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A Framework to Instigate Good Governance through ICT

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Abstract: IT governance or e-governance refers to technology driven governance for better interaction and communication between government and general public. E-governance employs Information and Communication Technology (ICT) for providing access to information and doorstep facilitation of services to the citizens. E-governance implies engaging citizens in government policies, plans and procedures as well as addressing needs and concerns of the masses. It entails development of smartly built intelligent systems for Government to Citizen (G2C), Government to Business (G2B) and Government to Government (G2G) communications as set out in the standard operating procedures (SOPs) and rule of business frameworks. This study takes into account various e-governance models with the primary objective to focus on e-governance initiatives to promote transparency and accountability in public affairs as well as ensuring across –the-board access to information. Our proposed e-governance framework encompasses various procedures of government functionaries to bring about transparency in the procedures to better administer and monitor the government projects and provide doorstep access to information to the general public.

Keywords: IT governance, e-governance. Information and Communication Technology, Government to Citizen (G2C), Government to Business (G2B), Government to Government (G2G).

1 Introduction and Background

E-governance has brought about new prospects for all types of organization and businesses, particularly the public sector organization [3]. E-governance model typically requires state-of-the-art technologies coupled with extensive ICT infrastructure support such as Internet, LAN, telecommunication networks etc. The instrumentation of such a model aims at empowering citizens by providing them upfront means of access to information on public matters as well as to induce transparency and enhanced delivery of services [1]. The philosophy of e-governance is to approach citizens through Internet with higher efficiency at a lower cost [6]. The main objective of blending 'e-' to the governance models is to apply ICT to the manual processes by employing Business Process Reengineering in order to revamp governance processes.

A general misconception about e-governance pertains to confusing it with automation or computerization process; in fact, it is the initiative toward digitalization of business processes (aka e-business). E-governance simplifies business processes without distressing the core business processes and objectives. The engagement of citizens with the government processes boosts their confidence as they feel their participation in government decision making process. E-governance paradigm helps make transactions between citizen and government departments more simple, coherent and transparent.

Customer Relationship Management (CRM) and paperless environment strengthens the harmony between citizens and the government. Through this initiative, citizens can avail multiple government services from a single point. Moreover, intra- and inter-departmental working becomes efficient and straightforward that leads to new business vistas and helps strengthening the economy. On the other hand, multiple challenges are faced by e-governance like lack of understanding of the integrated systems, services and procedures; communication gaps, cultural diversity and curse of digital divide.

2 Critical Review of IT Governance Frameworks

IT Governance is relatively a new term for governments that focuses mainly on return on technology investment [1]. This section critically analyzes IT governance frameworks for providing a logical view of the state of the affairs in this area. This research is geared towards discovering new directions for further research and exploring new vistas for discussions on the implications of e-governance. The new horizon of e-governance entails developing and creating

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appropriate IT structures to facilitate the masses by providing them opportunity to participate in government and corporate decisions. The existing frameworks classify e-governance into two separate streams - IT governance and IT governance contingency analysis - which follow a parallel path.

Identifying the critical success factors (CSF) for effectiveness of e-governance in the particular environment is imperative to tackle gray areas. The developing countries are facing serious challenges to undertake IT governance projects due to lack of investments, skilled manpower, and cultural constrains [2]. Dada [3] addresses the ground difficulties and issues regarding e-government practices in the developing countries. By retaining focus on cost-effective IT delivery, innovation and business impact, the developing countries can overcome the aforesaid e-governance challenges. E-governance mainly suffers from malpractices, low managerial autonomy, technical and cultural constraints etc. Strategic alignment, value delivery, risk management, resource management and performance management could possibly be the important CSF in e-governance. Effectiveness of e-governance may also be visualized by evaluating it at the global canvas.

Failure of e-government projects vary significantly due to context, time and view point. Probable reasons for failure include limited resources, privileged citizens, corruption, favoritism, bribery etc. along with mismatch between the ground reality and design of the systems. In this regard, three types of representative gap analysis can be conducted, namely, difference between actual technology and on ground social context (Hard-Soft Gaps), difference between private and public sectors (Private-Public Gaps) and difference between developing and developed countries (Country Context Gaps).

Tan *et al.* [4] report survey results of 50 Malaysian SMEs and state that the primary reason of hesitation of the corporate sector in adopting ICT is the fear of compromising business secrets and transactions. Whereas, the selection of proper ICT framework cannot only help overwhelm the security concerns but can also ensure better profitability in terms of cost, efficiency, growth, assets utilization and business flexibility. In this respect, collective team effort is required to take decisions on matters related to business improvement and ICT incorporation. Formal governance mechanism may be improved through coordinated flow of information on secure channels of communication. IT plays a vital role in almost every business process [5] and a well-defined e-governance framework is critical for making right decisions as it ostensibly outlines which decisions need to be made, who has to made decisions and who will contribute in decision making process.

E-governance applications, particularly G2C applications, are though reliable but insecure communication channels compromise their integrity [6]. Therefore, it is imperative to establish secure environment for hosting of government databases. Additionally, different applications corresponding to different e-governance models should be classified in accordance with their sensitivity to appropriation. In this perspective, the resource based model proposed by Acosta *et al.* [7] may be employed that encompasses issues pertaining to infrastructure and skills. A resource based view (RBV) of a model directly relates to the performance issues as usefulness of business processes determines the RBV logic. Intelligent use of Internet resources and electronic capabilities is central to enhance the business value. Incidentally, difference between Internet recourses and e-business capabilities needs to be ascertained as the former is merely an asset based technology while the latter is of strategic importance based on the effective use of IT. Governments mainly use Internet as a medium of communication with masses; therefore, the confidence level of the citizens can only be raised through ensuring security of the online applications [8]. A possible solution could be to use Nath's approach [16] that initially identifies the possible threats and vulnerabilities at the system level, followed by developing appropriate security architecture based on data location, data flow and transaction technique.

Flore and Gevrive [9] stress that empirical factors (e.g., organization structure and senior management support) and organizational factors (e.g., working environment) play a vital role in enhancing efficiency and performance of internal and external processes of the organizations. Gauging the efficacy of IT governance model is a key to access its worthiness and can be used as a benchmark.

Digital watermarks that are mainly used to protect intellectual property of individuals and businesses, can also be employed to further secure the e-governance and e-commerce applications [10]. However, digital watermarks for audio and video need to be invisible and robust; and for text data, they need to be invisible and fragile.

ICT can perform elegantly for better governance and facilitation to citizens through service production, economic activity, access to international market and resources [11]. Navarra [12] propose a framework to provide access to ICT in the remote areas; however, such frameworks have a limited horizon e.g., education, training, infrastructure development and basic e-services. The main objective to develop e-governance portals is to introduce knowledge management and connect governmental units. Certain factors adversely affect the implementation of e-government projects e.g., bureaucracy, political culture and regularity policy frameworks. Saviour *et al.* [13] report that only 9.76% of countries are extending the facility of high level interactions (i.e., end to end online transaction) to its citizens, and highlight how e-government tag is misused by different governments or organizations. Howard's three stage maturity model for e-governance [21] is extended to five phases by Saviour *et al.* [13]; and the revised phases

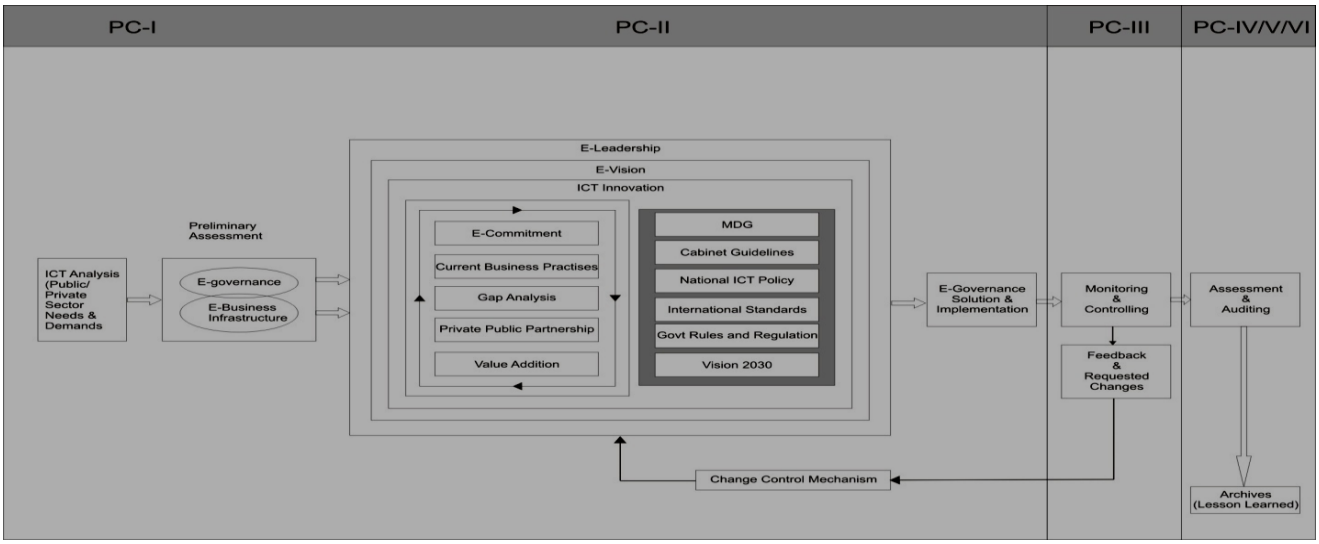

Figure 1. Proposed E-Governance Framework

include: *no website - only offline services exists; web URL is available – but website is under construction; publish - limited information is floated on website; interact – citizens correspondence through websites;* and *transact: citizens do effective business through websites*. Business processes and procedures should be in place for execution of e-governance projects [14]. For smooth operations of e-government, it is necessary to formulate comprehensive SOPs which should be followed in true letters and spirits. Since, the edifice of e-government is mainly dependent on the software applications and the ratio of software project failure is still higher as compare to the other commercial, construction and industrial projects [15]; therefore, it necessitates that software project management guidelines should be practiced meticulously during the development of e-government applications.

The development of citizen-centric applications is vital for putting e-government into practice. All such applications and systems should adhere to certain accredited standards and should be flexible, secure and dynamic. The literature survey reveals that though huge investments are made globally for better governance by using ICT potential, but the main objectives of e-governance like efficiency, effectiveness, transparency, accountability, timely and speedy service delivery are yet to be achieved. Nevertheless, effectiveness of e-government depends upon economic wealth, education, civil liberties and government's commitment.

3 Related Work and Research Motivation

Brown and Grant [1] delineate breakup of e-governance success factors as:- 10% technology, 60% processes, 20% change management and 10% purely luck. Kennan [19] emphasizes that there is a fundamental difference between e-governance and IT compliance, as the later deals with cost and does not confer benefit to business while the former always adds value to the business [4]. E-governance contemplates retrieving optimum ROI and achieving long term consistent value acceptable to all the stakeholders [20]. In short, extracting maximum returns from existing investment is the essence of e- governance [19]. E-governance is vital for growth oriented organizations in terms of cost, progression, better asset utilizations and business flexibility [4]. Spectrum of e-governance is so broad that it encompasses all areas of businesses - from ordinary shopkeepers to business cartels and from common citizens to top office-bearers in the government setups.

Sarbanes-Oxley Act introduced in USA in 2002 requires corporations to re-examine corporate governance structure to guarantee fiscal accountability to all stakeholders as companies have been made legally bound to revisit the framework for governance. The leading countries in the world are investing substantially in e-governance systems and projects as an effort to make the governance structure more efficient and effective. E-governance is an effective tool for bringing about more transparency, democracy, accountability and interaction in daily official business [13]. Navarra [12] considers that use of online portals and interactive software applications necessitates to be an integeral part of global ICT programme in order to provide electronic services to people around the globe.

Initially government, private and public enterprises used to benefit from newspapers, radio and television services to communication with their addressees [13]. After emergence of Internet, dynamic websites provide facility for masses to directly interact with the various companies and government offices. In this regard, emails and mobile technology has further facilitated the governance process. MIT researchers Peter Weill and Jeanne Ross extend the idea of e-governance by comparing it with IT Management by stating, "e-*governance is about systematically*

determining who makes each type of decision (a decision right), who has input to a decision (an input right) and how these people (or groups) are held accountable for their role. Good IT governance draws on corporate governance principles to manage and use IT to achieve corporate performance goals" [2].

People of the developing countries suffer adversely due to bad governance as there are many loopholes in their governmental procedures which are ultimately exploited by the unscrupulous authorities by treacherously dodging different accountability, audit and transparency mechanisms that are already in place. The quest for finding an effective solution to help curb the malpractices that hinder the good governance norms by exploiting the efficacy and potential of ICT led as a motivation for conducting this research.

The prime objective of e-governance is to deliver good governance through effective use of IT for making better, correct and effective decisions [4], decentralization and maximum public participation [22]. This entails that IT performance must be manageable, accountable and measurable and necessitates to be constantly monitored to mitigate IT risks. For this purpose, IT activities need to be aligned with enterprise/organization business and judicious use of IT recourses be ensured [9, 17].

4 Proposed E-Governance Framework

"It must be considered that there is nothing more difficult to carry out, no more doubtful of success, nor more dangerous to handle, than to initiate a new order of things" (Machiavelli).

Our proposed e-governance framework consists of a number of analyses and practices. The proposed framework is designed in such a way that it commensurate with the existing SOPs and policies formulated by the Government of Pakistan (Planning and Development Division) to initiate new projects. Before filing the PC-I (Project Concept-I) or PC-II (Project Concept-II), the following ICT analysis that includes planning and design activities must be completed. A brief description of these components is provided as under:

Assessment (Business Procedure): All types of assessments and feasibility studies should do before launching of PC-I or PC-II document.

Stakeholder Analysis (Identification): Analysis against each stakeholder must be done. Identification of the project sponsors, private public partnership, project dependencies, offshore and onshore stakeholders is necessary as a single institutional body is unable to conclude the e-governance projects.

Cost/Benefit Analysis: Cost/benefit analysis is essentially obtained through return on investment (ROI) technique. Economic feasibility plays a vital role in determining the scope, timeframe and quality of the project.

Strategic Gap Analysis: Strategic gap analysis is a forecasting technique in which the difference between the desired performance levels and the extrapolated results of the current performance levels is measured and examined. This type of assessment indicates what needs are to be met and what resources are required to achieve the goals of an organization's strategy. This land of assessment of strategy gap is often overlooked which is a threat to the future performance.

Current Business Practices: Current business practices determine ways and means to adapt a new system. Principle SOPs, regulation policies, legal framework, specialization of specific field, existing infrastructure, etc play a vital role in the success of e-governance project.

Project Management: Proper project management techniques and methodology are very useful to finalize the PC-I or PC-II documents and its subsequent execution.

Guidelines (Standards/SOPs): Standard for each business activity must be chalked out along with proper guidelines. Proper trainings and training manuals are required to be available for each user/stakeholder coupled with specific SOPs.

Security Parameters (S/W, H/W): All types of security parameters against proposed design must be spelled out and SOPs regarding software, hardware and application must be done before filing PC-I.

Risk Analysis/Plan: All types of risk analysis should be done at the conceptual level of the e-governance project as cost and time management are badly affected, if *known unknowns* surface during execution of e-governance projects. Risk mitigation plan must be in place for all types of indentified risks as new digital immigrants may have a novel understanding about the e-systems.

Staffing/Scheduling and Costing: Costing of resources along with proper scheduling plan and induction of trained staff will help HR module of PC-I of the e-government project. Costing will also help determine the budget estimate.

Audit, Controlling & Monitoring and Resource Based Management: Proper audit, controlling and monitoring mechanism must be in place, which is monitored at PC-III level (Monthly Progress Report), PC-IV (Project Completion Report), PC-V (Annual Report or Yearly Evaluation Report) and finally PC-VI a final report generated after the lapse of five years since project comes into operational state.

After ICT analysis, our proposed framework divides the demands and needs into the following three areas:

- E-Governance
- E-Business Infrastructure

- Combination of both E-Governance and E-Business Infrastructure

Simple form of e-governance instigates when ICT is introduced in public service delivery i.e. simple digital translation of the existing services. E-governance always evolves gradually but eventually transforms the system dramatically as it becomes more result oriented, swift, user friendly and transparent as it leads to efficient delivery of services and facilitation at doorstep. E-governance includes e-democracy, e-government and e-business. The e-governance leads to ICT socialism as e-governance basically evolves from e-transactions, which support the critical high level functions of public management. It also improves communication channels between intra-government and citizens which results in a highly integrated networked government. Such e-governance covers design help in implementation, monitoring and evaluation of public policies and programmes as well as development of legislation and high level decision making on complex and social problems..E-governance provokes decentralization activities which lead to engaging citizens in the decision-making process and enables government to embrace a kind of 'ICT socialism'. Thus, ICT enables the governance process towards proactive participation of citizens in government matters, achieving more reliable, cost effective and transparent system.

E-business infrastructure is the collection of hardware, platforms, communication networks, software applications, databases and the business rules governing the flow of data, both internal and external to the systems. Integration of components into cohesive systems is achieved through customization, pre-built adapters and gateways, application to application inter-operation technologies, web services, distributed object protocols, cross platform development tools and languages-business infrastructure in the form of interconnected basic e-business elements that help in implementing individual e-business cases. In this perspective, comprehensive integration of enterprise partners is essential to streamline business processes and to develop effective collaboration amongst them for utilizing the extended trading network value addition.

Strong commitment for stakeholders particularly is required at every step of ICT innovation. In a society where citizens are demanding better service, the public service needs to adopt appropriate private sector tools to reengineer processes and reduce costs. In response, public administrations are developing a service culture where citizens are treated more like customers. The public service can learn from the private sector about how to institutionalize personal incentives to encourage innovative e-government activity. Institutionalization of new business processes is need of time and can be achieved by adopting modern technology, improving the management information systems and introducing new management control systems.Business acumen allows the public service to replace outdated systems, to become more cost-effective, efficient and accountable and to standardize practices for quality and equity in service delivery. These are consistent with the needs of a national ICT plan.

Strategic gap analysis is another tool. Heeks (2001) asserts that without internal ownership, e-governance initiatives may never be developed and without external facilitation, e-governance initiatives may never be successfully implemented. The strategic gap analysis approach is fundamentally different. It first seeks to understand underlying political and social systems, through direct interaction with countries and regional agencies that create desired changes. Strategic gap analysis involves building partnerships from the outset, with a strong focus on localized action and on creating both broad and local ownership. Stakeholders are invited to participate in the decision-making process and to commit to subsequent actions.

E-governance project cannot simply run one agency. From Internet connection to the purchase of system, a public private partnership is essential for every e-governance activity. The next tool concerns integrated, multi-stakeholder partnerships. Bennis (1993: xxvii) envisages that tomorrow's organizations will be federations, networks, clusters, cross-functional teams, temporary systems, ad hoc task forces, lattices, modules, matrices and almost anything excluding pyramids. These virtual organizations help organizing resources to accomplish those projects where the time and expense of acquiring and owning resources are not otherwise affordable. In the private sector, a virtual corporation can be a network of independent suppliers, customers and competitors linked by ICTs to share skills, costs and access to markets. A focus on greater interests, rather than authority, helps maintain organizational integrity. Social capital can be measured by the degree to which organizations collaborate and cooperate through mechanisms such as shared networks, norms, values and trust to achieve mutual benefits. New innovation adds more value to the system. Sometime due to value addition as major factor, whole system may be revisited.

Millennium Development Goals (MDG), Cabinet Guidelines, National ICT Policy, International Standards, Government Rules and Regulation, Vision 2030 serve as legal and regulation framework for all types of work within and outside e-governance projects.

Innovation is central to the purposed framework. These innovations dramatically convert the society into a digital being. Although new digital immigrants may resist some change but e-leadership coupled with e-vision drive the things more smoothly.

E-leadership covers the top most layer of proposed framework and is the backbone of the system. Very true to the famous quote 'LEADER SHOULD LEAD FROM THE

FRONT' a leader has to exhibit a strong will fore-government project. The goals of leadership have not changed and an e-leader needs to implement those goals electronically on computer-mediated virtual teams that are dispersed over disparate region. The idiosyncrasy in this episode is that e-leader may never physically meet some of the team members but all time he/she has to in contact with stakeholders of the project. The new paradigm provides a range of new opportunities: the ability to instantly communicate one-on-one with employees, customers, and suppliers; the opportunity to enhance organizational performance by assembling better multi-functional teams to improve better customer satisfaction by using the "follow the sun" methodology; the ability to cut costs; and an opportunity scope for better knowledge management. These factors can positively impact an organization's competitive advantage. However, e-leaders also have new challenges: how to bridge the physical distance from the followers; how to communicate effectively with far-flung team members; how to convey enthusiasm and inspire followers electronically; how to build trust with remote posted colleagues. Therefore e-leader must have clear cut plan on every aspects of the system.

Without E-vision, one cannot derive thing more effectively. E-vision holds information and plan for all types of project condition even during operations. E-Leader must have the right vision and theoretical knowledge is basically a vision documents where every good or bad situation must be well predicted and have appropriate solution to cope all types of events. A vision document defines the high-level scope and purpose of a program, product, or project. A clear statement of the problem, proposed solution and the high-level features of a product help establish expectations and reduce risks.

The framework is divided into different phases. Initially, a new project or up-gradation of the existing project is evaluated by the ICT team and ICT stakeholders based on proposed needs and demands. This categorization is being done on the basis of nature of the project. The proposed project phases are as follows:

PC-I (Project Concept-I),PC-II (Project Concept-II),PC-III (Project Concept-III),PC-IV (Project Concept-IV),PC-V (Project Concept-V),PC-VI (Project Concept-VI).If the E-Governance project is critical or is of sensitive nature or require extra funding, then PC-II document shall be filed initially. On the basis of PC-II a pilot project shall be launched, which determines the success of full project. Different success milestones and targets are set and if all are achieved then PC-I shall be filed on the basis of PC-II. If PC-II shall fail then project does not proceed further and is terminated as unsuccessful project.

E-Governance solution and implementation is our critical stage of this proposed framework where thing must be critically review before implementation. Following design activities must be in consideration before finalization of the design and architecture of the system.

Business Architecture: The Business architecture describes different rules of business and the associated government functions that cut across the boundaries of different agencies and align department.

Solution Architecture: The solution architecture describes the common applications and application components that can be shared across the government setup. It includes the technical standards and security considerations pertaining to the design and implementation of solutions and applications.

Information Architecture: The information architecture lists the data definitions and data elements of common and shared data. Being part of the initial baseline scope, it describes data pertaining to people, establishment and land information hubs which are frequently used by various applications used different agencies. It also defines technical standards, design and security considerations and best practices related to the data management.

Technical Architecture: The technical architecture defines the infrastructure technologies and their respective technical standards to enable better system integration and interoperability. Similarly to other phases it also defines the security considerations and standards related to the infrastructure technologies.

E-governance project shall be deployed after comprehensive designing and necessary level of support and maintenance. The monitoring of project by a standing committee of experts is key to the successful execution of e-governance projects.

Linking it with PC-III monitoring, evaluation and controlling of IT resources, its performance is assessed on monthly and in some cases on weekly basis. For this purpose comprehensive reports are generated in our proposed e-government framework. Change management procedures/plans are adopted to cater for the required changes by the stakeholders. Hence, the entire system works in a cyclic fashion.

A detailed comprehensive report is required to be released when project comes into operation after system assessment, verifications and audit in PC-IV phase of the proposed framework. Monitoring process shall continue and annual report is released which reflects benefits, achieved targets, efficiency and performance. The final project reports thus produces are used for preparing project data dictionaries and updating the lesion learned reports. All the e-governance related projects documents needs to be archived for future reference.

5 Discussion and Validation

We have drawn a comparison of our model with the existing e-governance frameworks to validate proposed

framework. For validation purposes, we have used two case studies namely, 'Introducing a New e-Governance Framework in the Commonwealth: From Theory to Practice' [22] and 'Oman eGovernance Framework' [23] that have certain features and functionalities similar to our proposed framework. Both the case studies initiate the e-governance project by the comprehensively analyzing the needs and demands of the citizens by organizing feasibility aspects like economy, technical, legal, etc. Afterwards, by carrying out ICT analysis we can categorize the e-governance projects into their respective domains.

Gessi [22] explains that e-governance grooms a network oriented government structure where all major decisions are based on shared vision and collectively implemented by all stakeholders particularly the citizens. Both frameworks integrate ICTs with public sector reforms which promote transparency, accountability, and public participation and shared decision making. The success rate of the project enhances if all level participation increases as confidence level becomes higher. Similarly different e-activities, e-products and e-services are taken into account to coup up conventional governance issues. Our proposed framework and the framework proposed in the first case study encourage change and redesign roles and processes to achieve good governance based on ICT. However, both the frameworks are neither exhaustive nor accommodate change but strong monitoring mechanism makes them successful.

Here in our proposed framework, e-leadership wraps up as a top layer. The capacity to drive the vision and to motivate others having a clear vision about change is formulated only if the e-leadership is strong. Scope of ICT based projects, long-term and short-term organizational strategy can only be constituted if the e-leadership is in place because short and long milestone achievements, risk identification and its mitigation and cultural diversity can be materialized by envisioning the ground realities. E-leadership tag works in both the frameworks in a similar way which is different from the conventional approach i.e. 'think big, start small, scale fast'.

Both the frameworks support better services, overhauling of the whole current business practices by reframing the existing ones and choosing the best amongst them, customizing the needs and demands, encourages private sector to involve in better services which is cost-effective and efficient. Both frameworks encourage considering citizens as client so that their confidence can never be shacked. However, citizen's feedback or voice of customer is vital for improvement of the business practices.

Both the frameworks emphasize on conducting gap analysis. Tailoring of e-governance project activities into demand driven requests plays a vital role in both the frameworks. Critical analysis and monitoring of gap analysis will determine the success of the e-governance project. Strategic gap analysis involves engaging the partnership from the outset, with vigilance on local action and on creating both broad and local ownership. All stakeholders are involved in all types of decision making process. For this purpose, a facilitated process must be generated based on the bottom up approach that builds broader ownership and develops consensus among the stakeholders. Both the frameworks encourage multi-stakeholder partnership thus broadening the spectrum of recourses. This type of approach would help selecting the best expertise in the available pool of horizon of choices on the basis of cost effectiveness and availability of appropriate support services would lead to the successful projects. E-governance project become networked among different stakeholders and its partnerships having different aptitude and collaborative approaches.

In our proposed framework, designing and implementation of the solution have more similarities with the 'Oman eGovernance Framework' [23]. In business architecture designing, both the frameworks follow the rules of business and associated government functions. In solution architecture, both the frameworks describe the common applications and software components along with technical standards and security considerations. Similarly, information architecture highlights the data elements of common and shared data. Technical architecture defined in both the frameworks emphasis on deploying the necessary infrastructure technologies and adopting appropriate technical standards. Both frameworks give more emphasis on security configuration for solution, information and technical architecture. The comparison of our model with both the case studies is shown in Table I below

6 Conclusion and Future Work

This study looked into the current state of IT governance and in particular, the study focused on the progress made in this regard by the developing countries. Since e-governance aims at providing access to information to the citizens in order to enable them to contribute towards good government practices, thus this form of governance can be more beneficial for socio-economic uplift of the masses. The study discovers that though implementation of e-governance practices requires substantial investments but the returns are far reaching. Moreover, e-governance can especially be more useful to bring about transparency in the state affairs and control corruption in the government functionary. E-governance is all about empowering masses through involving them in decision making process and providing across the board access to services to the general public.

As a future work to this research, we intend to look into the strategies to revamp the e-governance practices particularly with reference to developing countries in order to align IT governance with the business strategy. The focus of the future research investigations will spell out

strategies that can help curtailing corruption in the government business affairs.

Table 1. Comparative Results.

S/N	Approach used in the existing frameworks	Limitation	Approach used in our framework	Benefits/Advantages
1	ICT Analysis	Time consuming	ICT Analysis	Demand and needs analysis.
2	-	-	Target is cleared as Value Addition module works bottom to top approached.	Value Addition
3	Monitoring and Controlling Mechanism	Slow the momentum of the project.	Strong monitoring and controlling mechanism. Monthly, yearly and periodically monitoring of e-governance projects.	Scope, Cost, Quality and time are well measured.
4	-	-	Focused/targeted approached is adopted	Result oriented
5	-	-	Internal Change Control Mechanism	Changed Control
6	Long Cycled	Phasing	Short Cycled	Adopt Change speedily
7	Good for small e-governance projects	Project size	Effective in both small and large e-governance projects	Independent from project size
8	Theoretical approached is used		Practical based	Good for academia and research purposes
9	High risk involved		Less risk	
10	Liberal	-	Standard Based having strong boundaries	Success rate become high if standards are to be followed
11	Team work	Dependencies	Team of diverse nature and expertise and business	Private Public partnership or multi stakeholder partnership
12	Less Scalable		Scale	Incremental and decremented, both ways adoptive.
13	Support agile methodology	Less documentation	Do not support agile methodology	Every step is well calculated and written

References

[1] Allen E. Brown, Gerald G. Grant "Framing the Frameworks: A Review of IT Governance Research" Communications of the Association for Information Systems 15.1 (2005): 38.

[2] Nfuka, E. N., Rusu, L. Critical Success Factors For Effective IT Governance In The Public Sector Organizations In A Developing Country: The Case Of Tanzania. 18th European Conference on Information Systems. 6-9 June 2010.

[3] Danish Dada, "The Failure of E-Government in Developing Countries. A Literature Review" The Electronic Journal of Information Systems in Developing Countries 26 (2006).

[4] Tan, Khong Sin, Wil Ly Teo, and Kim Piew Lai. "The applicability of information technology governance in the Malaysian SMEs." Journal of Innovation Management in Small and Medium Enterprises 2011 (2011): 1-10.

[5] Khong Sin Tan, Wil Ly Teo and Kim Piew Lai. 17th European Conference on Information Systems "Developing A Framework For IT Governance in the Post-Merger Integration Phase" 8-10 June 2009.

[6] Saha, Shilpi, et al. "Model Based Threat and Vulnerability Analysis of E-Governance Systems." International Journal of U-& E-Service, Science & Technology 3.2 (2010).

[7] Acosta, Pedro Soto, Ricardo Colomo-Palacios, and Euripidis N. Loukis. "A review of the RBV of the firm within the e-Business literature: What's next?" Interdisciplinary Journal of Research in Business 1.1 (2011): 45-52.

[8] Saha, Shilpi, et al. "Model Based Threat and Vulnerability Analysis of E-Governance Systems." International Journal of U-& E-Service, Science & Technology 3.2 (2010).

[9] Waldo Rocha Flores and Marlene Gevriye. "Surveying experts on IT governance factors and their impact on underlying goals." 8thInternational Conference on Enterprise Systems, Accounting and Logistics (8th ICESAL 2011) 11-12 July 2011, Thassos Island, Greece

[10] S.S.Sherekar, V.M.Thakare, Sanjeev Jain. "Role of Digital Watermark in e-governance and e-commerce impact on underlying goals". IJCSNS International Journal of Computer Science and Network Security, VOL.8 No.1, January 2008.

[11] Thompson, Mark, and Geoff Walsham. "ICT research in Africa: need for a strategic developmental focus." Information Technology for Development 16.2 (2010): 112-127.

[12] Navarra, Diego D. "The architecture of global ICT programs: a case study of e-governance in Jordan." Information Technology for Development 16.2 (2010): 128-140.

[13] Nwachukwu, S. L., et al. "A cross-national analysis of e-government implementation: a research note." Information Systems 9.2 (2008): 494-499.

[14] Rituraj Jain, Shefali Jain, V Sambasiva Raju. Study of Success and Failure of E-governance Journal of Advances in Developmental Research 2 (2) 2011: 299-302.

[15] Sukhoo, Aneerav, et al. "Accommodating soft skills in software project management." (2005).

[16] Nath, Vikas. "Digital Governance Models: moving towards

good governance in developing countries." (2003).

[17] IT Governance Institute. Rolling Meadows, IL, 60008 USA. http://www.itgi.org/

[18] Mete Yildiz, Performance Indicators and E-Government Projects. A Performing Public Sector: The Second Transatlantic Dialogue Conference, Workshop 5: Emerging and Other Strategies for Productivity and Performance. May 18,2006

[19] Parker, B. "Study Reveals Extracting Value is Top IT Governance Imperative,'" Manufacturing Business Technology, 23 (10) 44 (2005).

[20] Weill, Peter, and Jeanne W. Ross. IT governance: How top performers manage IT decision rights for superior results. Harvard Business Press, 2004.

[21] Howard, Mark. "E-government across the globe: how will" e" change government?" Government finance review 17.4 (2001): 6-9.

[22] Gessi, Tania, Devindra Ramnarine, and John Wilkins. "Introducing a New E-Governance Framework in the Commonwealth: From Theory to Practice." Asia Pacific Journal of Public Administration 29.2 (2007): 131-151.

[23] http://www.ita.gov.om/itaportal/Government/Government_Projects.aspx?NID=76, P.O. Box - 1807,PC 130, Al Athaiba,Sultanate of Oman,Phone:(+968) 24166600,Fax:(+968) 24166604,Email:eOman@ita.gov.com