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From Governance to e-Governance: A Way Forward

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Abstract: IT governance or e-governance refers to technology driven governance for better interaction 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 all government policies, plans and procedures as well as addressing 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 and with the primary objective to focuses on e-governance initiatives to promote transparency and accountability in public affairs as well as to curb corruption.

1. Introduction and Background

E-governance has brought about new prospects for all types of organizations, 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, mobiles 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 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 and 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 system, services and procedures; communication gaps and cultural diversity.

2. 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 IT 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].   IT

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 IT governance [19]. IT governance is vital for growth oriented organizations in terms of cost, progression, better asset utilizations and business flexibility [4]. Spectrum of IT governance is so broad that it encompasses all area of business - from ordinary shopkeeper to business cartels and from common citizen to top government office-bearer.

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 being 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 respective 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 and state, "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 group) 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 developing countries suffer adversely due to bad governance due to many loopholes in their governmental procedures which are ultimately exploited by the unscrupulous authorities by treacherously dodging different accountability, audit and transparency mechanisms 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 of ICT led as a motivation for conducting this research.

3.   Insight into e-Governance Approaches

The prime objective of IT governance is to deliver good governance through effective use of IT for making better, rightly and effective decisions [4]. 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].

3.1 IT Governance Players

Since IT governance takes place at different levels, therefore, standardized operating procedures should be laid and proper mitigation plans be in place to resolve differences and deviations that occur at any level [17]. Stakeholders are always the central player in any project, process or activity, and interestingly the significantly broader spectrum of IT governance absorbs everyone including the general public into the stakeholder list of IT governance processes.

3.2 IT Governance Responsibilities

The design and strategy of IT governance is always specific to a company or organization. IT governance actually corresponds to elaborating which decisions to be made, identifying who will make the decisions and recognizing who contributes in decision making process [5]. IT strategy formation, managing risk, risk mitigations, resource allocations, values performance measurement are the key IT governance responsibilities.

3.3 IT Governance Models

IT Governance model are classified into five main areas depending upon the nature of the governance styles. The first model named as broadcasting model is based on dissemination of information to general public. This type of model brings into net a larger part of the population through effective use of ICT mainly the Internet [6]. As more citizens are linked through this model, thus a larger range of opinions about the functionality of the existing governance mechanisms become available.

The second model names as critical flow model is based on dissemination of information of critical nature to the limited targeted audience (e.g., media, judiciary, parliamentary committees and local governments etc.) using ICT or broadcasting media.

The third model, called as comparative analysis model is used to compare and analyze bad governance practices and vice versa. This model is of high significance but is least used. Good practices ultimately evolved through this approach.

The fourth model is known as e-advocacy/lobbing and pressure group model which takes into account the impact of global civil society on global decision making in broad spectrum. The main strengths of this model include diversified virtual community, thrilling ideas, expertise etc.

Interactive-service model stands fifth in the category of e-governance models. This model opens up new horizon for all citizens to directly participate or interact with government and organizations in formation or execution of governance policy and plans. This model leads toward the transparency and accountability on part of the government.

3.4 IT Governance Classification

IT governance frameworks are classified into self-explanatory seven major categories including G2C (Government to Citizen), G2B (Government to Business), G2E (Government to Employee), G2G (Government to Government), C2G (Citizen to Government), G2SC (Government to Civil Societal Organizations) and C2C (Citizen to Citizen) [18].

3.5 IT Governance and Strategic Alignment

IT governance needs to be strategically aligned with organizational objectives and key business interests. Therefore, emphasis should be given to perform IT governance under the boundaries of the organization's legal, technical and cultural norms. IT governance lifecycle consists of several phases and major stress areas for IT governance are strategic alignment, IT value, risk management, recourse management and performance audit. For this purpose, the worth of IT significance is determined from the parameters like co-relating system with respect to efficiency, cost-effectiveness of IT deliverance, impact of IT on overall business etc [2].

3.6 Conceptual Framework for IT Governance

Besides the core technical aspects, IT governance framework also caters for the soft aspects like organization and strategy [5]. A conceptual framework for IT governance is divided into two streams. The first stream is known as IT governance forms that deals with decision making structure adopted by the IT organizations. There are two types of IT decision making structure - centralized and decentralized – which are essentially based on IT infrastructure. In centralized governance, decision making is done by the central body while in de-central governance, decisions are taken at individual or unit level. In vertical expansion, centralized and decentralized IT governance structures are treated as absolute unit whereas in horizontal expansion, centralized and decentralized IT organization are synergized. The second stream is based on IT governance contingency analysis that is primarily based on 'why' and 'how' types of questions. Aim of this analysis is to choose the best option which is more appropriate for the organization and to find the factors that affect individual IT governance framework success [1].

3.7 IT Governance Process and Strategies

There are several strategies to be adopted for the development of a framework for IT governance. Some of the IT governance strategies are replacement, adoption, standardization and synchronization [5]. IT governance process starts by explicating strategic objective of the enterprise. Afterwards, a repetitive process starts to measure the performance vis-à-vis the outlined objectives. This performance audit may require redirection of the activities to achieve the predefined objectives. A comprehensive analysis of IT governance reveals that key responsibilities lies with board of directors, executives and management [17].

4. Critical Review of IT Governance Frameworks

IT Governance is relatively a new term for governments and that focuses mainly on return on technology investment [1]. This paper is an effort to critically analyze IT governance frameworks for providing a logical view of the state of the affairs in this research area. This research is targeted to discover new directions for further research and open new vistas for discussions on the implications of IT governance. The new horizon of IT governance entails developing and creating

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

Identifying the critical success factors (CSF) for effectiveness of IT governance in the particular environment is imperative to overcome 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 IT 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 IT governance challenges. IT 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 IT governance. Effectiveness of IT governance may also be visualized by evaluating it at the global canvas.

IT government does not mean computerization of a government system; actually it means facilitating government and its citizens. Failure of e-government projects vary significantly due to context, time and view point. Probable reasons for failure are 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 of business secrets and transactions. Whereas, the selection of proper ICT framework can not 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 regard, 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]. Well-defined IT 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 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 data. Additionally, different applications corresponding to different e-governance models should be classified in accordance with its sensitivity to appropriation. In this perspective, the resource based model proposed by Acosta et al. [7] may be employed that encompasses the 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 later 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, 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 prominent factor to determine its worth 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 scope 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 [21] for e-governance is extended to five phases by Saviour et al. [13]; and the revised phases 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 SOP 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 compared 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 not achieved. Moreover, effectiveness of e-government depends upon economic wealth, education, civil liberties and government's commitment.

5. Conclusion and Future Work

This study looked into the current state of IT governance. In particular, the study focused on the progress made in this regard in 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 huge 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 would be spell out strategies that can help curtailing corruption in the government businesses.

References

[1] Allen E. Brown, Gerald G. Grant "Framing The Frameworks: A Review of IT Governance Research"

[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 "

[4] Khong Sin Tan, Wil Ly Teo and Kim Piew Lai "The Applicability of Information Technology Governance in the Malaysian SMEs"

[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] Anil K. Kaushik, Chandan Mazumdar, Jaya Bhattacharjee, Shilpi Saha, Model-driven Security Analysis of E-Governance Systems

[7] Pedro Soto Acosta, Ricardo Colomo-Palacios, Euripidis N. Loukis, A review of the RBV of the firm within the e-Business literature: What's next?

[8] Shilpi Saha, Debnath Bhattacharyya, Tai-hoon Kim, Samir Kumar Bandyopadhyay, Model Based Threat and Vulnerability Analysis of E-Governance Systems

[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] Mark Thompson,Geoff Walsham. ICT Research in Africa: Need for a Strategic Developmental Focus. Information Technology for Development, Vol. 16, No. 2, April 2010, 112–127

[12] Diego D. Navarra, The Architecture of Global ICT Programs: A Case Study of E-Governance in Jordan

[13] Saviour L. S. Nwachukwu, Syed Musab Khalil, Ashagre Yigletu, Donald R. Andrews,"A Cross-National Analysis of E-Government Implementation a Research Note"

[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] Aneerav Sukhoo, andries barnard, Mariki M. Eloff, John a. Van der Poll "Accommodating Soft Skills in Software Project Management", University of South Africa, Pretoria, South Africa.

[16] Vikas Nath, Digital Governance Models: moving towards good governance in developing countries

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

[18] Mete Yildiz, Performance Indicators and E-Governement Projects.A performance Public Sector, Workshop:Emerging and other strategies for productivity and performance

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

[20] Weill, P. & Ross, J. W. (2004). "IT Governance: How Top Performers Manage IT Decision Rights for Superior Results," Watertown, MA: Harvard Business School Press.

[21] Howard M. (2001) E-government Across the Globe: How Will "e" Change Government. Government Finance Review, 17(Part 4): 6-9.