

## THE EFFECTS OF INFORMATION AND COMMUNICATION TECHNOLOGY ON LOCAL GOVERNMENT: A REVIEW OF E-GOVERNANCE AT THE LOCAL GOVERNMENT LEVEL

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### Abstract

In the past decade, the use of information and communication technology (ICT) for governance has gained worldwide attention as a tool to improve government services and promote citizen participation. Although studies have been made at the national and local level of government, there has been little emphasis on the effects of ICT implementation at the local level. This study will review the literature of the effects of ICT at the local level of government. In addition, this study aims to describe and discuss the effects of ICT implementation on governance at the local level, as compared to the national level of government. This research uses a “narrative overview” of the literature, synthesizing the findings of studies retrieved from searches of computerized databases and hand searches. The effects are first listed and then classified. They are then grouped according to the broad sense, as follows: (1) increased efficiency and effectiveness of service delivery, (2) improved accountability and transparency, (3) promoted participatory decision making, (4) bridged digital divide and gave way for democratized governance, (5) enhanced citizen engagement in local public affairs, and (6) change in power relationship among all involved actors. The first four effects are found to be common to both national and local levels of government, while the last two are found to be distinct to the local level of government. We also note that a thin line separates the effects of local from national government, which varies in terms of scope and coverage of implementation. These effects provide innovation in the specific needs of local government.

*Keywords:* information and communication technologies (ICT), local governments, e-governance, effects of ICT, local e-governance

### 1. INTRODUCTION

Technological advances have paved the way towards the information superhighway, otherwise known as the Internet, which has become an important way to communicate and do business. Current evidence suggests that information and communication

technology (ICT) also hastens the government’s role in many ways. The application of ICT to improve governance has been gaining momentum in many parts of the world. Innovative technology solutions have gained special recognition to improve government services (UN, 2012).

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The objective of this study is to describe and discuss the effects of ICT implementation on governance at the local as compared to the national level of government. What effects are true for both levels? And, what effects are unique to local government? This study aims to answer these questions by looking into previous studies that explored ICT implementation at the national and local levels of government.

In the Philippines, some studies have explored the extent of ICT implementation at the local government level by examining websites as their medium (Ilago, 2002). However, some studies have expanded to include other ICT initiatives (e.g., the use of ICT in financial accounts) in the accounting system, in other channels, and in software facilities. Moreover, across Asia, many studies have made use of the “Five Stages of E-Government” that were developed by the United Nations-American Society for Public Administration (UN-ASPA) to evaluate ICT implementation. In the United States, an increasing number of studies have described local government ICT practices. These studies have mentioned in part the effects of ICT on local government but give little emphasis to it. Some comprehensive studies done by United Nations Educational Scientific and Cultural Organization (2002) and the United Nations E-Government Survey (2012) have provided the effects of ICT on a national scale based on their assessment of different countries around the world, but none have been made at the local level of government. This paper attempts to fill this gap, and focuses on the effects of ICT at the local level of government.

This paper has two major parts. The first part discusses governance, its development, definition, components, and its evolution to e-governance. It also includes a discussion of ICT and

local government. This will provide the background of the study. The second part examines the studies conducted on e-governance using secondary data analysis. It focuses on the effects of ICT implementation that holds true for both local and national government levels, and on the effects that are distinct to local government only.

## **2. METHODS**

This study is a narrative overview of the literature that synthesizes the findings of studies retrieved from searches of computerized databases and hand searches. Retrieval of pertinent journal articles was guided by key word searches, using terms such as “effects of e-government”, “effects of e-governance”, “effects of ICT”, and “local e-governance”. This study used secondary data analysis based on selected comprehensive empirical and conceptual works on ICT and governance at the local level of government.

## **3. GOVERNANCE: ITS DEVELOPMENT, DEFINITION, AND COMPONENTS**

In the 1970s, the public administration in many developing countries was frequently associated with the negative connotations of bureaucracy: overstaffed, weak, corrupt, and inefficient. Then, globalization along with liberalization and the phenomenon of privatization, otherwise known as “Thatcherism,” took place. The theory of New Public Management (NPM) emerged in the 1980s, which was characterized by decentralization, management by objectives, contracting out or privatization, competition within government and consumer orientation. When compared to other public management theories,

NPM is oriented towards outcomes and efficiency through better management of the public budget. This is considered to be achieved by applying competition (as it is known in the private sector) to organizations in the public sector, emphasizing economic and leadership principles. NPM addresses beneficiaries of public services much like customers, and conversely it addresses citizens as shareholders. Consequently, NPM's focus on market-led growth neglects social concerns and public welfare. At the same time, public policies are implemented by business corporations and nonprofit organizations, thus blurring the distinction between public and private (Kettl, 2002). Many structural adjustment programs have failed, and fiscal debt has increased dramatically due to grants, aids, and loans in return for market-oriented reforms. A need for institutional reform towards a better and more efficient public sector called for the emergence of "governance."

The concept of governance is the successor of NPM in the digital era. Governance can be defined as the exercise of economic, political, and administrative authority to manage a country's affairs at all levels. It comprises the mechanisms, processes, and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences (UNDP, 1997). Governance is characterized by the rule of law for legitimacy; professionalism, as reflected by competency, setting standards and efficiency; participation; transparency based on the availability of information; and accountability.

Similarly, some scholars have defined governance as upholding the constitution and the constitutional values, and not the whims of the powerful (Wamsley and Wolf, 1996). In other words, the government acts in

a professional manner with a concern for the development of competence and standards, an orientation to service, and a set of values that regards the broadest possible definition of public interest as a real trust and upholds the maintenance of the constitutional order as a fundamental duty.

Moreover, Mark Turner and David Hulme (1997) said that the legitimacy of government is based on government, which depends on the existence of participatory processes and the consent of those who are governed. Governance is the recognition of the accountability of both political and official government for their actions, depending on the availability of information, freedom of the media, transparency of decision making, and the existence of mechanisms to call individuals and institutions to account.

Jon Pierre and Guy P. Peters (2000) defined governance as the capacity of government to make and implement policy in other words, to steer society. They argue that the notion of steering by national governments from the top down is inherent in the old governance, so the new notion focuses on how the center interacts with society.

The World Bank (2000) has its own definition of governance, which is the institutional capacity of public organizations to provide the public and other goods demanded by a country's citizens or their representatives in an effective, transparent, impartial, and accountable manner, subject to resource constraints. Governance should not only to steer but also suggest how to improve accountability. Furthermore, the World Bank identified three (3) key actors of governance, which are the state, market, and the civil society. Kooiman Jan (2003) coined these as society's three (3) major institutions. The state focuses on creating a favorable

political, legal and economic environment. In contrast, the market is concerned with creating opportunities for the people. Lastly, civil society should be attuned by mobilizing participation.

Governance has four (4) components (World Bank, 2000). The first is public sector management. Government must manage its financial and personnel resources effectively through appropriate budgeting, accounting, and reporting systems and by rooting out inefficiency, particularly in the parastatal or the government-owned sector. The second is accountability, public officials should be held accountable for their actions. The third is the legal framework for development. A set of rules should be known in advance, rules should be enforced, conflicts should be resolved by independent judicial bodies, and there should be mechanisms for amending rules when they no longer serve the intended purpose. Finally, the fourth is information and transparency, information should be publicly available for policy analysis and debate, to provide information on economic efficiency, and to ensure transparency to prevent corruption.

Governance is guided by the principles of efficiency, citizen participation, transparency, and accountability. These principles offer the best option to be adopted by governments in developed and developing countries alike. Governments have faced increasing pressure to improve their role in public administration over recent years. These reforms sought have called for better public service, improved efficiency, increased citizen participation, promotion of transparency and accountability. This is the reason why governance took the place of the traditional structure of government, the top-down approach (Siar, 2005), towards a more decentralized or network kind of government (Goodsell, 2006).

ICT can help to reinvent government, while it enables existing institutional arrangements to be restructured and new innovative arrangements to flourish, paving the way for a transformed government. Electronic governance (e-governance) allows but is not limited to the following: electronic service delivery, electronic workflow, electronic voting, and electronic productivity. In the following, these electronic services are further enumerated based on their classification. The Taxonomy of Services of E-governance (World Bank, 2000) follows:

1) G2C – Government to Citizen

G2Cs are those activities in which the government provides one-stop, online access to information and services to citizens. G2C applications enable citizens to ask questions of government agencies and receive answers, file income taxes, pay taxes, renew driver's licenses, pay traffic tickets, change their address, and make appointments for vehicle emission inspections and driving tests. In addition, the government may disseminate information on the web, provide downloadable forms online, conduct training, help citizens find employment, provide tourism and recreation information, provide advice about health and safety issues, allow transfer of benefits such as food coupons, and file flood relief compensation electronically through the use of smart cards.

2) G2B – Government-to-Business

In G2B, the government deals with businesses, such as suppliers, using the Internet and other ICTs. G2B includes two two-way interactions and transactions: government-to-business and business-to-government (B2G). B2G refers to businesses who sell

products and services to the government. Two key G2B areas are e-procurement and auctioning of government surpluses. The government buys large amounts of maintenance, repairs, and operations (MROs) and other materials directly from suppliers.

### 3) G2G – Government to Government

G2G deals with those activities that take place between different government organizations/ agencies. Many of these activities aimed to improve the efficiency and effectiveness of overall government operations.

### 4) Government to Constituents (E-Democracy)

E-democracy refers to the online activities of governments, elected representatives, political parties, and citizens for democratic processes. This includes political or current affairs discussion, and online consultation between representatives and their constituents. During the 2004 US presidential elections and 2006 midterm elections, both major party candidates had their own information portals and also sent e-mail messages to potential voters. In South Korea, because web surfers seldom read newspapers or watch TV, politicians have to rely on the Internet to recruit voters. Pdaq, the Seoul-based over-the-counter stock exchange, offers an Internet game that allows players to buy “stocks” in a politician. This game resulted in over 500,000 members signing up in just one year. Other common uses are the broadcasting of city council meetings, press conferences and public addresses.

Powerful new technologies can be used to advance development for the people across the world, while including them in the process. Many countries have put in place government initiatives and ICT applications to

further enhance public sector efficiencies and streamline governance systems to support development.

So, what is e-governance? Basically, it is the public sector's use of ICT with the aim of improving information and service delivery, encouraging citizen participation in the decision-making process and making government more accountable, transparent, and effective (UNESCO, 2002). E-governance allows electronic consultation, electronic controllership, electronic engagement and network societal guidance.

### 5) ICT Initiatives

ICT includes the Internet, computers, and other hardware, software and digital technologies that enhance the transfer of information from one point to another. Its application varies depending on what the implementing body does. For example, a business organization may use ICT to increase sales and profitability. Meanwhile, the use of ICT in the public sector is more extensive (Ocenar, 2013). The government uses ICT as a tool to improve the quality of its services, optimize operations, and enhance citizen participation. These activities and services are also known as ICT initiatives by the government. Examples of ICT initiatives are given in the taxonomy of services of e-government above but are not limited to such activities.

### 6) ICT and Local Government

Zwass (2010) noted that government was supported by ICT long before the infusion of the Internet - Web compound. The advancing societal complexity of the nineteenth century called forth the technology necessary to manage societal affairs, and the need to control public institutions is part of the origins of computing. By the 1890s, tabulating equipment a precursor of modern computer technology was used by the US Census Bureau. The use of

ICT in the public sector has been intensifying, as has its introduction to the business organizations. The emergence of the Web in the early-1990s and the rapid spread of technologies and practices based on it have led to a qualitatively new stage of opportunities in e-governance. However, beyond efficiency concerns, central and local governments are also harnessing ICT to accomplish the broader concerns of achieving economic growth, improving the citizen's quality of life, and democratizing governance.

Change is inevitable, and the local level of government experienced this first hand. Local government units, being the frontliners of the national government, are the first to know good fortune and are the first to be hit by crises. Furthermore, many modern cities are experiencing numerous governance problems brought about by population growth and rapid urbanization. Many are confronted with administrative problems such as red tape, deficient databases, and unreliable service delivery. Issues such as congestion, unemployment, environmental degradation, lack of infrastructure, and decreasing revenues are only some of the problems that local governments have to face. Thus, these local governments are under pressure to adopt new ways to overcome these challenges. Increasingly, many cities are adopting ICT as an instrument to improve local level of governance and have already adopted e-governance by the early twenty-first century (Holden, Norris & Fletcher, 2002)

#### 4. DISCUSSION

Studies conducted by Simeon Ilago (2001) and Shiela V. Siar (2005) in the Philippines explored the extent of ICT implementation at the local government level by examining

websites as their medium. However, Remegio D. Ocenar (2013) expanded his study to include other ICT initiatives, such as use of ICT in the financial accounts, accounting system, other channels, information technology staff, software facility, and budget for ICT initiatives. This made Ocenar's (2013) study more comprehensive because it considered other aspects of ICT implementation than the website content alone. Moreover, across Asia, Emmanuel C. Lallana, Patricia Pascual, and Edwin Soriano (2002), Mihir Desai and Numa de Magalhaes (2001), Ma Lin, Rapheal Zhu and Nina Hachigian (2001) and Subhash Bhatnagar (2000) made use of the "Five Stages of E-Government" developed by the United Nations - American Society for Public Administration (UN-ASP) to evaluate ICT implementation. These studies were conducted at the macro level or the national level of implementation. In the United States, studies conducted by John Leslie King (1982), Stephen H. Holden, Donald F. Norris, and Patricia D. Fletcher (2002), Tony Wohlers (2010), James H. Svara (1999), John D. Nugent (2001), Caroline J. Tolbert and Karen Mossberger (2003), and Donald G. Lenihan (2005) discussed local government ICT practices. These studies in part mentioned the effects of ICT on local government level but give little emphasis to it. Some comprehensive studies by the United Nations Educational Scientific and Cultural Organization (2002) and the United Nations E-Government Survey (2012) have provided the effects of ICT on a national scale based on their assessment of different countries around the world, but none at the local level of government. This paper summarized the effects of ICT at the local level of government mentioned in the selected studies used for this article. The effects were listed and then classified. They were then

grouped according to its broad sense and identified as follows.

1) The Effects of ICT on Governance Emphasized on both National and Local Government Level

a. Increased Efficiency and Effectiveness of Service Delivery in Economic, Social and Environmental Areas

ICT connects individual systems and government functions, as well as public services, into a coherent system. This enables enhanced service delivery in the economic, social, and environmental areas. The integration of services also helps to deliver interlinked social-economic environmental activities in a more efficient manner. It allows synergies to be built on and a network of systems to be created, which enhance the quality and speed of service delivery. In addition, implementing ICT contributes to the effectiveness of public institutions in fighting poverty, reducing hunger, providing essential social services, and responding to the needs of women and vulnerable groups.

Progress is being made towards delivering integrated public services (Teryima and Sunday, 2015), while efforts are being made to ensure privacy and security of personal data. However, many challenges remain. Some relate to the technical difficulties associated with ensuring interoperability of systems. While the proliferation of technologies is positive, it makes it difficult to provide integrated e-health services. It also makes it difficult to ensure integration of services across sectors.

b. Improved Accountability and Transparency

The use of ICT in government has allowed access to data that was previously difficult to obtain unless the government office was visited in person. Governments produce and collect vast amounts of data on many issues from expenditure for education

or the military, to the number of hospitals, quality of the air, transcript of judicial hearings, vital records, and traffic congestion (to name a few). Providing government information online in open standards makes this information readily available and transparent for anyone to know or use. Current studies suggest that government data can be found on regional, national, and local online portals. Furthermore, access to timely and reliable data about public sector policies, and allocation of tax revenues and international aid provides the public with the information that they need to hold their governments to account. Data are the lifeblood of decision making and the raw material for accountability. Without high-quality data providing the right information on the right things at the right time, designing, monitoring, and evaluating effective policies becomes almost impossible (United Nations, 2014).

c. Promoted Participatory Decision Making

The role of ICT in facilitating information exchange can be seen in the way in which information flows faster, more generously, and less expensively throughout the world. ICT allows the sharing of information or ideas by different nations. It can improve government, strengthen democracy and citizen participation, and can help foster most transparent governance by enhancing interaction between government and citizens (UNESCO, 2002). It can be particularly powerful in providing a voice to people who have been isolated and invisible (Ogbomo, 2009).

With growing access to social media, an increasing number of governments now proactively use networking opportunities to engage with people and evolve towards participatory decision making. This is done through open data, online

consultations and multiple ICT-related channels. In general, governments, regardless of income level, can post basic public sector information online on national websites or use social media and other innovative means for consulting and engaging people on a broad range of public related issues. However, more resources are needed to develop more technically complex and specialized citizen participation portals, such as for petitioning or online consultation and deliberation. A growing number of e-participation applications and tools are put in place in various sectors with the objective of responding to the needs of various communities. This contributes to the development of new forms of collaborative partnerships between government bodies and people, and reinforces the focus on people's needs. The largest share of these initiatives relates to the central government and local authorities giving access to public sector information and public consultation via ICT as tools. However, there has been a growing focus on mobilizing contributions to policy-making, even though progress has been modest so far. Making progress in participatory and democratic decision making will increasingly be the criteria against which the success of ICT will be assessed.

#### d. Bridged Digital Divide and Gave Way for Democratized Governance

Regarding sectorial and transactional services, many governments have introduced online services for tax submission and registration of businesses; thus reducing the administrative burden for new and existing businesses, and also increasing transparency. Online applications are also being provided for a growing number of certificates (e.g., birth, marriage, and social security). This saves time and money. It may also have a significant impact on poverty

and increase the efficiency of public institutions. In particular, the availability of information has increased in the area of education, health, finance, welfare, labor, and the environment.

The increase in the online provision of sectorial and transactional services has been driven by the bold adoption of new technological approaches, a high commitment of the leadership of concerned countries and administrations, effective and capable institutions, as well as by regulatory reform. Most of this growth was channeled via SMS services, mobile apps and user-friendly social media tools. However, more efforts are needed to deliver online services in major areas.

While these advances are overall very positive, access to the Internet and availability of mobile devices, and digital literacy are essential to exploit the full potential of the use of technology, in particular ICT. The overall availability of broadband has increased globally, but there are substantial regional disparities and a major divide persists. The accessibility and availability of mobile devices support improvements in health, education, agriculture, commerce, finance, and social welfare. This can allow regions that jumped into wireless broadband to step up innovation and narrow the digital divide.

At the national level, the digital divide not only reflects issues related to access, infrastructure, and availability of technology but it also reflects social and economic inequalities. Educational and income levels, race, gender, culture, and age also influence access to digital technology and e-governance services.

To develop more targeted interventions to mobilize ICT and online service delivery for the benefit of all people, including the poorest and

most vulnerable, it is also important to better understand the factors that influence a country's e-governance readiness and overall development. Bridging the digital divide calls not only for enhanced international and regional cooperation in the areas of technology and finance but also in supporting the capacities of public institutions to develop policies.

Technological progress continues to drive innovative development interventions. The use of Geographic Information System (GIS) data and Internet of Things (IoT) offer the potential to transform the way in which public policy is formulated, implemented, and monitored. Their early adoption has shown increased levels of civic participation and enhanced efficiency, transparency, and accountability of public institutions (Cuaresma, 2013). However, improvements of legal and regulatory frameworks, and enhanced cooperation are required at all levels.

## 2) The Effects of ICT on Governance Distinct at the Local Government Level

### a. Enhanced Citizen

#### Engagement in Local Public Affairs

ICT promotes participatory, transparent, responsive, and inclusive democracy to enhance local level development. The local citizen's access to their mayors, and other local officials and basic social services, through e-governance enhances effective communication between the government and the governed at the local level (Sunday, 2014). It also creates an opportunity for the citizen to receive feedback from the appropriate local government units, thus enhancing citizen engagement in local public affairs. This latter effect differs from the "promoted participatory decision making" that was mentioned earlier. The latter involved local public affairs, making it narrow in scope and specific in coverage. "Local public affairs" refers to local issues and concerns that are experienced or felt by local citizens first hand and are distinct to their own locality. While the promoted participatory decision-making effect is broad in scope and the coverage is at the national level. Table 1 shows the extent of the effects of ICT implementation on local governance.

**Table 1:** Extent of the effects of ICT implementation

<b>Level of Government Implementation</b>	<b>Coverage</b>	<b>Scope of</b>
National	National issues and concerns	Broad
Local	Specific local issues and concerns	Narrow

### b. Change in Power Relationship Among All Involved Actors

The introduction of ICT also leads to substantial changes in the power relationships among all involved actors. Some of the actors will increase their power as a result of ICT-enhanced operations, while others will lose some of their power. The implementation of ICT in local

government is not a neutral thing because of the redistribution of power among the various involved local actors (Zimmermann and Finger, 2005). However, there is no general rule that describes the overall impact of ICT on local power relationships. In addition, ICT does not diminish or increase power as such, but it does change the

contours of the playing field and some of the rules of the game.

The local actors identified in this section include citizens; businesses; politicians; parliament, justice, non-government organizations and associations; media; foreign countries; and employees. These actors were specifically recognized in this paper (e.g., the state, market, and civil society), which are broad categories. Prior to the introduction of ICT, power was equally shared by the local citizens; businesses; politicians; parliament and justice, nongovernment organizations and associations; media; foreign countries; and employees. Consequently, power sharing changed when ICT was introduced, giving media the greatest share, and businesses and other administration the least share. Media has the greatest share because it is a source of information, while businesses and other administrations that rely on third - party ICT implementation lose their power due to reduced confidentiality of information. However, this effect has its limitations. This study focused on the local level of government and not the national level.

## 5. CONCLUSION

Some of the effects of ICT on governance hold true for both national and local government levels only a thin line separates the effects of ICT at the local level versus the national level of government. They only vary in the scope and coverage broad for national government and more specific for local government. Moreover, some effects are distinct to the local government level. These effects provide innovation on the specific needs of local government.

There is no single e-governance model that would suit all levels of government, which are often at different stages of development and with varying degrees of democratic principles, whether applied in real or

declared governance practices. However, there are a lot of good lessons to be learnt or best practices to look into in the implementation of e-governance at the local level.

This study suggests that further research on the dynamics of e-governance at the local level of government is necessary because this provide a better picture of local e-governance. This should involve not only the effects but also the stakeholders or role players, elements, and factors and their impact on local governance that will lead to a framework of e-governance at the local level of government. This may help policy-makers in their implementation of e-governance at the local government level.

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