rest of parameters signifying impact both on internal efficiency and public satisfaction dimensions of police functioning at Police Stations. The success of the PCI lied not only in enhancing police internal efficiency at the cutting edge level but also in improving service delivery by the police.

Case 2: e-Cops of Andhra Pradesh State Police

PCI was confined to a local chapter of police (one District only) administration. It was more of a voluntary initiative largely due to initiative of a visionary change agent. On the other hand, e-Cops of the Andhra Pradesh Police was a totally planned endeavour from the beginning itself. The celebrated Chief Minister of Andhra Pradesh, Shri Chandra Babu Naidu, already spearheaded ICT, in governance, and as such as highly favourable environmental and institutional support was already in place. It was just a matter of initiative to take the lead and push the momentum. It was again an Inspector General of Police (IGP) in charge of computerization in State police came forward to take 'executive leadership' and e-Cop was conceived.

With one thousand five hundred and eighty five Police Stations, *four hundred thirty* Circle Offices, one hundred and forty two Sub Divisional Police Offices, seven Range Offices covering the whole State and a total police force of about eighty two thousand, e-Cops was conceptualized to computerize the total policing. Under the phase I of development of e-Cops, a large number of organizational units right from Police Stations to the offices of District Police Chiefs (called Senior Superintendent of Police (SSP)/Superintendent of Police (SP) were covered and implemented. In terms of applications, basic police functionalities viz. investigation, prosecution, various crime and administrative report's were covered in the Phase I. In Phase-II, many more were added to make total computerization in the entire State police administration.

e-Cops became comprehensive in applications covering crime, law and order and other administrative modules. The integration criteria was evolved based on unit requirement, inter-functional and cross functional requirements covering all the key stakeholders viz. Prosecution, Judiciary, Prisons, Forensic, Hospitals etc. The Criminal Justice framework was kept in the forefront to streamline various process involved. Provisions to accommodate changes in the future, functional requirements, technology were taken into account while drawing the blue print of the solution framework.

Citizens as a whole were one of the target groups of beneficiaries. Complaint can be registered by a citizen at a Police Station which is convenient and comfortable to him without the problem of jurisdictional limits. This was a welcome feature for weaker sections, minorities and women victims, as they could register their complaint at a Police Station of their choice, (woman victim can choose to register at all women police stations). Such cases are automatically transferred without human interference to the appropriate Police Station under whose jurisdiction the actual crime has taken place, making a reality that the nearest Police Station can be chosen by the citizen. A person can also follow up on his case status over the Internet (www.apstatepolice.org).

In the initial stages of implementation of e-Cops, the resistance to change at all levels was evident and the usage of e-Cops was not encouraging due to non-exposure of field as well as senior police officers. The lack of interests was largely due to non-involvement which created hurdles in implementing the project successfully. Added to this was lack of IT trained policemen. Gradually, with continuous seminars and group discussions, senior police officers and Investigating Officers were motivated to become part of the Project Team. By exposing them to short term training their involvement was ensured resulting in accelerated use of e-Cops System. This is evident from trend described in Table No. 5.

Table 5: e-Cops in Hyderabad[1]

	At initial phase of Implementation (Dec, 2002)	**After One Year (November 2003)**
Registration of FIRs (in numbers)	16959	39282
Persons arrested (in numbers)	936	8564
Charge sheets issued	263	8372

Source: e-Cops Project, Andhra Pradesh Police (2003).
Courtesy: Inspector General of Police (Computers), Hyderabad, Andhra Pradesh
1. e-Cops was commissioned on 17th June 2002

8. Use of the Integrated Framework

It is made clear upfront that the suggested framework is a sum total of the two independently developed and advocated frameworks, namely, the framework of key success factors ad developed by Chircu and Lee and the framework of key success strategy as developed by Gil-Garcia and Pardo. Since the integrated framework is not an independent one, its validation would also serve to validate the two frameworks as well.

While Table 6(a) captures the success factors and success strategy with respect to Police Computerization Initiative (PCI) of Indore District police administration of the State of Madhya Pradesh, India, Table 6(b) captures the success factors and success strategy of e-Cops, an initiative of police administration of the State of Andhra Pradesh, India.

Table 6a: Validation of Key Success Factor framework- Caselet I:

Police Computerization Initiatives (PCI)

1 **Key success factors as per the framework**	2 **Economic and political impacts as emerging from the caselet**	3 **Key success strategy**	4 **Results of validation and the broad trends emerging therefrom**
1. Conduct Business Process Reengineering (BPR) in preparation for e-government.	Immediately after system study BPR was set in by way of automation of various registers, data organization and retrieval. It increased efficiency and involved the policemen at the police stations.	• Planned • Continuous feedback as the project was developed on site • The project team and end-users (i.e., policemen at police station) was deeply involved and training was in built in the process of development. • Software was easy-to-use (Vernacular interface) and useful. • Very realistic goals • Strategically outsourced by co-opting an ASP • Software was so developed that police (legal) procedures were not disturbed at all.	Result of BPR were instantaneous and made way for full fledged E-government endeavour involving more police stations. Presence of all key success strategies, as shown in Col (3), made it successful.
2. Offer one-stop E-government solution	Although not in a big scale as often is observed with 'portals', PCI is 'one-stop' in the sense that in the matter of lodging a complaint with the police	• Technical skill of the project team was adequate. • Technological compatibility on the same platform was ensured	That the public satisfaction was positively impacted was evident from Statistical finding (Table 4).

	station, the complainant is not required to come for the same service again or is not required to go to multiple windows. There was no fragmentation in the matter of delivery of services it offered to a citizen in the matter of lodging a complaint and disseminating status.		This served as a political importance of the project.
3. Appoint Visionary change agent	Although not appointed specifically for the E-government project, the senior police officers [the Range Inspector General (IG), the Senior Superintendent of Police (SSP) played their role very well. They could comprehend the 'political values' of the project, By selecting Police Stations as the target, they could make the success more conspicuous	• Executive leadership provided by the Range Inspector General of Police (IGP) and District Senior Superintendent of Police (SSP)	Indore district Police administration was the pioneer in going E-government way while conditions and constraints relating to resources, infrastructure probable resistance to change etc, were uniform for all the districts of the State. What made a different was the role played by senior police officers in driving the project and their insight about critically of police performances.

Table 6a: Validation of key Success Factor framework- Caselet I: Police Computerization Initiatives (PCI) (Contd)

1 **Key success factors as per the framework**	2 **Economic and political impacts as emerging from the caselet**	3 **Key success strategy**	4 **Results of validation and the broad trends emerging therefrom**
4. Divide and conquer	There was no big bang approach- it was essentially incremental- starting with automation of the records at one Police Station and subsequently embracing more functionalities and at more Police Stations.	• Very very realistic goals (one or two Police Stations to begin with) • Specific and measurable deliverables (automation of records, data organization retrieval etc). • Demonstratio ns and prototypes (PCI itself was a prototype).	It was truly a phased approach. However, in case of PCI, the backend was taken up first and the customer face end was taken up later on. Thus, there is no actual trade–off between internal vs. external focus. It is a matter of how one sees it.
5.Build a prototype	The project was initially implemented in one police station (Palasia, Indore) and this served as a prototype to demonstrate the value it could create and thereby gaining credibility and minimizing the risk.	• Planning by the District police administration coupled with skill of the project team.	No sooner the IT value of the project at one police station become evident, it started spreading to other Police Stations. Prototypes and demonstrations, in effect, played the role of change.

6. Mandate change	Apart from senior police officers viz. Range Inspector General and Superintendent of police Indore, the PCI had full support of the local politicians. Event the Chief Minister of the state volunteered to inaugurate PCI at some police stations at Indore.	• There was an IT policy and IT vision at the State Police Headquarters level but PCI was not rolled out of such a State level initiative. It was conceived and operationalized locally – more as a voluntary project. But due to existence of a State level IT road map, a mandate did exit in any case.	PCI was more of a localized initiative than a State mandated initiative although there was a 'mandate' in the form of a State level IT vision and IT policy road map. This finding has very important implications in the sense that while mandate is necessary but it need not necessarily be mandated Federally or at the State level. A local mandate can drive an e-government initiative. However, its change of adoption – State wide or country wide would depend on a number of complex administrative and political forces. Despite great success of PCI in enhancing police efficiency and public satisfaction factor, PCI was never implemented beyond Indore. Neither the Federal agency called National Crime Records Bureau (NCRB), which is entrusted with the job of promoting police e-governance in the country nor the State Police Headquarter adopted it for its wider adoption across the State let alone across the country. To conclude, while 'mandate change ' is indeed a valid key success factor to overcome resistance to change or political resistance, it may not necessarily be in the form of active support by way of funding etc., at the Federal level or at the State level. A local mandate in the form of support of top officers of the organization, citizens, partnership with ASPs etc. can drive successful e-government initiatives.

Table 6b: validation of key Success Factor framework- Caselet 2:

E-Cop of state of Andhra Pradesh

1 **Key success factors as per the framework**	2 **Economic and political impacts as emerging from the caselet**	3 **Key success strategy**	4 **Results of validation and the broad trends emerging therefrom**
1.Conduct Business Process Reengineering (BPR) in for preparation e-government	Essentially a BPR, endeavour, it aimed at improving police efficiency in totality	e-Cops had back up of right kind of strategy, a well planned project aimed to cover all police functionalities and organizational units. It had interfaces with the judiciary, forensic, hospitals and similar related departments, initial resistance was mainly due to non involvement of end-users at the development stage. However, discussions, seminars, and training resolved the hurdles.	Computerization of the entire police work processes encompassing all most all functionalities of policing. It paved the way for integration and total inter- connectivity.
2.Offer one stop of e-government solution	The whole project was designed to offer 'one stop' e-governme nt services relating to the police related services	Technological issues were pre-addressed as the scope and scale of e-Cops was quite board and large. It tended to become techno-centric from the beginning. Challenges around IT were well addressed.	A common citizen under e-Cop could file a complaint at his nearest police station thanks to the interconnectivity between the police stations as against the past practice of filling a complaint at the jurisdictional police stations only (previously complaint could be filed only at the police station having jurisdiction over the place of occurrence of the crime). Thus one–stop e-government truly makes an e-government successful.

Table 6b: validation of key Success Factor framework- Caselet 2:

E-Cop of state of Andhra Pradesh (Contd)

1 **Key success factors as per the framework**	2 **Economic and political impacts as emerging from the caselet**	3 **Key success strategy**	4 **Results of validation and the broad trends emerging therefrom**
3.Appoint visionary change agent	There was a visionary; The chief visionary was the then Chief Minister of Andhra Pradesh who could inspire all the government departments to go e-government way. The Inspector General of Police in charge of computers was equally motivated.	Executive leadership was in place	Executive leadership at macro level but a keen and visionary personality driving an e-government initiative at field level is bound to be more successful
4.Divide and conquer	E-Cop is no doubt comprehensive in application covering crime, law and order modules, the integration criteria were unit requirement. One module at a time was implemented beginning with crime module.	By setting realistic goals and measurable deliverables at phase 1 and phase 2, a right strategy was put in place	The implementation approach was in phased and hence it had the greater chance of survival
5.Build a prototype	A prototype of the e-cop was initially developed and tested before its commissioning thereby demonstrating its efficacy.	Each module was a prototype in itself and was capable of demonstrating the results. Modularization as a strategy was rightly applied for implementation of e-Cops.	Apart from demonstrating its potential use, the prototype of each module also helped in discovering possible lacuna in the system and thereby enabling the police departments to improve upon further.

Table 6b: validation of key Success Factor framework- Caselert 2: E-Cop of state of Andhra Pradesh (Contd)

1 Key success factors as per the framework	2 Economic and political impacts as emerging from the caselet	3 Key success strategy	4 Results of validation and the broad trends emerging therefrom
6.Mandate change	e-Cops had the full support from the State Government–both by the police departments as well as the connected departments responsible for releasing funds. Because of the mandate, it could also garner support from National Crime Records Bureau (NCRB) at the Federal level which is responsible for promoting e-government in police across the country.	Being planned at State level, e-Cops could set up all technological standards and norms.	e-Cops enjoyed the support of both the Federal as well as State agencies and thus could earn further strength in its sustainability and further expansion.

It is very evident from the two tables that all the relevant success factors were present in both cases in some form or other. Side by side, right kind of strategic back-up was in place to drive and support the success factors leading to their success. The findings, thus, establish that success factors go hand in hand with success strategy and a comprehensive framework which captures both can be of great help for management of IT value for e-government initiatives.

9. Concluding Remarks

The frameworks of key success factors and key success strategy are outstanding contributions in their own rights towards generating valuable policy and operational insight to the policy/decision makers and project managers responsible for formulation and implementation of E-government initiatives. However, a success factor, per se,

cannot drive success. It has to be 'managed' and it is towards this end, this paper has tried to contribute to by liking success factors to success strategies and finally, by suggesting a comprehensive framework for this purpose, which can help to drive a road map for success of E-government initiatives.

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