

## **THE STRATEGIC ROLE OF INFORMATION TECHNOLOGY IN E-GOVERNMENT: A CASE OF NEPAL**

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### **-Abstract-**

Information technology (IT) strategies are organized and long-term approaches to connect government with citizens. Federal, state, and local governments are investing in the development of IT strategies to promote their e-government goals. E-government improves and enhances the infrastructures and services provided to the citizens. The purpose of this paper is to investigate the strategic role of IT in e-government. The findings of this study indicates that better configuration of IT strategies with different projects, clear legislation, implementation guidelines and standards are required. A detail analysis of citizen participation can be performed from literature, general practice, incentives and organization to highlight,

investigate, and discuss major issues regarding the public participation challenges in e-government. This is an important IT implication in this paper that provides contribution to theory and practice of e-government. The major findings of this study are useful for decision makers, policy makers and also valuable for actual understanding of the needs of the citizens.

**Keywords:** *Information technology, e-government, strategy, information systems*

**JEL Classification:** O03

## 1. INTRODUCTION

Governments in different countries have acquired remarkable development in e-government initiatives during the last ten years. E-government is the technology-enabled alteration and transformation of governments for the reduction of costs, for the increase of transparency, and for the enhancement on service delivery and public administration (Irani et al., 2006). Curtin et al. (2004) define e-government as the use of information and communications technology (ICT) by governments and their agents to increase operations, the delivery of public information and services, citizen engagement and public participation, and the process of governance. According to Leet al.(2008), e-government is the process of delivering information and services to citizens, business, and public administration online by the government. The development of any country is almost depends on the advancement in developing the technology in different fields. The new technology with young minds creates a synergy both in knowledge and resource utilization (Jai Ganesh and Nagarajan, 2013). IT provides increased operational competence by reducing costs and increasing productivity, and better quality of services provided by government organizations(Gil-Garcial et al., 2003, Gajendra et al., 2012, Burn and Robins, 2003). Srivastava (2011) developed a model that outlines government and public areas where e-government provides better outcomes.

Recent studies in e-government implication indicate a strong impact of optimism, publicity and lack of balance in e-government functioning (Heeks and Bailur, 2007). The use of digital infrastructure for governance is accepted worldwide (Jaeger, 2003; Riley, 2007). Adoption of web-based technologies to deliver government services has become a universal trend in public administration. IT, thus, is the reinforcement driver of e-government (Lee and Kim, 2007). The studies of information use in government focuses on the design and use of ICTs in the public sector as well as on the implication of IT in inter-governmental collaboration. An exhaustive understanding of the design and use of IT requires the study of institutional strength and composition.

The purpose of this paper is to investigate the strategic role of IT in e-government. Jaeger (2003) believes that e-government include the use of other ICT, such as database, networking, discussion support, multimedia, automation, tracking and tracing and personal identification technologies. E-government is not about the use of technology, it is the relationship among technology, policy and various stakeholders, which come together to construct and offer improved services to citizens. Technologies by themselves do not define what e-government is and what it will be (Yildiz, 2007). However, unpredictable IT infrastructure in government organizations will minimize the e-government performance. The shortage of IT skills is also a barrier, which contends a number of challenges regarding the efficiency of a public administration to provide modern e-government services (Heeks, 2006; Ho, 2002).

This study is divided into seven sections including these introductory comments. Section 2 frames the discussion about IT strategy and e-government literature and relevance issues. Section 3 describes the theoretical foundation of the study. Section 4 presents research model and hypotheses development. Section 5 presents methodology and results of this study. Section 6 includes discussion of this study along with theoretical and practical implications and limitations. Finally, the article offers some conclusions and recommendations.

## **2. LITERATURE REVIEW AND THEORETICAL BACKGROUND**

Information quality was found to be a major variable during information retrieval from the state website. Moreover, service quality, perceived ease of use and transaction security is important variables which influence the public intention to execute transactions with the government (Rehman and Esichaikul, 2011). The introduction of IT is undergoing a period of eight to 10-year growth when technology investments are growing twice faster than the economy, followed by a similarly long period when technology investments are growing at the same pace as the economy (Loesch, 2012). Global IT development has belief over local economies influence because information sharing on new products in internet is highly significant and rapid delivery as well. The key problem relating to the high failure rate of e-government projects is the lack of awareness about the potential factors that may assist citizens to adopt e-government services (Sang and Lee, 2009). The eagerness of the citizens to adopt e-government is the most important issue for successful e-government implementation of (Shareef et al., 2009). Bwalya (2009) developed a model combining existing models with ICT infrastructure and culture awareness.

Grant and Chau (2006) proposed an e-government framework to categorize, classify and evaluate e-government system. An effective definition of e-government was started to find out the building blocks of e-government. Some important drives of e-government strategies are political and economic factors, vision, and requirements of each nation. Political spirit is vital to initiate any e-government projects, and strategic vision facilitates for planning and proper implementation of e-government (Heeks, 2006; Rabaiah and Vandijck, 2009).

E-government development is disrupted by lack of resources and infrastructure in developing countries (Heeks, 2003; Mofleh and Wanous, 2008; United Nations, 2013). Some components such as inequality and poverty cause digital divide in diffusion of e-government (Heeks, 2006; Heeks and Bailur, 2007; United Nations, 2013). Another key issues are e-democracy, e-politics and cyber laws (Mofleh and

Wanous, 2008; United Nations, 2013). TAM was broadly used in e-government study to investigate attitude toward e-government and citizen behavior (Wang and Doong, 2010; Martin and Rice, 2010, Zhao, 2011). Various technology adoption models have been applied to e-government studies by several researchers (Ahmad et al., 2012; Rehman et al., 2012; Venkatesh et al., 2011). UN (2012) and Kumar et al. (2007) have emphasized this dilemma, finding that the rate of adoption of e-government is low around the world, although some countries are performing better than others.

Impact-oriented indicators should be well considered that includes public service quality, user satisfaction, innovation and evaluation of e-government services (OECD, 2011). Other factors are quickness in the public sector, openness, transparency and public participation and effective policy implementation. There is a need to observe improving policy factors for e-government capacity building, common standards, security guidelines, quality, completeness, depth and spread of services, coordination, mindset, etc (Kalsi and Kiran, 2012). The emergence of e-government is witnessed due to the developments in ITs that are harnessed to provide the operations of government services (Alkhaleefah et al., 2010, Krishnan and Thompson, 2011).

The rapid enhancement of technology is contributing to the expansion of IT. The organizational management of IT-enabled transformations is still remained limited (Tan et al., 2005; Irani et al. 2006; Alshawi et al., 2007). A requirement of the implementation of e-government to re-invent government services using IT has great importance in recent years (Kawalek & Wastell, 2005). Complexity and compatibility as well as relative advantage have been found to be significant in e-government adoption (Alomari et al., 2010). Henriksson et al. (2007) argue for evaluating public sector websites with security and privacy policy, quality of information, usability, functions and public participation. Zhu et al. (2007) discovered that the transparency, accessibility, usability and interactivity are e-government web sites evaluation parameters.

### **3. RESEARCH MODEL AND HYPOTHESIS DEVELOPMENT**

The major aim of this study is to investigate the strategic role of IT in e-government. Based on widespread literature review the conceptual model was developed. The first part of the block is pre-requising factors for e-government adoption. The variables are trust, website design, service quality and satisfaction. In this case these variables act as independent variables towards e-government adoption. In addition, IT standards and e-government strategy act as independent variable on e-government adoption. The contribution of mediating variable is to link motivating constructs and influencing constructs in e-government. All these variables were developed from literature review.

#### **3.1.Trust**

The importance of trust in e-government adoption is vital based on previous studies (Be' langer and Carter, 2008; Carter and Be' langer, 2005; Welch et al., 2005). Belanger and Carter (2008) provided confirmation empirically by evaluating the influence of trust in government over e-government adoption. They found that trust in government is a significant factor influencing public intention to use e-government. Priorresearch has comprehensively recognized trust in the internet as a significant predictor of e-government services adoption (Carter and Be' langer, 2005; Chang et al., 2005) and this study recognizes its importance. Based upon the above arguments we propose the first hypothesis as:

H1: Trust is positively and directly associated with e-government adoption in online platform.

#### **3.2.Website design**

E-government website was investigated to be a strong predictor of actual systems usage in the information systemsstudy(Chau and Hu, 2001; Venkatesh et al., 2003). User-centered websites are important for governments as e-government websites are becoming the significant medium for electronic transaction between citizens and government (Becker, 2004). Bertot and Jaeger (2006) mention that

user acceptance is critical factor in establishing user focused e-government services. Different studies show that well-designed and attractive contents on government websites play critical role to provide citizen satisfaction (Smith, 2001; Wang et al., 2005; Gajendra et al., 2012). Thus, we propose following hypothesis:

H2: Website design is positively related to e-government adoption in online environment.

### **3.3.Service quality**

Service quality is important variable to perform transactions with the government (Rehman and Esichaikul, 2012). The government should pay more attention on how information will be delivered and organized to the people (Stiftung, 2002). Parasuraman et al. (1988) developed a scale to measure quality which is called 'SERVQUAL'. The components of the scale are responsiveness, assurance, tangibles, reliability and empathy. A complete service quality impacts satisfaction and adoption (Reichheld et al., 2000). The quality of service plays a vital role in e-business. Sureschander et al. (2002) found five critical factors that are essential in measuring service quality: human element of service delivery, tangibles of service, core service or service product, system inaction of service delivery and social responsibility. Thus, higher quality of service will provide greater customer satisfaction.

H3: Service quality positively influences e-government adoption

### **3.4.Satisfaction**

Online services will lead to increase satisfaction among citizens and acceptance of the public services (Stiftung, 2002). Technology facilitates to identify a website where delivery of services could be monitored to meet the individual needs to enhance the satisfaction of citizens from government services (Gilber and Balestrini, 2004; Gajendra et al., 2012). E-government adoption is measured by the level in which the government can provide trouble free services, rich and engaging support for public satisfaction. Thus the customer satisfaction is

measured by transactional satisfaction and overall satisfaction (Shanker et al., 2003).

H4: Public satisfaction in online platform positively effects e-government adoption

### **3.5.E-Government adoption**

The successful adoption of e-government services is important for governments. Warkentin et al. (2002) define adoption as the intention of people to involve in e-government services in order to collect information and request services from the government. Carter and Belanger (2005) evaluate it as intent to implement, while Gilbert and Balestrini (2004) examine as intention to use e-government services. Both willingness and intention is considered as unidimensional measures of e-government adoption. However, e-government adoption is a multi-dimensional variable. Adoption is a simple decision of using, or not using, electronic services. Akman et al. (2005) explained that the success of e-government adoption depends on public efficiency. E-government services offer public precision in the process of governance, such as prompt and efficient services, simplification of procedures, and friendly attitudes of an individual (Gajendra et al., 2012).

### **3.6.IT strategy**

IT strategy includes competencies, IT scope and IT governance. Some of the challenges in developing countries are lack of ICT infrastructure, public awareness on e-government services and citizens' trust in the government which are basis for e-government project failure (Heeks, 2006). Bwalya (2009) proposed a model that combines existing models with ICT infrastructure and culture awareness. The findings of this study were focused on the creation of an ICT-enabled environment for the adoption of e-government. Hence, following hypothesis was developed:

H5: IT is directly and positively related to e-government adoption.

### **3.7.E-Government strategy**



Strategy-focused governments seek to formulate a plan which integrates government and e-government strategies (Irani et al., 2005). Strategic fit in government is defined as the configuration between external and internal domains that is represented by either government transformation or e-government transformation (Gilber and Balestrini, 2004). A complete framework for the evaluation of e-government projects was outlined by Esteves and Joseph (2008). Based on above argument we propose following hypothesis:

H6: E-government strategy directly influences e-government adoption in online platform.

#### **4. DATA COLLECTION AND RESULTS**

Online survey was performed to collect data for this study. The questionnaire was distributed to Nepalese citizens having knowledge on e-government via e-mail along with the web link. The questionnaire consisted of 20 questions. All of the questions were closed-ended and measured on five-point Likert scale. First part of the questionnaire was related to the demographic information. Second part of the questionnaires consisted of items measuring e-government adoption, including the variables of trust, web site design, service quality, satisfaction, IT strategy and e-government strategy. The actual sample size used for this study is 372 selected respondents which may represent attitude of Nepalese citizen towards adoption of e-government services.

72.7 percent of the participants were male while only 27.3 percent were female; 42.5 percent were aged between 20 and 30 years while 35 percent were aged between 31 and 40 years. 20-30 and 31-40 years were common. Only 2 percent of respondents who were less than 20 years in their age. The response yielded 43.8 percent graduate and 42.5 percent post-graduate participants. A total of 3.6 percent of the participants were from high school. About 12 percent of the respondents were from intermediate level. 16 percent of the respondents had an internet experience of one to three years, 22 percent had an internet experience of

four to six years, 37 percent had an experience of seven to nine years and 24 percent have an experience of more than nine years.

#### **4.1. Instrument development and validation**

In preliminary stage, the survey items were pre-tested with 30 users. After that pilot test was performed with another 30 users. In order to test the reliability of scale constructs Reliability analysis was performed as suggested by Kline (1999). According to Hinton et al., (1980), the reliability factor may be divided into four parts; “excellent reliability (0.90 and above), high reliability (0.70-0.90), moderate reliability (0.50-0.70) and low reliability (0.50 and below)”. The Cronbach coefficient for all the constructs is higher than 0.80. Therefore, all these constructs are found to be consistent (Kline, 1999).

#### **4.2. Construct validity**

To validate the constructs factor analysis using principal component analysis (PCA) was performed. In addition, to rotate the matrix and improve the results varimax rotation method was used as suggested by Jolliffe (1986). Entire items were loaded on their expected factors. The factor loadings were generated from rotational component matrix. All items loaded above 0.40, which is the minimum recommended value in IS research (Straub et al., 2004).

#### **4.3. Research Constructs and Items**

Each construct of e-government adoption has 4 items. The total number of measurement items was 28. The constructs are trust (TR), website design (WD), service quality (SQ), satisfaction (SAT) and e-government adoption (EGA). Similarly other constructs are IT strategy (ITS) and e-government strategy (EGS). The survey item TR2, SQ3, ITS4 and EGS1 was deleted due to lower factor loading, below 0.6.

The predictor for research model, R value is 0.426,  $R^2$  value is 0.172, and adjusted  $R^2$  is 0.168. The model was emerged at  $p < 0.001$  from the analysis. It provides 42.8% of discrepancy in citizens' intention to use e-government services. The

result further shows that 61% people use e-government services to conduct transaction. Furthermore, 80% users use government web sites to get information electronically. These findings were matching with other e-government studies in developing countries (Kampen et al., 2005; Welch et al., 2005).

As a result, out of six, five hypotheses five were supported. Hypothesis (H1) was confirmed to show that that trust is crucial in e-government adoption. This result show that the adoption of e-government implication leads to efficient public participation (Gajendra et al. 2013). Also, the data analysis supported hypothesis (H2), which predicted that website design directly influences e-government adoption. Moreover, public intentions to engage in online government are significant predictors of their actual participation in e-government activities (Wang et al., 2005). The data did not provide support for the hypothesis (H3). For a successful e-government implementation, service quality is considered as the fundamental component (Rehman and Esichaikul, 2012). Hypothesis (H4) confirms that satisfied citizens always have positive attitude towards e-government. This argument shows the result of Gilber and Balestrini (2004) argue that satisfaction is the trust of a loyal user and of great importance in e-government adoption. Similarly hypotheses H5 and H6 are accepted as IT strategy and government strategy is crucial for e-government adoption. These arguments support findings of Bwalya (2009) and Belanger and Carter (2008).

## **5. DISCUSSION**

Minimizing risk in e-government is a high concern for both researchers and practitioners. A number of organizations including both public and private are increasing investments in IT. Thus IT has become a significant tool for national development in several countries. Human knowledge and skill as well as social development have high growth through the use of IT. The developing countries have number of challenges such as poverty, disease, low literacy and low quality of life. The developed nations have been able to overcome these problems through the adoption of ITs. A number of citizens are demanding improved public services.

This enables governments to establish new strategic initiatives. This is an evolutionary step for the survival of public sector in fast-moving and competitive environment (Moon, 2002).

The application of IT in the production and delivery of public services has become quite significant. A number of nations have developed and improved web portals to provide superior and high-quality online services. Open data and collaboration with third parties has offered governments' new vision to develop new and emerging e-government services. Besides, opportunities e-government provides for citizens to interact with public authorities can enhance transparency and increase greater public participation in democratic life. Stronger online participation through technology has the capability to improve the quality of political decisions and to increase the legitimacy of the decisions. Some comment on e-government as accompanying in a new era of democratic involvement, greater transparency and accountability; others note that governments have given low priority to technologies that enable citizens to contribute to decision-making, going for digital democracy and online participation.

Encouraging citizens to use e-government services is not an easy task. An extensive resistance to change is needed and governments make public life convenient. Public online services are thus vital for successful the public participation (Jones et al., 2007; Weerakkody and Dhillon, 2008). Public engagement is important when implementing e-government systems to transform service delivery. Citizens are considered as customers and government provides information and services to satisfy the demand of their customers (Morgeson and Mithas, 2009). If citizens are able to accomplish what they set out to perform when they are online this success should translate into greater demand for e-participation (Carter, 2008).

The IT development falls into a broader scope of thought that proposes to use technology for development. The theoretical and practical contribution can be found in the notion of socio-economic evolution which consists of an incessant

process of creative destruction that modernizes the society as a whole, including its economic, social, cultural, and political organization. This study highlights the importance of IT as an enabling mechanism that incorporates and revolves on organizational issues.

The data used in this study were possibly biased due to self-selection of the survey participants. In order to enhance the significance of this study natural path method would be helpful. Besides this, no attempt was made to ensure the non-response bias as it was not possible to provide the survey follow-ups. Further study may make enough refinements in this study.

## **6. CONCLUSION**

The ability of people to adopt ICT is significant for economic, social and political development. The implementation of ICT requires a high level of commitment from the government and citizen. These constraints should not be allowed to discourage the benefits that will accrue to them for IT. Clear legislation, implementation guidelines and standards in terms of the technologies that are used to support e-government will need to be recognized by the respective governments, and closer collaboration will need to be established between different local agencies and central government to facilitate the smoother implementation and diffusion of e-government. Future research would be useful to develop metrics to evaluate the e-government projects in the public organizations.

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