



# Productivity *Analysis*



## **E-Government: Policy and Strategy for Productivity Growth in the Philippines**

**Department of Science and Technology  
Philippine Council for Industry, Energy, and  
Emerging Technology Research and  
Development**

**Asian Productivity Organization**



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# **E-GOVERNMENT: POLICY AND STRATEGY FOR PRODUCTIVITY GROWTH IN THE PHILIPPINES**

PRODUCTIVITY ANALYSIS  
e-Government: Policy and Strategy for Productivity Growth in the Philippines

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# PREFACE

E-government is about harnessing the information revolution to improve the efficiency of government processes. The adoption of the e-government system promotes transparency and effectiveness of government processes as well as participation of citizens in the services provided by the government. It is evident that ICT plays an important role in providing citizens and businesses with more convenient access to government information and services. E-government practices have greatly improved the operations of the government which gives the citizens a better experience in their day-to-day transactions with various public services. E-government is an instrument of reform and a tool to transform how the government delivers its services.

This research study is intended to determine the effectiveness of e-government systems and their contribution to national productivity. As the government continuously thinks of ways to improve its services to the public, e-government system when properly designed and implemented will significantly contribute to the achievement of many government plans, policies, and priorities.

This report presents a perspective in the adoption and improvement of e-government systems based on the interplay of factors such as expectation, effort, and influence, that contribute to good governance and productivity in the Philippines. The policy recommendations and strategies identified will provide reference information in improving the current e-government platforms in the country. Insights from the study may serve as a guide for better delivery of services to citizens, improved interactions with business and industry, citizen empowerment through information access, better management, greater convenience, cost reductions, and other benefits of productivity.

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# EXECUTIVE SUMMARY

E-government is envisioned as a means of promoting stronger information society and e-commerce policies. E-government counters good governance issues that are at the heart of many current discourses on how to improve relations between government and citizens. E-governance is the way forward for creating a cycle of transparent, accountable, responsive, efficient, and cost-effective governance. It is a means to simplify procedures and practices, and modify service delivery in a profound manner. The path of good governance has been aided by tools presented by advancements in ICT. The adaptation of these tools in different domains of governance has unleashed an era of e-governance. The degree of progress attributed to the assimilation of ICT tools makes governance economic, efficient, effective, and productive.

In the Philippines, there is a need to strengthen studies that examine and assess the effectiveness and performance of e-government systems. In this study, surveys and FGDs were conducted to determine the effectiveness of e-government systems in increasing national productivity. Quantitative data were collected through survey questionnaires, while qualitative approach was adopted by conducting FGDs to solicit inputs from the users and providers of e-government systems/services. Both personal and organizational experiences were tackled in the discussions.

According to this study, the adoption/improvement of e-government systems is generally influenced by the interplay of factors such as expectation, effort, and influence that contribute to good governance and productivity. Based on the results of the study, transparency, efficiency, IT literacy, and good stakeholder experience are the most common advantages of e-government.

The results of the study brought out salient and major issues concerning: (a) procedural and methodological knowledge inhibited by the complexity and lack of clarity of requirements of various agencies, which is dependent on the collaboration and information sharing between and among organizations, (b) IT proficiency and skills improvement which includes the challenge on digital divide, (c) budgetary constraints to ensure support for e-government strategic plans and programs and (d) data analytics for enhanced decision-making.

To address the gaps and key issues, following are the proposed policy recommendations to improve the current e-government in the Philippines:

- Strengthen partnership with relevant institutions to enhance mutually reinforcing collaborations regarding e-government policies and their implementation.

- Develop and accelerate proficiency and skills to support e-government development and improvement.
- Establish policy directives or legislative measures to break budgetary barriers and ensure regular provision of budget to proposed e-government plans and programs.
- Define policy directives to develop capacities for big data analytics skills of e-government systems, thereby improving decision-making capabilities of both public and private institutions.

The study has provided valuable insights on the needed reforms which may serve as the foundation for the adoption or improvement of e-government in the country. It highlights internal inconsistencies but underscores e-government initiatives as an important tool to renew the interest and trust of citizens toward public management and administration. Moreover, information generated by the study can be a basis of more in-depth research in the future on how government online applications for service delivery and business processes can provide a demonstrated effect which can help lead to the acceptance of e-government across the economy more broadly. This will further contribute to developing or enhancing processes, standards, and relevant and significant policies which can be applied across government entities leading to the realization of the objectives of good governance and national productivity.

# CHAPTER 1:

## BACKGROUND OF THE STUDY

Electronic government or e-government is defined by the OECD as the use of ICTs, and particularly the internet, to achieve better government [1]. This definition focuses on why countries are implementing e-government rather than on the ICT tools. Faced with the pressure of increasing government performance while being responsive to citizens' needs, OECD countries have realized that e-government goes beyond the simple exercise of putting information and services online and can be used as a powerful instrument to transform the structures, processes, and culture of government making these more efficient, user-oriented, and transparent [2].

Kettani and Moulin stated that empirical studies have shown that certain gains are generated by the deployment of e-government systems [3]. E-government influences the value chain of the government organization by, first, reducing the amount of input resources required such as limited workforce and less physical effort. Second, it reduces service elapsed time. Third, it improves outcomes, for example, by improving service delivery quality, and in the process contributes to the overall productivity [4].

Fang stressed that governments worldwide are faced with the challenge of transformation and the need to reinvent government systems to deliver efficient and cost-effective services, information, and knowledge through ICT, especially during times of national emergencies [5]. The COVID-19 pandemic forced social distancing and quarantine measures such as lockdowns in every part of the world. According to Mr. Liu Zhenmin, UN Secretary General Economic and Social Affairs, the pandemic has renewed and anchored the role of digital government – both in its conventional delivery of digital services and new innovative efforts in managing the crisis [6]. All sectors diverted their efforts and services to the use of digital solutions to meet the isolation requirements and ensure that people are informed and engaged.

One of the most important aspects of e-government is how it brings citizens and businesses closer to their governments as mentioned by Samsonova [7]. According to Gordon [8], e-government is the use of ICTs (blockchain, robotics, Internet of Things, artificial intelligence, Big Data, etc.) to improve the process of government. Signore et al. [9] defined e-government as citizens' services, re-engineering with technology, or procurement over the internet. For Spremić et al. [10], e-government is the use of information technologies and the internet for better delivery of government services to citizens.

Dhaoui described good governance as having considerable potential for modernizing public administration, improving public service delivery, dealing with increasingly more complex development imperatives, and promoting well-being [11]. Furthermore, Glass and Newig commented that it is widely accepted that the achievement of the 17 SDGs depends on effective governance arrangements [12]. Hence, ICTs to support governance strategies remain an important driving force for realizing this transition, particularly in the context of international market pressures and global competition. They present incredible opportunities to innovate, strengthen, and improve the ways of working and bring plenty of advantages [11]. However, the World

Development Report (WDR) cited that the greatest rise of digitalization in history will not be truly revolutionary until it benefits everyone in every part of the world [13]. In order to seek the economic, social, and environmental needs sustainability, it is necessary to establish both good governance and e-governance strategies by identifying the mechanisms, processes, and outcomes [14].

E-government presents a tremendous impetus to move forward in the 21st century with higher quality, cost-effective government services and a better relationship between citizens and government [5]. E-government in the Philippines is envisioned to create “a digitally empowered and integrated Government that provides responsive and transparent online citizen-centered services for a globally competitive Filipino nation.”

E-governance is important to deliver various benefits of economic growth due to digitalization to all the sectors of society, blending technology and citizen centricity, catalyzing government operations to create a safer, more efficient, and sustainable society [15]. E-governance involves implementing internal government operations meant to simplify and improve both the democratic and business aspects of governance. The end goal of e-governance is good governance, by providing efficient and effective services, and bringing national, regional, and local administrations closer to the common people [16].

Various countries allocate an enormous amount of public funds to finance their e-government initiatives. Many studies agree that e-governance can increase the efficiency, responsiveness, transparency, and legitimacy of the government processes.

In the Philippines, there is a need to strengthen studies that examine and assess the effectiveness and performance of these e-government systems. In this study, surveys and FGDs were conducted to determine the effectiveness of e-government systems in increasing national productivity and implementing good governance. Specifically, the objectives of the research are the following:

- To determine the effectiveness of e-government systems in increasing the productivity of the identified organization using the interplay of factors such as expectation, effort, and influence and the subfactors indicated in the research methodology.
- To determine the factors of enablers and barriers in e-government practices.
- To determine mission-critical policies that can be drawn up to enhance e-government services contributing to national productivity.

The results and findings of the study will be essential for the enhancement of e-government systems in the Philippines through policy recommendation and strategy formulation. This study would provide significant and valuable insights into better delivery of services to citizens, improved interactions with business and industry, citizen empowerment through information access, better management, greater convenience, cost reductions, and other benefits of productivity.

# CHAPTER 2:

## LITERATURE REVIEW

### 2.1 Electronic Government (E-Government)

Electronic government is about the use of ICT for improving the delivery of public services to citizens and businesses [17]. It can be approached from different perspectives. Nam [18], for example, considers e-government as the delivery of public services through the adoption of digital technologies. Hwang and Syamsuddin [19] perceive e-government as a way of improving communication between governments and citizens. Meanwhile, Pudjianto et al. [20] view e-government as a process of enhancing the relationship between governments and their stakeholders including citizens and businesses. There are various benefits of the development of e-government. For example, it enables seamless two-way communications between governments, citizens, and businesses [21]. E-government improves the quality of public service delivery and the transparency of public decision-making as Deng et al. stated [22], while Heeks and Bailur [23] mentioned encouraging citizens' involvement in the public administration. It also enhances information sharing between government institutions [24]. Besides, the development of e-government streamlines processes in public organizations, therefore improving their efficiency and effectiveness [25]. According to the UN [26], numerous countries have introduced various initiatives for the development of e-government. However, e-government research up to date for the most part limited itself to the study of the outcomes and outputs of the e-government projects. Thus, understanding the political processes behind e-government development is vital for overcoming both definitional and analytical limitations. Such an effort requires a historical understanding of the relationship between technology and administration.

### 2.2 Adoption of E-Government

The adoption of e-government generally refers to the intention of citizens to engage in e-government for accessing public services [27]. In addition, Kurfalı et al. [28] stated that research in this area mainly focuses on the awareness, motivation, and trust of citizens to adopt e-government. Such research becomes vital given the potential of e-government to reduce costs and improve public service delivery compared with the traditional paper-based services [29]. Numerous studies have been conducted for better understanding the adoption of e-government from different perspectives in the literature. Susanto and Goodwin, for example, highlight the importance of having multiple access platforms to support the adoption of e-government [30]. Bertot et al. [31] study the effect of transparency on the adoption of e-government. Meanwhile, Mirchandani et al. [27] find that citizens of closely related countries have a very different expectation of their e-government, which means every country needs a specific e-government adoption strategy.

E-government increases the convenience and accessibility of government services and information to citizens. Despite the benefits of e-government – increased government accountability to citizens, greater public access to information, and a more efficient, cost-effective government – the success and acceptance of e-government initiatives, such as online voting and license renewal, are contingent upon citizens' willingness to adopt this innovation [28]. Governments worldwide are encouraging public agencies to join e-government initiatives in order to provide better services to

their citizens; hence, the need arises to measure the e-government preparedness of public agencies [29].

## 2.3 E-Government Barriers

Several studies have been conducted on the systematic and comparative review of the challenges and barriers in the implementation of e-government. Based on a recent review of digital transformation conducted by Barcevicius et al. [30], structural barriers, including technological barriers (infrastructure, lack of interoperability, data access), organizational factors (lack of strategy, human resources, digital skills, capacities of managers), legal and ethical factors (lack of citizen trust), and factors related to limited budgets are the prominent challenges in digital transformation. Perceptions of structural barriers are closely related to what Wilson and Mergel [31] characterize as cultural barriers, including risk aversion, bureaucratic culture, and fear of change. Mergel's e-governance case study also notes the integration of cultural barriers with structural barriers, including "legal constraints, lack of finances, shortage of personnel and available skills, limited political and management support, lack of coordination, technological constraints" (p. 200). This point is echoed by surveys on perceived barriers to open Government of Martin, and Van Veenstra et al.'s [32-33] review of the literature on transformational government, which states that "Impediments simultaneously occur on the governance, the organizational and managerial, and the technical levels. Impediments represent an interrelated set of factors that need to be addressed in concert."

A 2015 survey of Eggers and Bellman [34] on digital transformation perceptions conducted by Deloitte demonstrated how structural barriers are experienced by individuals and suggests that public administrators face too many competing priorities, insufficient funding, security concerns, and lack digital workforce skills. Based on Janowski's evolutionary model between cultural and structural aspects of digital government, it reveals that structural barriers are most prominent in the research on e-government and its technological adoption. In contrast, institutional culture and processes are more prominent in research on digital transformation [35]. Further, this could be read to imply a sequence whereby structural barriers must be overcome before addressing obstacles related to organizational culture in government. This reading is reinforced by the explicit incrementalism of Janowski's model, which progresses from technological, through institutional and relational change, and in which "capabilities required at one stage require capabilities built at earlier stages" [36].

Cultural barriers are also regularly referenced independently, including prominent attention to established ways of doing things in bureaucracies [37-38] and a lack of organizational leadership, vision, and strategy. Pittaway and Montazemi [39], meanwhile, argue that the most important barrier to digital transformation is the tacit information about how to manage structural and cultural barriers, asserting that "digital transformation has stagnated because city managers lack the requisite know-how to replace legacy system silos with integrated enterprise systems" (p. 1). Howes and Kidney Bishop [40] situate this know-how within institutional efforts to gain support for digital transformation projects in the UK Government and note that these efforts often fail because digital teams fail to make convincing arguments about the value of transformation or fail to "recognize the uncertainty inherent in digital transformation, locking programs into fixed and unrealistic timelines" (p. 3).

## 2.4 E-Government and Public Sector Productivity

According to Krugman [41], productivity is commonly defined as a ratio between the output volume and the volume of inputs. In other words, it measures how efficiently production inputs, such as labor and capital, are being used in an economy to produce a given level of output. Productivity is considered a key source of economic growth and competitiveness and, as such, is basic statistical information for many international comparisons and country performance assessments.

According to Scottish Productivity Commission [42], digitalization should become integral to overall strategy and delivery in government, business, and public services to capture the productivity gains (such as deeper understanding and engagement with customers) which can only happen if business models change, services are redesigned, and there is an understanding of the technology and leadership at the most senior levels.

The UN mentioned two best practices that illustrate the benefits of e-governance. The first example is the e-health application designed by the Egyptian Government in order to provide free breast cancer screening to Egyptian women above the age of 45. The system is based on satellite connectivity so that the tests can be transmitted from remote units. This e-service helps with the early-stage treatment of breast cancer in a nondiscriminatory manner. The second-best practice case comes from Nigeria, where the government initiated an e-agriculture application to help the agricultural sector. The advantages are the provision of strategic information, as well as the promotion of new helpful ICT skills among Nigerian farmers [43].

## 2.5 E-Government and Good Governance

According to Heeks [44], there are three components of e-governance: (a) e-administration – improving government processes; (b) e-citizens and e-services – connecting citizens; and (c) e-society – building interactions with and within the civil society. The UN describes e-government as “utilizing the internet and the world wide web for delivering Government information and services to citizens” [45]. Hence, e-government happens when a government institution uses ICT to satisfy the citizens’ informational and transactional needs.

Forman [46] refers to e-government simply as “the use of digital technologies to transform Government operations in order to improve effectiveness, efficiency and service delivery.” Several studies have promoted the use of e-government systems, suggesting that they produce a number of benefits which foster good governance [47]. Bhatnagar [48] assessed 12 e-government projects in developing countries. These projects provide “examples where e-Government has delivered concrete benefits by increasing transparency, reducing corruption, improving service delivery, empowering people and enhancing economic goals of good governance.”

The relation between e-government and good governance has been suggested by several authors. They believe that both concepts share the same objectives such as administrative efficiency, quality of public services, and democratic participation [49–50]. They suggest “the relationship between good governance and e-Government stems from the latter’s dualistic approach to state modernization: it combines an internal focus on administrative reform with an external focus on state–citizen (or state–customer) relations.” Generally, e-government is a subfactor for creating good governance as it improves the government’s internal operations and relations and the government relations with citizens and other external stakeholders to make way for good governance.



However, the use of e-government systems/services does not guarantee the development of a country. As cited by Moulin and Kettani [51], the Philippines is open for importation and adoption. For instance, the Philippines acquired a modern shipping infrastructure and railways as early as 1849 and 1887, respectively, which was maintained. They added that “technology importation is not problematic in the Philippines, but what is distressing is the failure to harness the power of these technologies for the country’s development.” Kettani and Moulin suggested to be aware of the scope and implications of the e-government system, the ICT’s direct relation to their immediate environment, and e-readiness of the stakeholders with the inevitable changes it will bring. They added, “They should perceive these systems as their own and not as being imported or imposed, so that a feeling of appropriation will emerge to accompany and strengthen the use and proliferation of ICT.” The government should risk e-government implementation despite the high failure rate that the latter has. The use of e-government assessment methods and proposed best practices were also mentioned by Kettani and Moulin as paramount for ongoing and future projects, and for decision-makers and managers too.

In addition, Pertier [52] explains that “technology in the Philippines mainly benefited metropolitan areas and was controlled by elite interests, and thus had little transformative power in the development of the country as this technology did not enter into the everyday life of most Filipinos.” Moreover, this lack of “absorptive capacity” [53] hindered the effective utilization of ICT resources and diminished the likelihood of the emergence of benefits and development. Therefore, this shows the critical importance of mainstreaming the ICT and facilitating the opportunity for development brought about by e-governance.

According to Hagen [54], “The real challenge, rather, is to determine how to successfully build e-Government systems that contribute to the realization of good governance targets.” Hence, the realization of good governance through the e-government system will only be realized when the procedural and methodological knowledge will be met as required for effective e-government implementation. The complexity and lack of clarity of regulations and requirements on agencies can be a major barrier for e-government, as they increase the cost for agencies to collaborate and join up information and services. Another barrier is the presence of existing public management frameworks based on the assumption that agencies work alone (e.g., in terms of performance management, accountability frameworks) which can also act to inhibit collaboration and information sharing between organizations. Finally, privacy and security legislation and practices need to be put in place before online services can advance.

The digital divide is an important barrier to e-government, in that people who do not have access to the internet will be unable to benefit from online services. In OECD countries a growing number of people have access to the internet, but there are still large numbers who do not. Governments in OECD countries have implemented a number of policies to break up the digital divide, including those focused on increasing access and marketing of online services, and strengthening ICT education and skills.

## 2.6 E-Government in the Philippines

In the paper of Magno published in the *Journal of Asia-Pacific Studies*, he identified several factors of e-government relative to Philippine development. In the Philippines, efforts to integrate e-government as a key lever in development started two decades ago. Over the years, innovative e-government projects and programs were pursued to improve the delivery of public services. However, the continuity of reforms was hampered by the absence of a top-level agency that is



formally dedicated to govern and oversee ICT policies and programs. In the past, every transition to a new administration results in a change in the office designated to steer e-government implementation. In 2016, a law was passed creating the Department of Information and Communications Technology (DICT) as the primary policy, planning, and administrative entity that will promote the national ICT development agenda. It has the mandate to provide an integrated framework to optimize all government ICT resources and networks for the prioritization of e-government systems and applications. The establishment of the DICT represents a policy milestone in the evolution of e-government in the Philippines. It provides an institutional anchor for mainstreaming e-government innovations. Given the responsibility to ensure the provision of ICT infrastructures and systems as instruments of good governance and global competitiveness, the new agency can benefit from benchmarking with international measures of e-government [55].

The Philippines posted strong and sustained economic growth rates for the past several years but has fared poorly in investing enough for public infrastructure and services. The government is determined to answer the problem of budget underspending and will leverage technology for more efficient public spending [56]. This presents a good opportunity to improve the utilization of the e-government fund and the effective implementation of ICT projects in the public sector. Studies indicate that a major barrier to e-government is the *bureaucratic culture* that is averse to risk and resistant to change [57].

Moreover, Magno emphasized that measures can be taken to enhance performance incentives, grants, and bonuses that are tied up with accomplishing the results criteria for e-government. The continuity of e-government reforms has been hampered in the past by the absence of a top-level agency that is formally dedicated to governing and overseeing ICT policies and programs. The passage of the law creating the DICT in 2016 fills a critical institutional gap. Under the policy, the *development of a pool* of chief information officers (CIOs) will provide the leadership needed for managing e-government programs at both national and subnational levels. Under the new policy architecture, the Philippines can now transition from the nonintegrated and agency-specific applications toward an e-government model where there is sharing of data and interoperability of government offices to provide public services with better value for citizens. The membership of the country in the Open Government Partnership has led to the design of online services that leverage technology to promote participation, transparency, and accountability. There is a need to develop the demand side of open data and policies. Citizen oversight and monitoring of public services can be strengthened with information intermediaries who can analyze the information made available in online transparency portals. The government can engage universities as knowledge partners in capacity building for CIOs and research programs for tracking e-government progress.

#### *The Philippine E-Government MasterPlan (EGMP) 2022*

The E-Government Master Plan (EGMP) 2022 [58] is the Philippine Government's living plan that builds on past experiences, recognizes present challenges, and achieves the vision of a "One Digitized Government." The EGMP 2022 serves as the blueprint for a harmonized government information system. The DICT, through the EGMP 2022, envisions to improve the country's e-government system in the delivery of public services, increased government transparency, and opportunities for public participation in decision-making. This plan outlines DICT's intent of developing the country's e-government systems through the digital transformation of basic services such as public health, basic education, and other programs that cut across the whole of government. In doing this, DICT aims to create a networked and collaborative environment for improved public service delivery.

## CHAPTER 3: RESEARCH FRAMEWORK AND METHODOLOGY

The research was undertaken following the framework of the research which aims to create a favorable ecosystem for the transformation of e-government services by the application of ICT for an effective service delivery. The framework (Figure 1) was adopted from the study entitled “A Conceptual Framework for the Adoption of E-Government in Indonesia” by Sabani et al. [59], School of Business IT and Logistics RMIT University Melbourne, Australia. However, the framework was revised to simplify the perspective in the adoption/improvement of e-government systems based on the interplay of factors such as expectation, effort, and influence, that contribute to good governance and productivity. The definition of each variable is presented in Table 1.

**FIGURE 1**

### RESEARCH CONCEPTUAL FRAMEWORK

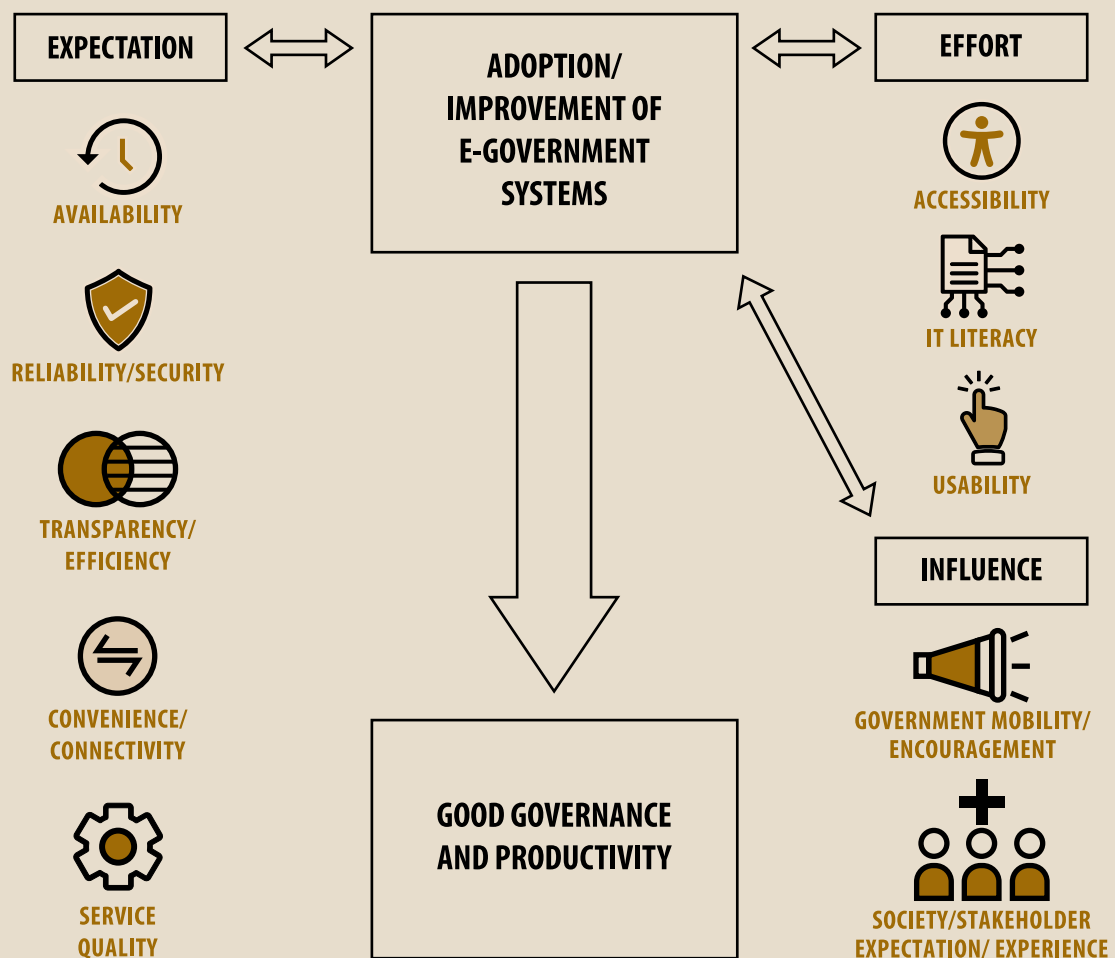


TABLE 1

## DEFINITION OF STUDY VARIABLES

Variables	Definition
Availability	<ul style="list-style-type: none"> <li>The availability of funding for the implementation of e-government system.</li> <li>The readiness of e-government system to consistently perform its specified purpose.</li> <li>The ability of e-government systems to be integrated with other systems.</li> <li>The availability of e-government system in smartphones, tablets.</li> <li>The ability of e-government systems to quickly connect, process traffic, and respond.</li> </ul>
Accessibility	<ul style="list-style-type: none"> <li>The ability to use the systems using personal computer, mobile phones with or without internet connection.</li> <li>The ease of use of the system and availing of services even for people with disabilities.</li> <li>The ability to work outside the workplace using e-government services.</li> </ul>
Connectivity	<ul style="list-style-type: none"> <li>The instances of e-government system to work and do its function with strong and stable internet connection.</li> </ul>
Convenience	<ul style="list-style-type: none"> <li>The benefits of time and cost saved, and administrative burden decreased using e-government system.</li> </ul>
Effort expectancy	<ul style="list-style-type: none"> <li>Effort expectancy is referred to as the degree of ease in using new technologies [60].</li> </ul>
Efficiency	<ul style="list-style-type: none"> <li>The fast execution of core processes without compromising the delivery of information, and simplified services offered by the agency by reducing paperwork and saving communication costs.</li> </ul>
Expectation	<ul style="list-style-type: none"> <li>The degree to which citizens believe that adopting e-government would result in better public service performance [60].</li> </ul>
Good Governance	<ul style="list-style-type: none"> <li>Characterized as participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive, and follows the rule of law. It minimizes corruption and takes into account the views of minorities and voice of the most vulnerable society in decision-making (UNESCAP).</li> </ul>
Government Mobility (Encouragement)	<ul style="list-style-type: none"> <li>The ability to mobilize government resources.</li> <li>The level of support to strengthen government policies and regulations.</li> <li>The ability to spearhead/provide efficient and effective services.</li> <li>The level of support in connecting the government to the citizens.</li> <li>The ability to improve the quality of work/outputs.</li> </ul>
Influence	<ul style="list-style-type: none"> <li>Influence or social influence is the external dimension that affects an individual's decision to adopt new technologies [60].</li> </ul>

IT Literacy	<ul style="list-style-type: none"> <li>• The ability to use the system for its functions.</li> <li>• The ability to do basic troubleshooting while using the system without any technical experts.</li> <li>• The ability to comprehend all the functions of the system.</li> <li>• The ability to initiate capability development for the employee's readiness to implement and utilize the system.</li> </ul>
Productivity	<ul style="list-style-type: none"> <li>• A ratio between the output volume and the volume of inputs (OECD).</li> </ul>
Reliability	<ul style="list-style-type: none"> <li>• The ability of e-government system to accomplish its functions for a certain period, with a certain level of trust, without collapsing and bug occurrences.</li> </ul>
Security	<ul style="list-style-type: none"> <li>• The degree of trust of users on the security of the e-government system.</li> <li>• The capability and sufficient awareness in protecting and securing the e-government system.</li> </ul>
Service Quality	<ul style="list-style-type: none"> <li>• The ability to use the system with minimal mistakes while doing functions at work.</li> <li>• The expectations of the stakeholders on e-government systems concerning service delivery have been consistently met.</li> <li>• Improved customer satisfaction since the utilization of the e-government.</li> </ul>
Society/Stakeholder Expectation (Experience)	<ul style="list-style-type: none"> <li>• The ability to deliver better services through streamlined processes and procedure</li> <li>• The degree of interactions and encouragement with stakeholders to adopt e-government systems.</li> <li>• The extent of benefits created by e-government systems.</li> </ul>
Transparency	<ul style="list-style-type: none"> <li>• The ease of acquiring the necessary comprehensive information.</li> </ul>
Usability	<ul style="list-style-type: none"> <li>• The quality of the e-government system being effortless and self-explanatory.</li> <li>• The ability to remember functions of the system for future use.</li> <li>• The ability to easily perform tasks in the system.</li> <li>• The system is designed to be appealing to the users.</li> </ul>

**Source:** Authors.

The research employed both *quantitative* and *qualitative approaches*. Quantitative data were collected through survey questionnaires shared with the Providers (see Annex 1) and Users (see Annex 2) of e-government systems. Qualitative approach employed FGDs to solicit inputs from the users and providers of e-government systems/services. Both personal and organizational experiences were tackled in the discussions.

The FGD participants, as shown in Table 2, are representatives from the National Government Agencies (50%); Higher Education Institutions/State Universities and Colleges (28.57%); Micro, Small, and Medium Enterprises (MSMEs, 14.29%); and Local Government Unit (LGU, 7.14%). In terms of the extent of utilization, 7% of the participants are using e-government systems for 1–2 years. A total of 29% are using e-government systems for 3–4 years and 64% are using e-government

systems for more than 5 years. This implies that most of the participants are users of e-government systems either for personal or official transactions.

FGD participants from three different locations (Luzon, Visayas, and Mindanao) were asked about their actual experiences and their perceived impact of e-government systems to citizens, businesses, and other stakeholders in terms of productivity and good governance. Structured questions were developed and used in the FGDs based on the framework of the research (see Annex 3).

**TABLE 2****PROFILE OF PARTICIPANTS**

No.	Age Group	Gender	Sector/Organization	Number of Years of Using E-Government
1.	Millennials or Gen Y (Born 1981–1996)	Male	National Government Agency	More than 5 years
2.	Gen X (Born 1965–1980)	Male	Local Government Unit	3–4 years
3.	Millennials or Gen Y (Born 1981–1996)	Female	National Government Agency	More than 5 years
4.	Gen Z (Born 1997–2012)	Female	Micro, Small, Medium Enterprises	3–4 years
5.	Millennials or Gen Y (Born 1981–1996)	Male	National Government Agency	More than 5 years
6.	Boomers (Born 1946–1964)	Male	Micro, Small, Medium Enterprises	More than 5 years
7.	Millennials or Gen Y (Born 1981–1996)	Male	National Government Agency	1–2 years
8.	Gen X (Born 1965–1980)	Male	Higher Education Institution/ State Universities and Colleges	More than 5 years
9.	Gen X (Born 1965–1980)	Male	National Government Agency	More than 5 years
10.	Millennials or Gen Y (Born 1981–1996)	Male	Higher Education Institution/ State Universities and Colleges	More than 5 years
11.	Gen X (Born 1965–1980)	Female	Higher Education Institution/ State Universities and Colleges	More than 5 years
12.	Gen Z (Born 1997–2012)	Male	National Government Agency	3–4 years
13.	Gen X (Born 1965–1980)	Male	National Government Agency	More than 5 years
14.	Millennials or Gen Y (Born 1981–1996)	Male	National Government Agency	3–4 years

Source: Authors.

# CHAPTER 4:

## RESULTS AND DISCUSSIONS

### 4.1 Demographics

A total of 96 users and providers of e-government systems/services responded to the survey. The majority or 46 (48%) of the respondents were Gen X (Born 1965–1980), 37 respondents (39%) were Millennials or Gen Y (Born 1981–1996), 11 respondents (11%) were Boomers (Born 1946–1964), and 2 (2%) respondents from Gen Z (Born 1997–2012). As to the FGDs, 43% of the participants were Gen X (Born 1965–1980), 36% were Millennials or Gen Y (Born 1981–1996), 14% were Gen Z (Born 1997–2012), and 7% were Boomers (Born 1946–1964).

As to gender distribution, 48 (50%) males and 48 (50%) females responded to the survey questionnaires, while FGD participants comprised 79% males and 21% females.

In terms of length of service in the government, of the 54 respondents who are providers of e-government services/systems, 31 (57.41%) were working for more than 10 years, 13 (24.07%) were working for 5–10 years, and 10 (18.52%) were working for less than 4 years.

Users of e-government services were also asked how long they were using e-government systems either for personal or work-related transactions. Of the 42 user respondents, 9 (21.43%) had been using e-government services for more than 5 years. A total of 15 (35.71%) were users for 3–4 years, 13 (30.95%) were users for 1–2 years, and 5 (11.90%) were users for less than a year.

### 4.2 E-Government Systems Provided and Utilized

In the paper of Solinthone and Rummyantseva entitled “E-Government Implementation,” they cited that e-government services focus on four main customers: citizens, business community, government employees, and government agencies. E-government aims to make interactions more convenient, friendly, transparent, inexpensive, and effective among stakeholders [61].

There are four (4) types of e-government:

- Government-to-Citizen (G2C)
- Government-to-Business (G2B)
- Government-to-Employee (G2E)
- Government-to-Government (G2G)

G2C includes information dissemination to the public. G2B transactions include various services exchanged between government and the business community, including dissemination of policies, memos, rules, and regulations. G2E services encompass G2C services as well as specialized services that cover only government employees. G2G services are transactions between the central/

national and local governments, and between department-level and attached agencies and bureaus. At the same time, G2G services are transactions between governments, and can be used as an instrument of international relations and diplomacy.

Based on the responses of the providers of e-government services, 30.6% of their users/clients are entrepreneurs/businesses. This is followed by government agencies which accounted for 29.4%. Other users of e-government services are academe (16.5%), LGU (11.8%), private agencies (9.4%), and consumers (2.4%).

Most of the survey respondents utilize e-processing such as laboratory and technical services (23, 42.59%). Other respondents provide/utilize e-application (22, 40.74%), e-procurement (21, 38.89%), e-payment (19, 35.19%), e-library (14, 25.93%), e-proposal (12, 22.22%), and other e-government services (12, 22.22%). Presented in Table 3 are the e-government systems being utilized by the respondents of the FGDs.

**TABLE 3.**

**E-GOVERNMENT SYSTEMS/SERVICES BEING UTILIZED BY THE FGD RESPONDENTS**

Sector/Service	E-Government Systems/Services
Education	<ul style="list-style-type: none"> <li>• Online enrolment/Admission application</li> <li>• E-learning</li> <li>• Online training</li> <li>• Scholarships</li> </ul>
Health and Social Services	<ul style="list-style-type: none"> <li>• E-health consultation</li> <li>• Vaccination administration system, or D-VAS and VaxCertPH</li> <li>• Online responsible parenthood and family planning system</li> </ul>
E-Processing/ E-Payment	<ul style="list-style-type: none"> <li>• Tax administration and collection</li> <li>• BIR online filing of ITR</li> <li>• Philippine Statistics Authority/Civil registry certificates</li> <li>• Land Transportation Office license registration and renewal</li> <li>• Business permit application and renewal</li> <li>• Sanitary permit</li> <li>• Work permits</li> <li>• E-payment for city fees and taxes</li> <li>• Social Security System, HDMF, GSIS remittances, and loan application</li> <li>• Professional Regulation Commission registration</li> <li>• E-passport</li> <li>• Import application</li> <li>• Sales promotion</li> <li>• Online ticketing</li> </ul>

Research	• Consultancy and technical services (calibration, laboratory, and testing)
	• Energy data and information
	• Project proposal application and processing
	• Project management
	• Project monitoring
	• Technical assistance and research
	• Department of Science and Technology Project Management Information System (DOST-PMIS)
	• Meteorological data monitoring
Other Government Services	• E-procurement (DBM, Philippine Government Electronic Procurement System)
	• E-inventory
	• Records management
	• Document tracking
	• Budget reporting
	• Financial management system
	• E-new government accounting system
	• Philippine National Public Key Infrastructure for e-signature
	• Information management system
	• Enterprise Resource Planning (ERP)
	• Virtual events/exhibits
	• Customer feedback

Source: Authors.

In one of the FGDs, a participant from a government agency said that they developed a local system that provides information on which location/s in their region are at risk of flooding. The agency will also introduce a system/portal where reports and updates will be posted whenever there are calamities to provide updates to the public. Currently, social media platforms are being used in announcing the status of the typhoon. There are also private institutions that enable the government to deliver e-government services. One of the participants said that their institution was commissioned by Commission on Higher Education (CHED) to develop an e-government portal for an e-scholar profiling system that will monitor the scholars' academic performance.

### 4.3 Expectations of E-Government

Table 4 shows the expectations of e-government systems and services being implemented in the country. The results show a grand mean of 3.78 and standard deviation of 0.500, which suggested that subfactors such as availability, reliability/security, transparency/efficiency, convenience/connectivity, and service quality are *mostly enablers* of e-government. This means that all these factors are being considered in developing information systems on government services.



Of the five subfactors, “transparency/efficiency” had the highest mean response of 3.96, which means that majority of the e-government systems are purposed to achieve transparency and efficiency in service delivery.

TABLE 4.

## EXPECTATIONS ON THE E-GOVERNMENT SYSTEMS AND SERVICES

Subfactor	Mean	Standard Deviation
Availability	3.72	0.656
Reliability/Security	3.73	0.619
Transparency/Efficiency	3.96	0.546
Convenience/Connectivity	3.79	0.521
Service Quality	3.70	0.598
Average Grand Mean on the Expectation	3.78	0.500

Source: Authors.

Note: 5.00–4.21 for Strongly Agree (Completely Enabler), 4.20–3.41 for Agree (Mostly Enabler), 3.40–2.61 for Slightly Agree (Partially Barrier), 2.60–1.81 for Disagree (Mostly Barrier), and 1.80–1.00 for Strongly Disagree (Completely Barrier).

**Availability (mostly enabler).** E-government providers confirmed that the agency they are connected with has an e-government system and allocates budget to make these systems available to users. The systems are ready to perform their specified purpose under prespecified environmental conditions when called upon. The e-government system they have is integrated with other government and non-government agencies and can be downloaded to smartphones, tablets, and other gadgets. It can quickly connect, process traffic, and respond to stakeholders. However, as confirmed through discussion with e-government system providers, *some of the services are not always available* contrary to users’ expectations of 24/7 access to information and services.

**Reliability/Security (mostly enabler).** The respondents believe that a reliable government system accomplishes its functions based on its purpose without collapsing and does not encounter bug occurrences. It should be up to date and sufficiently tested before purchase from the manufacturer. *Security of information systems* is also a challenge in e-government. Intended users should have undergone training to be knowledgeable in protecting and securing the e-government system while using it. A participant cited as an example that scammers can access certain databases containing important information like contact details of those who applied for permits. This resulted in phone call threats from scammers asking money in return.

**Transparency/Efficiency (mostly enabler).** E-government systems should be able to simplify the services offered by the agency, reduce paperwork, and save communication costs. Through

e-government, users easily acquire the necessary comprehensive information and have fast execution of core processes without compromising the delivery of information.

*Convenience/Connectivity (mostly enabler).* Through e-government, users should be able to work smoothly and deliver timely outputs either in the office or at home as long as there is internet access. E-government promotes work-life balance of its users. In terms of convenience, one participant cited the Department of Foreign Affairs (DFA) appointment system as an example of a very efficient e-government system that is helpful to the public. However, there are other government systems that are *not user-friendly* and had difficulty in addressing *issues on connectivity*.

*Service quality (mostly enabler).* Users also expect the e-government system to improve customer satisfaction and minimize complaints received. Furthermore, having an e-government system in place prevents employees from making any mistakes at work, thus increasing service quality. However, there are also issues associated with *organizational culture and mood* that affect the delivery of quality service to the public.

#### 4.4 Efforts on E-Government

Table 5 presents the responses on the *level of government efforts* in terms of accessibility, IT literacy, and usability. The results show an average grand mean of 3.70 and standard deviation of 0.580. This indicates that the three subfactors are mostly enablers in the implementation of e-government.

Of the three subfactors that are associated with the efforts on e-government, *IT literacy* had the highest mean of 3.80. The result suggests that the government focused most of its efforts in promoting IT literacy to lessen digital divide in the country. The government continuously implements programs to encourage and educate the public and employees on the usage of ICT and development of ICT capabilities.

**TABLE 5.**

#### GOVERNMENT'S EFFORT ON E-GOVERNMENT SYSTEMS/SERVICES

Subfactor	Mean	Standard Deviation
Accessibility	3.57	0.634
IT Literacy	3.80	0.595
Usability	3.73	0.650
<b>Average Grand Mean on the Effort</b>	<b>3.70</b>	<b>0.580</b>

Source: Authors.

**Note:** 5.00–4.21 for Strongly Agree (Completely Enabler), 4.20–3.41 for Agree (Mostly Enabler), 3.40–2.61 for Slightly Agree (Partially Barrier), 2.60–1.81 for Disagree (Mostly Barrier), and 1.80–1.00 for Strongly Disagree (Completely Barrier).

*Accessibility (mostly enabler).* With e-government, information systems can be accessed through mobile phones and computers. During the pandemic, when the Civil Service Commission released a guideline for hybrid work arrangements, government agencies with existing information systems easily adopted to the new setup. Agencies also use the power of social media platforms for faster communication and response. Some are using customer hotlines or chatbots to respond to inquiries even after office hours. One LGU participant shared that DICT has implemented a national broadband project that provides network access to the public. Wi-Fi hotspots were installed in different parts of the city to provide free internet for a limited time. Also, the LGU's business permit department put up e-service kiosks during caravans to bring services of the city government nearer to the people. In general, accessibility is still dependent on users' access to the internet.

*IT literacy (mostly enabler).* The respondents agree that the current e-government systems are not complicated and are user-friendly. Technical problems that occurred were easily resolved as the users were given proper training, either tutorials or webinars, to learn all the functions of the systems. E-books are also available aside from the digital literacy classes embedded in the programs provided by the Department of Education. Also, DICT has a division in charge of ICT access, deployment, and conduct of training at the national, regional, and local levels.

*Usability (mostly enabler).* Users expect that information systems are easy to navigate and understand, the interface is appealing, and the user can easily perform the tasks required using the users' manual. Through e-government, processes can be streamlined to minimize errors and reduce corruption.

## 4.5 Influence on E-Government

E-government can help achieve specific outcomes in key policy areas (e.g., online information can help boost use of an educational or training program) and ICT is expected to contribute to broad policy objectives (e.g., the use of ICT can contribute to other economic policy objectives by reducing government expenditures through more effective programs, improving business productivity through administrative simplification, and promoting the information society and ICT industry). The development of e-government in OECD countries demonstrates that having a vision is not sufficient to ensure the success of initiatives. *Leadership* is needed at all levels of organizations to translate the vision into programs and action plans, to motivate people, to create incentives and opportunities for change, and to encourage collaboration and ensure coordination of initiatives. In some OECD countries, political leadership has had an important role in shaping and backing e-government initiatives and ensuring high level coordination of e-government [62].

The degree of e-government's influence can be determined through two subfactors: (a) Government mobility/encouragement, which are the actions or initiatives of the government to increase the level of adoption of e-government; and (b) Society/Stakeholder expectations/experience, which are based on the society's perception and experience on how e-government will be useful to its users.

Table 6 shows the extent of influence of e-government in terms of program/policy implementation and stakeholders experience. The results show an average grand mean of 4.14 with a standard deviation of 0.546, which means that when it comes to the implementation of programs, policies, and initiatives, government's influence is *mostly an enabler* of e-government that stimulates end-user's adoption. This means that respondents strongly agree that e-government mobilizes the government's resources and strengthens the implementation of policies and regulations. It brings

national, regional, and local administrations closer to the common people and provides efficient and effective services through improving the quality of work and delivery of services. Moreover, the e-government system is perceived to provide better management, greater convenience, cost reductions, and other benefits of productivity to a government agency.

TABLE 6.

## INFLUENCE OF E-GOVERNMENT SYSTEMS/SERVICES

Subfactor	Grand Mean	Standard Deviation
Government Mobility/Encouragement	4.11	0.575
Society/Stakeholder Expectations/Experience	4.17	0.611
<b>Average Grand Mean on the Influence</b>	<b>4.14</b>	<b>0.546</b>

Source: Authors.

Note: 5.00–4.21 for Strongly Agree (Completely Enabler), 4.20–3.41 for Agree (Mostly Enabler), 3.40–2.61 for Slightly Agree (Partially Barrier), 2.60–1.81 for Disagree (Mostly Barrier), and 1.80–1.00 for Strongly Disagree (Completely Barrier).

Participants from the FGDs shared that they are using other platforms such as TikTok to inform the public of the e-government system and services being offered by their agencies. DICT also conducts roadshows to inform the public of the different benefits of using the systems. They also conduct distribution of annual Digital Awards to LGUs for implementing the services in their constituents. Government adopts different strategies to encourage the customers to maximize the use of websites and e-government systems. These systems were developed to improve the lives of the public, promote transparency, increase efficiency, and build trust and integrity between suppliers.

However, some of the participants pointed that the benefits of e-government are not felt due to *insufficient infrastructure* as well as *lack of buy-ins* from the stakeholders. The government encourages partnerships and collaborations among agencies in projects such as computerization and digitalization of processes, promotion of 4th Industrial Revolution/Digitalization in the regions and collaboration with industries, LGUs, and academe. Though there are measures to adopt e-government systems, there are still *challenges in terms of support and implementation*. Some of the participants said that they have laid out concrete plans and activities, but they face problems in implementation.

## 4.6 Enablers and Barriers in the Implementation of E-Government

It is evident that ICT plays an important role in facilitating good governance. ICT is considered as an enabler of e-government practices to effectively and efficiently deliver government functions for an improved and better governance. The implementation of e-government facilitates citizen participation in governance by increasing access channels to government. In the FGD conducted with user and provider respondents, one participant mentioned that *convenience and accessibility* are enablers in the implementation of e-government practices. However, these factors depend on the *level of literacy* of people and sectors availing the services of the government, especially those who belong to the vulnerable sectors that prefer the traditional way of going to government offices and transact over the counter.

Most of the FGD participants shared that the *COVID-19 pandemic* in 2020 gave them no choice but to adopt to electronic transactions. Though there were difficulties encountered in adapting to electronic systems, the pandemic has helped and pushed people forward to shift to electronic and digital ways of accomplishing things. In coordination with the Department of Labor and Employment, organizations invested in upskilling the workforce to ensure smooth and continuous delivery of services during the pandemic. Government services were also converted to online systems to serve public and private customers and employees. Through these platforms, the productivity of the agencies significantly increased, especially in processing documents and delivering core services.

According to OECD, external barriers to e-government often concern breakdowns, missing components, or lack of flexibility in the government-wide frameworks that enable e-government. These barriers cannot be overcome by agencies alone but need to be resolved through concerted efforts from other actors (e.g., in central administration). The result of these barriers can be an inability to achieve a whole-of-government perspective in e-government implementation. Barriers such as (a) legislative and regulatory, (b) financial, and (c) digital divide can impede the uptake of e-government.

In the FGDs conducted, *internet infrastructure and speed* were the most common barriers noted by the participants. One consideration in measuring the reliability of e-government is its ability to cater to the needs of the users under normal usage. According to the data reported by Ookla as of October 2022, the Philippines ranked 81st in the global mobile internet speed and ranked 54th in the fixed broadband global average category. Moreover, internet infrastructure (Smart, DITO, and Globe) in the country is owned by private companies and this imposes additional *security risks* in government systems and transactions.

*Lack of collaboration and coordination* among government agencies resulted in information systems developed in silos. This means that repetitive inputs are needed since information systems are not linked to each other. Other common barriers identified on e-government that vary from one organization to another are budget/funds, prioritization, and organizational culture. Budget becomes a barrier especially for organizations that are small and with *limited funding* to implement e-government. Hiring of internal or external developers requires additional operating costs for the organization. There are also instances in which *e-government holds the least priority* for the management as it requires large amount of investment to implement. Moreover, employees prefer the traditional or manual way of doing government transactions. Increasing motivation and desire for growth in employees plays an important factor in the adoption of e-government practices. In

some cases, e-government is given the highest priority with regular budget allocation by the management. However, there are *limitations on IT skills and capabilities* in government agencies. With the standard salary rates in government agencies, IT practitioners are more inclined to work in private companies that offer benefits and competitive and higher salaries. This poses a problem to the government as lack of IT human resources to implement and manage information systems affects efficiency in e-government.

#### 4.7 Impact of E-Government System on Its Users

E-government is used to improve the efficiency of the government services delivery to citizens, employees, businesses, and agencies [63]. It can enhance communication between government agencies and their constituents by providing access to information and services online at relatively low cost and provide public services through websites [64]. The combination of ICTs and citizen participation will create e-participation, enabling citizens to play a better role in running of the government [65].

Table 7 shows the extent of impact of e-government on the users. The result indicated that e-government has *major short-term impact on productivity* of the users with a grand mean of 3.93 and standard deviation of 0.917. This means that users perceived e-government as a major contributory factor to individual and organizational productivity. Some user respondents noted that e-government promotes trust in government agencies and makes data consolidation and analytics easy.

*Saving time and money* had the highest mean response of 4.19 which means that most of the respondents believed that they were able to save time, money, and effort due to the fast, easy, and reliable transactions facilitated by e-government system. The adoption of e-government has made an essential change in the ways of conducting daily operations at work by utilizing ICT resources. The purpose of e-government does not lie only in transporting manual or traditional information and transactions to electronic platforms, but it also calls for rethinking ways in which the government functions are carried out today in order to improve processes.

**TABLE 7.**

#### IMPACT OF E-GOVERNMENT SYSTEM ON ITS USERS

Indicator	Mean	Standard Deviation
Accelerating access to information	4.12	1.041
Customer-centric (addressing customer needs)	4.07	1.045
Providing high-quality and straightforward services	3.90	1.008
Timely response to inquiries	3.74	0.989
Encouraging smooth interaction with clients	3.90	1.031

Providing a user-friendly interface	3.88	0.993
Fostering collaboration and participation	3.69	1.047
Encouraging long-term partnerships	3.83	0.986
Saving time and money	4.19	1.018
Supporting other programs/initiatives	3.98	1.024
<b>Grand Mean</b>	<b>3.93</b>	<b>0.917</b>

Source: Authors.

Note: 5.00–4.21 for Major Long-Term Impact, 4.20–3.41 for Major Short-Term Impact, 3.40–2.61 for Significant Impact, 2.60–1.81 for Short-Term Impact, and 1.80–1.00 for Minimal Impact.

#### 4.8 Perceived Impact of E-Government System on Good Governance

According to the UN Economic and Social Commission for Asia and the Pacific (UNESCAP), good governance has eight characteristics. These are (a) Participatory, (b) Consensus-Oriented, (c) Accountable, (d) Transparent, (e) Responsive, (f) Effective and Efficient, (g) Equitable, and (h) Inclusive. The participants of the FGD said that e-government contributed to promoting good governance particularly on the legitimacy of documents (Accountability), and they were able to do government transactions outside office hours (Efficient and effective). One of the FGD participants shared that the current enterprise resource planning system of their organization does not really take into consideration the persons with disabilities. E-government is not yet equitable for all citizens; hence, the current e-government programs lack the factor of “Inclusivity” as contributory to good governance.

Providers of e-government system were asked to share their perception of the impact of e-government system on good governance. Table 8 shows the extent of the impact of e-government in promoting good governance. The result had a grand mean of 4.18 and standard deviation of 0.865. This implies that *e-government has major short-term impact on good governance*.

Among the five indicators, *processes and procedures* had the highest mean of 4.24 which implies that e-government has *major long-term impact* in promoting good governance.

**TABLE 8.**

#### PERCEIVED IMPACT OF E-GOVERNMENT SYSTEM ON GOOD GOVERNANCE

Indicator	Mean	Standard Deviation
Governmental tasks	4.22	1.040
Processes and procedures	4.24	0.970
Quality of public services	4.07	1.061

Use of information in the decision-making process	4.20	0.919
Communication between government and citizens	4.13	1.010
Transparency	4.22	0.965
<b>Grand mean</b>	<b>4.18</b>	<b>0.865</b>

Source: Authors.

Note: 5.00–4.21: Major Long-Term Impact; 4.20–3.41: Major Short-Term Impact; 3.40–2.61: Significant Impact; 2.60–1.81: Short-Term Impact; 1.80–1.00: Minimal Impact.

## 4.9 Perceived Impact of E-Government on the Productivity of Government Agencies

The use of the e-government system has significant impact on the productivity of organizations. Before the establishment of e-government, agencies mainly depended on traditional offline services. However, when e-government was established, the shift of transactions to online services improved the efficiency of services, thereby promoting synergy between different departments. Table 9 presents the extent of impact of e-government on the productivity of government agencies. The results showed that all the indicators relative to e-government have a *major short-term impact* on productivity with a grand mean of 3.98 and standard deviation of 0.853. *Collaboration between units* in the organization had the highest mean of 4.19 which implies that e-government promotes collaboration in achieving organizational targets and productivity.

**TABLE 9.**

### PERCEIVED IMPACT OF E-GOVERNMENT SYSTEM TO THE PRODUCTIVITY OF GOVERNMENT AGENCIES

Indicator	Mean	Standard Deviation
Improving quality and quantity of work output (personal)	3.98	0.981
Achieved the target goals in a timely manner (personal)	3.85	0.940
Efficiency in doing work/assigned tasks (personal)	3.93	1.025
Feeling motivated at work (personal)	3.74	0.975
Employee satisfaction (personal)	3.83	0.986
Timely delivery of services (organization)	4.07	0.968
Timely decision-making (organizational)	4.02	0.942
Collaboration between units in the agency (organizational)	4.19	0.933
Customer satisfaction (organizational)	4.09	1.014
Reducing operation cost (organizational)	4.11	0.984
<b>Grand Mean</b>	<b>3.98</b>	<b>0.853</b>



Source: Authors.

Note: 5.00–4.21 for Major Long-Term Impact, 4.20–3.41 for Major Short-Term Impact, 3.40–2.61 for Significant Impact, 2.60–1.81 for Short-Term Impact, and 1.80–1.00 for Minimal Impact.

#### 4.10 Users Feedback on the Current E-Government Systems/Services

According to the survey respondents, the current e-government systems and services allow swifter communication and convenience in availing government services. The loom of low-cost smartphones has increased the citizens' participation in e-government as it is more accessible at a cheaper price. Smartphones pushed the need for systems application to be developed. A private business owner shared that his company utilizes government's online systems such as DFA and PAGIBIG/HDMF, but these systems still experience *technical glitches*; however, he noted that government's online systems are very useful to the private sector.

Of the 42 user respondents, 30.95% said that the major problem they encountered in using the e-government system is the *weak internet connection*. Other issues raised in using e-government systems are enumerated below:

##### System Infrastructure/Connectivity

- Maintaining the physical server
- Site crash
- Some agencies have no online payment
- Sometime when uploading bulk file, it encounters system error
- The information is not available
- The system maintenance takes days to finish but issues remain unresolved

##### Security

- Data privacy
- Insufficient security features making it vulnerable for hackers or scammers
- Fees
- Fees are a little excessive
- Payment systems should connect with all banks

##### IT Literacy

- Low literacy on awareness focusing IT

## Policies

- Some have automated appointment systems; however, one needs to report to the office physically and the appointment is not valued. We still must spend almost a day in their office physically.

Based on the feedback from users and providers of e-government systems, the study arrived at two kinds of e-government barriers: structural and cultural. On a positive note, a participant stated that the system at his workplace is very convenient and having these systems installed allows them to plan an alternative work arrangement, such as working from home, when required.

### *Structural Barriers/Feedback*

The group discussions evidently showed the structural barriers being experienced by both the users and providers of e-government systems. Setting up an *ICT infrastructure was recognized to be one of the main challenges for e-government implementation*. Of the survey respondents, 11% affirmed *weak internet connectivity* while using the current e-government systems. As one participant asserted, the success of e-government implementation would depend on the *structure capacities of digital infrastructures* and their integration focus.

However, ICT literacy and e-readiness of the users shall also be considered along with ICT infrastructure in order to utilize and benefit from e-government applications. E-readiness assessments are performed to determine a country's capacity to use and apply ICT. These are primarily focused on the extent to which governments have the capacity to implement applications and users have the capacity to take advantage of them. They help to determine which types of services can realistically be provided, which barriers are likely to be encountered, and which complementary initiatives are necessary to enhance their impact and sustainability [65]. Ndou [66] presumed that the higher the level of human development, the more likely it is for citizens to be inclined to accept and use e-government services. Thus, public private partnership should be established to develop a modernized e-government infrastructure that will provide access opportunities for disconnected individuals and groups. *Lack of infrastructure* was repeatedly mentioned during the group discussions as primary barriers to the implementation of e-government. With the limited e-government initiatives, *a regular budget allocation for the implementation of e-government systems* should be in place.

For the providers of e-government services, the need to *improve the technical skills* of those personnel handling and managing the e-government systems was emphasized. The capacity and skills of developers and managers shall meet the standards as it is important in project management. The e-government system can be implemented successfully if there are qualified personnel to manage and develop the e-government projects. Moreover, the government is gearing towards the adoption of big data analytics for public service delivery giving opportunity for citizen's engagement. With big data analytics, government leaders and managers will employ data driven decision-making and craft strategic e-governance policies. However, there is *lack of concrete policies* to support the development of capacities for big data analytics skills as well as funding for big data infrastructure.

One FGD participant shared his experiences as user of mobile banking, particularly the Landbank mobile app. The participant appreciated Landbank for improving the system in their mobile

banking app especially at the height of the pandemic where all transactions were being done online. However, it is common to experience *security issues*. Thus, security policies and standards that meet citizen expectations shall be considered.

### *Cultural Barriers/Feedback*

The main barriers of e-government implementation are not structural but cultural implications of new emerging technologies. Also, cultural barriers were prominently mentioned during the discussions compared to structural barriers. Participants of the FGDs affirmed that Philippine bureaucracy has tedious processes and Standard Operating Procedures that hinder the development and implementation of e-government systems; therefore, the modernization of government's regulations should be enforced which seeks to contribute to the betterment of the bureaucracy. Measures to achieve regulatory efficiency should be developed.

On another note, *coordination in government processes and policies* has been the greatest challenge in introducing e-governance in the Philippine public sector due to different processes and tools being utilized. Respondents described *lack of institutional coherence and interaction* which resulted in duplication of information systems serving the same purpose. It was stated that there should be shared standards and compatible infrastructure among departments and agencies. As it is now, the whole-of-government approach is not integrated at all levels of the government. The *absence of a policy framework of cooperation* at the national and regional levels hindered the smooth implementation of e-governance. Moreover, the limited involvement of the local government during policy formulation and planning stage affects the adoption of e-government relative to the existing local cultures, norms, and economic structures of the users. One example cited by a participant is that there are units/departments under one organization that use different systems for the same purpose; hence, there are issues on coherence and interconnectedness of information systems. One respondent shared that students transferring from one campus to another are required to register again in another system with the same information requirements of the university.

Some respondents also emphasized the *lack of cooperation between system users/stakeholders* when deploying a new system in their organization. They noted that these users rest on the *usual institutional habits and established* “ways of doing things.” As recommended by the comparative study of Weerakkody, Janssen, and El-Haddadeh's [67], structural changes need to be accompanied by a “well thought out education and training program [that] ensures buy-in and ownership...” by public servants at all levels for digitalization efforts to take place. The *right organizational deployment strategy* must be taken into consideration in order to avoid further complications.

In terms of *management support and leadership*, half of the participants agreed that there is a *lack of ICT planning by agencies in adopting new changes in e-government services*; hence, it is a problem rooted within the practice and culture of an organization. Several participants responded that there were systems that mismatched to the needs of the organization and systems that are not a priority of the management. The support from the leaders and top management is a vital part of e-government implementation to gain the necessary resources, training, cooperation, and coordination with other stakeholders to attain successful e-government implementation. Government should *develop a long-term framework that will reduce public concerns about data*

*sharing* and encourage an open, joined-up and industry-friendly approach by public bodies.

It was also recognized that policies needed to be outcome driven and strong decisions should be taken by the management to improve businesses and services. Many participants stated that a cultural shift is needed, and that *leadership is key to changing organizations*. Government agencies act faster if there is a mandate and instruction coming from the executive branch, especially the Department of Interior and Local Government (DILG). The government should *encourage all sectors to participate in the implementation and development of e-government*, encompassing all barriers in the implementation and development of e-government.

#### 4.11 Proposed Improvements in E-Government

Presented in Table 10 are the proposed improvements identified by the respondents in the implementation of e-government. These are in the areas of connectivity, infrastructure, technical/system performance, system functionality and interoperability, capability development, collaboration, and policy reforms.

**TABLE 10.**

#### PROPOSED IMPROVEMENTS IN THE E-GOVERNMENT SYSTEM

Areas	Suggested Improvements
Connectivity	<ul style="list-style-type: none"> <li>Strengthen internet connection and system access throughout the country.</li> <li>Expand internet connectivity and speed.</li> <li>Government must regulate TelCo/internet provider for fast internet connection.</li> </ul>
Infrastructure/ Technical	<ul style="list-style-type: none"> <li>Have a relevant systems server.</li> <li>Availability of cloud services for deploying other e-government systems.</li> <li>An equivalent mobile application for the e-government system.</li> <li>Harmonization of information systems/Merging of e-government systems under one mega system using the PhilSys ID as platform.</li> <li>There should also be an e-system for supply inventories and supply utilizations.</li> </ul>
System functionality/ Interoperability	<ul style="list-style-type: none"> <li>More user-friendly.</li> <li>Improvement to user functionality and system availability.</li> <li>Faster service.</li> <li>Round the clock accessibility.</li> <li>Increase transparency and responsiveness of the system.</li> <li>Improve interoperability of systems.</li> <li>Need updating of information, data, and statistics.</li> <li>Online banking status on collection to be incorporated on as being member of Philippine Government Electronic Procurement System.</li> </ul>

Capability development	<ul style="list-style-type: none"> <li>• Availability of more online trainings/seminars to enhance capability of MSMEs.</li> <li>• Proper training and orientation of the programs.</li> </ul>
Policy	<ul style="list-style-type: none"> <li>• Policy reforms on online banking particularly on security features and liability of banking institutions.</li> <li>• With an option for physical submission.</li> <li>• Payment of fees, amortizations should already be done online.</li> <li>• Minimal fee for government transactions.</li> </ul>
Collaboration	<ul style="list-style-type: none"> <li>• Link to other relevant government agencies.</li> </ul>
Communication	<ul style="list-style-type: none"> <li>• Give advisory when there is a system maintenance.</li> </ul>

Source: Authors.

## 4.12. Correlations of Expectations, Efforts, and Influence on Good Governance and Productivity

This study uses the Pearson correlation in determining the relation of the three factors in the adoption of e-government such as expectation, influence, and efforts. Based on the computation shown in Table 11, it is observable that the three factors (expectation, influence, and efforts) are *correlated with good governance*, and all correlations (0.3000, 0.394, 0.673) of the factors are positive.

**TABLE 11.**

### CORRELATIONS OUTPUT FOR THE EFFECT OF THE FACTORS IN ADOPTING AND IMPROVING E-GOVERNMENT SYSTEM TO GOOD GOVERNANCE

Expectations and Good Governance	Pearson Correlation	0.300*
	Sig. (2-tailed)	0.027
	N	54
Effort and Good Governance	Pearson Correlation	0.394**
	Sig. (2-tailed)	0.003
	N	54
Influence and Good Governance	Pearson Correlation	0.673**
	Sig. (2-tailed)	0.000
	N	54

Source: Authors.

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

TABLE 12.

### MODEL SUMMARY OUTPUT ON THE EFFECT OF THE FACTORS IN ADOPTING AND IMPROVING E-GOVERNMENT SYSTEM TO GOOD GOVERNANCE

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.678 <sup>a</sup>	0.459	0.427	0.65501

Source: Authors.

a. Predictors: (Constant), Expectations, Effort, Influence.

Guide: The R can be interpreted as a correlation coefficient. However, instead of telling the relationship between the variables, it tells the strength of the relationship between good governance and factors (expectations, effort, influence). In this case,  $R = 0.678$ , which is a strong relationship. This suggests that the expectation, effort, and influence are relatively good predictors of good governance.

The  $R^2$  indicates the proportion of variation in good governance that can be explained by the expectation, effort, and influence. In this case, 45.90% of the variance in the data can be explained by the expectation, effort, and influence.

TABLE 13.

### ANOVA<sup>b</sup> OUTPUT ON THE EFFECT OF THE FACTORS IN ADOPTING AND IMPROVING E-GOVERNMENT SYSTEM TO GOOD GOVERNANCE

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	18.220	3	6.073	14.156	0.000 <sup>a</sup>
Residual	21.452	50	0.429		
Total	39.672	53			

Source: Author

a. Predictors: (Constant), Expectations, Effort, Influence.

b. Dependent Variable: Good Governance.

Guide: The test of ANOVA tells whether the expectation, effort, and influence are significant predictors of good governance. As significance value is less than  $p = 0.05$ , then expectation, effort, and influence can predict good governance. In short, the result of ANOVA test indicates that the expectation, effort, and influence are significant predictors of the good governance,  $F(3, 50) = 14.156$ ,  $p = 0.000$ .

TABLE 14.

**COEFFICIENTS<sup>a</sup> OUTPUT ON THE EFFECT OF THE FACTORS IN ADOPTING AND IMPROVING  
E-GOVERNMENT SYSTEM TO GOOD GOVERNANCE**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-0.072	0.791		-0.091	0.928
Expectations	-0.038	0.238	-0.022	-0.159	0.875
Effort	-0.132	0.237	-0.089	-0.558	0.579
Influence	1.179	0.224	0.744	5.272	0.000

Source: Author

a. Dependent Variable: Good Governance.

Guide: While ANOVA test tells whether the overall model which includes expectation, effort, and influence are significant predictor of good governance, the table of coefficients tells the extent to which the individual predictor variables contribute to the model. By observing the table, influence is the only factor contributing to the model with  $p = 0.000$ . Meanwhile, expectation and effort do not contribute to the model with  $p = 0.875$  and  $p = 0.579$ , respectively.

A multiple regression was carried out to investigate whether expectations, effort, and influence in the e-government system could significantly impact good governance. The results of the regression indicated that the model explained 45.90% of the variance, as shown in Table 12 and that expectation, effort, and influence in the e-government system were significant predictors of good governance,  $F(3, 50) = 14.156$ ,  $p = 0.000$ , as shown in Table 13. In Table 14, *while influence in the e-government system contributed to the model ( $B = 1.179$ ,  $p < 0.05$ ), expectations ( $B = -0.038$ ,  $p = 0.875$ ), and effort ( $B = -0.132$ ,  $p = 0.579$ ) in the e-government system did not. This also supports the results presented in Table 11 that show that while all the three factors are positively correlated to good governance, only influence (0.673) has a strong correlation to good governance, while both effort (0.394) and expectations (0.300) have medium correlation.*

TABLE 18.

### CORRELATIONS OUTPUT FOR THE EFFECT OF THE FACTORS IN ADOPTING AND IMPROVING E-GOVERNMENT SYSTEM TO PRODUCTIVITY

Expectations and Productivity	Pearson Correlation	0.327*
	Sig. (2-tailed)	0.016
	N	54
Effort and Productivity	Pearson Correlation	0.386**
	Sig. (2-tailed)	0.004
	N	54
Influence and Productivity	Pearson Correlation	0.635**
	Sig. (2-tailed)	0.000
	N	54

Source: Authors.

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

TABLE 15.

### MODEL SUMMARY OUTPUT ON THE EFFECT OF THE FACTORS IN ADOPTING AND IMPROVING E-GOVERNMENT SYSTEM TO PRODUCTIVITY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.638 <sup>a</sup>	0.407	0.372	0.67605

Source: Authors.

a. Predictors: (Constant), Expectations, Effort, Influence.

TABLE 16.

### ANOVA<sup>a</sup> OUTPUT ON THE EFFECT OF THE FACTORS IN ADOPTING AND IMPROVING E-GOVERNMENT SYSTEM TO PRODUCTIVITY

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	15.689	3	5.230	11.443	0.000 <sup>a</sup>
Residual	22.852	50	0.457		
Total	38.541	53			

Source: Author

a. Predictors: (Constant), Expectations, Effort, Influence.

b. Dependent Variable: Productivity.



TABLE 17.

**COEFFICIENTS<sup>a</sup> OUTPUT ON THE EFFECT OF THE FACTORS IN ADOPTING AND IMPROVING  
E-GOVERNMENT SYSTEM TO PRODUCTIVITY**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	–0.160	0.816		–0.196	0.845
Expectations	0.070	0.245	0.041	0.284	0.778
Effort	–0.133	0.244	–0.090	–0.544	0.589
Influence	1.055	0.231	0.675	4.569	0.000

Source: Author

a. Dependent Variable: Productivity.

The results of the multiple regression that were carried out to investigate whether expectations, effort, and influence in the e-government system could significantly impact productivity indicated that the model explained 40.7% of the variance, as shown in Table 15 and that expectation, effort, and influence in the e-government system were significant predictors of productivity,  $F(3, 50) = 11.44$ ,  $p = 0.000$ , as shown in Table 16. The results of measuring the relationship between the three stated factors and good governance were the same as the results of measuring the relationship of the factors and productivity – influence was the most significant factor. As Table 17 shows, *while the influence in the e-government system contributed to the model ( $B = 1.055$ ,  $p < 0.05$ ), expectations ( $B = 0.070$ ,  $p = 0.778$ ) and effort ( $B = -0.133$ ,  $p = 0.589$ ) in the e-government system did not; additionally, this is supported by the results presented in Table 18 that show that while all the three factors are positively correlated to productivity, only influence (0.635) has a strong correlation to good governance, while both effort (0.386) and expectations (0.327) have medium correlation.*

In conclusion, both the regressions that were made for measuring the relationship of influence, effort, and expectations with good governance and productivity showed that all three factors definitely have an impact on good governance and productivity but of the three factors, only *influence weighs more or has a significant impact or direct relation to both good governance and productivity.*

## CHAPTER 5: CONCLUSIONS

The study underscored the need for the efficient functioning of public institutions for developing and implementing programs for society's welfare. The reach and depth of governance is a major contributing factor to the quality of life of the citizenry. The enabling spirit and mindset must inherently emanate from the core of governance. It carries immense trust and hopes of the people and must imbibe all the "goodness" to realize its bottom line – A Public Good.

E-government is envisioned as a means of promoting stronger information society and e-commerce policies. E-government impacts good governance issues that are at the heart of many current discourses on how to improve relations between government and citizens. E-governance is the way forward for creating a cycle of transparent, accountable, responsive, efficient, and cost-effective governance. It is a means to simplify procedures, practices, and modify service delivery in a profound manner. Government transparency is important because it *allows the public to be informed about what it is working on along with the policies to implement these initiatives*. By contributing to reduced fraud and corruption, greater openness and trust in government institutions, it can help meet economic policy objectives and build citizen trust in government.

Indisputably, the enhanced information diffusion capacity of the internet increases the pressure on government to be more transparent. It is incumbent for the government to decide, in dialogue with citizens, business, and civil society, how best to safeguard the public interest, reconciling the search for better knowledge management with the demand for data privacy and responding to pressures for greater transparency and disclosure at realistic cost. It is also valuable bearing in mind the incentives, opportunities, and limitations of the public administrations that are being tasked to carry out e-government initiatives. Given the mandate to do so, they can identify and remove common barriers to improved service delivery as well. It is therefore vital to e-government transformation that governments appoint an official with real authority across departmental boundaries to facilitate strategy and decision-making regarding the country's ICT architecture and assist agencies in their efforts to run more effective and efficient programs. One measure to be taken is the establishment of a coordinating authority in the form of a CIO or equivalent to head e-government working groups at the national level.

Finally, the proposed policies and strategies are expected to address the challenges of *common understanding and sense of mission across the bureaucracy*. This emanates from a strong political will and *government-wide vision* that helps bond e-government initiatives to *broader strategic and reform objectives*. This will help promote and cultivate interdepartmental coordination, ensure check and balance and fairness, and help to stay focused in delivering quality e-government services that contribute to institutional and national productivity.

The vision needs to be *communicated across all government entities*. In the process, this will provide for avenues of improving coordination and collaboration, clarifying *public-private partnerships*, ensuring that government officials have the *essential skills and tools* to carry-out their mission, and monitoring and evaluating success from the lens of *good governance and productivity*.

The study, though limited in time and scope, has provided valuable insights on the needed reforms which may serve as the foundation for the adoption or improvement of e-government in the country. It highlights internal inconsistencies but underscores e-government initiatives as an important tool to renew the interest and trust of citizens toward public management and administration.

The insights and information can be a basis of more in-depth studies in the future on how government online applications for service delivery and business processes can provide a demonstrated effect which can help lead to the acceptance of e-government across the economy more broadly. This will further contribute to developing or enhancing processes, standards, and relevant and significant policies which can be applied across government entities leading to the realization of goals for good governance and national productivity.

## CHAPTER 6: RECOMMENDATIONS

The path of good governance has been aided by tools presented by advancements in ICT. The adaptation of these tools in different domains of governance has unleashed an era of e-governance. The degree of progress attributed to the assimilation of ICT tools makes governance economic, efficient, effective, and productive.

To realize a national strategy for e-governance, effective leadership is required. The challenges and opportunities of integrated e-service delivery pertains to how e-government harmonization requires *strong leadership and commitment* in order to connect and communicate in a coordinated way and integrate the various public sector organizations, which is a crucial pillar of whole-of-government practice. This also concerns the *collection and use of data* which is segmented along with the structure of government. Although this separation according to functions serves to protect the privacy of citizens' data, there is a need to *strike a balance* between protecting citizens' privacy and better meeting their needs with more efficient, proactive services. What starts as an exercise aimed at developing more responsive programs and services becomes an exercise in governance (Lenihan, 2002). [68]

The results of the study brought out salient and major issues concerning: (a) procedural and methodological knowledge inhibited by the complexity and lack of clarity of requirements of various agencies which is dependent on the collaboration and information sharing between and among organizations, (b) IT proficiency and skills improvement which includes the challenge on digital divide, (c) budgetary constraints to ensure support for e-government strategic plans and programs and (d) data analytics for enhanced decision-making. In reference to its framework connecting the interplay of factors involving expectation, effort, and influence, it is the influence factor concerning *government mobility of resources/encouragement and society/stakeholder expectation/experience* that has the most impact on good governance and productivity.

In this regard, the following are the proposed policy recommendations that include general strategies based on key issues relating to the research study:

### Inclusive Governance

*Policy directives to strengthen partnership with relevant institutions to enhance mutually reinforcing collaborations regarding e-government policies and their implementation.*

A different culture and philosophy must be adopted to incorporate whole-of-government values into all departments and agencies. Societal forces such as the mounting complexity of problems and difficulties call for collaborative responses to the increased demand of citizens for more tailored and accessible public services. These services should be thoughtfully planned, implemented, and evaluated with their participation. The prospects and opportunities brought about by the ICT transform the way the government works for the people.

Agencies providing e-government services cannot operate in silos and collaboration is essential for successful e-government implementation. *Revisiting institutional arrangements* to address the vertical and horizontal fragmentation signifies one of the major challenges of whole-of-government implementation. Public sector initiatives where services cross departmental boundaries present a formidable challenge. The interconnected environment of e-government requires vital commitment to ensure collaboration of action to guarantee interaction and cooperation, while avoiding duplication. *Promoting information sharing and cooperative knowledge management* effectively align top-down policies with bottom-up issues. This enables the adoption of new and different ways of developing policies, designing programs, and delivering services. There should be clear *policy directions and actions* to address diverse and crucial areas of concern, such as connectivity, accessibility, availability, literacy, information security, and privacy protection, among others.

In this regard, there is a need for a *policy on inclusivity*, a strategy of *whole-of-government approach*, and *structures* that play an important role in steering and coordinating e-government implementation across agencies. A whole-of-government strategy necessarily indicates that the systems deployed throughout government can communicate with one another. A *policy framework of cooperation in the national and regional levels* should be established to provide capacities for seamless and continuous services. A CIO or equivalent should be designated who will be responsible for providing policy leadership, supporting and monitoring open government initiatives, coordinating ICT projects across government to ensure they are aligned with overall strategy, and monitoring and reporting. Determining baseline conditions will leverage collaboration across and among departments through institutional arrangements so that the resulting system is holistic, synergistic, and aligned in the delivery of public services.

The existing structure of the *Regional Development Councils* in the country should be optimized in keeping e-government initiatives aligned with broader public administration program agendas. Top e-government officials must bring on board key stakeholders across departments and agencies, identify shared needs, pinpoint potential gaps and redundancies in implementing strategic goals, and guide e-government innovation in service delivery. They can also lead process redesign efforts, facilitate communication among departments, articulate best practices, and leverage shared solutions.

In particular, the *DILG* should play a more active role in ensuring the implementation of e-government initiatives at the LGUs level. Working committees maybe established composed of agency heads and senior officials that have clearly defined functions which may include, among others, advisory and information sharing, policy analysis and development, and implementation monitoring and oversight. E-government policies are implemented in relation to *local cultures, norms, and economic structures*. Efficiency and citizen-centered approaches in the redesign of information relationships between public administration and citizens to create added value are crucial. Prospective added value is the source of information of citizens' issues through the implementation of municipal contact centers, which may have a positive impact on the conditions for local planning.

The important role of managerial involvement is fundamental in setting the e-government project goals, simplifying existing work processes, and ensuring an overall efficient setup to improve the delivery of e-government services. There should be an *expanding network of key persons and institutions* to collaborate outside of institutional borders and accelerate the efficient sharing of best practices, technical expertise and tools, and vital lessons learned that lead to the harmonization in e-government practice.

## Proficiency and Skills Acceleration

*Policy directives to develop and accelerate proficiency and skills to support e-government development and improvement*

As technology progresses, some skills become obsolete. Workers, entrepreneurs, and public servants must acquire and upgrade new skills that help them become more productive and to seize opportunities in the digital world, i.e., adapting their skills to the demands of the new economy (WDR, 2016) [13].

To unfold an era of e-governance, *policy directives* for a massive training program carried out with the help of experts and universities are an indispensable precondition. The digital divide is also an important barrier to address, in that people who do not have the capability and access to the internet will be unable to benefit from online services. In this regard, appropriate *policies* to break up the digital divide, including those focused on *increasing access and marketing of online services, and strengthening ICT education and skills* should be established. One initiative to address the digital divide is to provide technology more openly within the education sector to educate students using online facilities within schools and colleges or in communal or public places such as *libraries and centers* where people can learn ICT.

At the organization or department level, ICT skills are not only needed to ensure e-government development but have become a more universal skill of literacy, proficiency, and *managerial aptitude*. Appropriate policies need to be established to accelerate the acquisition of basic and advanced ICT skills permeating all levels of the organizations. The capacities and skills required for e-government do not only entail technical aspects but need broader *managerial skills to engage in e-government decision-making*. Although fundamental skills entail basic technical IT literacy, skill sets should also include an understanding of information management of the organization's IT department and outside partners that enable the integration of the organization's ICT strategy with its wider objectives and goals. One strategy that can be adopted is the identification and assignment of an e-government CIO or equivalent at the department level with proficiency in establishing IT services and IT security policies. The overall role of the CIO is to ensure business processes run efficiently, with a goal of promoting the productivity of individual employees and business units.

There should also be policies and strategies for sustained efforts to *identify skills* gaps to strengthen skill assessment and development across government institutions. Skill assessment should enable institutions' *self-assessment* to gain an understanding of the skills required for planning, implementing, and delivering e-government services. The assessment classifies the skills available internally through internal information professionals and recognizes skill gaps that may need to be addressed by additional internal manpower complement or through outsourcing modalities. This is a major role of working committees headed by CIOs.

## Budgetary Reforms

*Policy directives or legislative measures to break budgetary barriers and ensure regular provision of budget to proposed e-government plans and programs.*

*Policy directives or legislative measures for centralized funding* for e-government plans and programs should be established to ensure support for collaboration among national departments

that extend into LGU jurisdictions. The *provision of funding* should be determined by established strategic plans and programs geared towards the: (a) *improvement of IT infrastructure*, (b) *provision of IT capability enhancement training*, and (c) *conduct of extensive IEC campaigns*.

To efficiently provide budget for said plans and programs cited above, there should be an examination of the *feasibility of centralized funding support for e-government initiatives* that enhances the ability to provide incremental funding that would allow for collaborative opportunities and leverage eventual gains. This may be achieved by offering some mutual solutions, systems, and infrastructure to connect institutions that need them. A *policy for centralized approach* may accelerate the successful delivery of internet-based services, which include departments with tight discretionary budgets to initiate e-government initiatives. In evaluating *e-government projects*, a variety of methods may be utilized to include both economic and noneconomic assessments methods such as benchmarking and *institution capacity assessment*. The most important thing in the evaluation is to arrive at a consensus that more cost benefit analysis of e-government can help better target scarce funds, build up support and political will for e-government, and reduce the risk of failure.

In addition, for the effective adoption of the e-government services, widespread and stimulating awareness *campaign programs* should be conducted, targeting potential users properly to inform them about the real benefits they would gain from the use of these services. Benefits should be articulated such as savings in time and effort, reduction in bureaucratic procedures, and enabling everyone to engage in governmental transactions on a fair basis.

## Big Data Analytics

*Policy directives to develop capacities for big data analytics skills of e-government systems thereby improving decision-making capabilities of both public and private institutions.*

The implementation of e-government system deals with the safety and security of huge amounts of data involved. Any government department caters to the needs of millions of citizens and thereby must deal with a substantial amount of data. The setting up of portals that aggregate large amounts of information and services into a website underscores the need for big data analytics skills and profound capabilities. A key objective of such portals is to facilitate citizen navigation and use of the content. There should be a clear *policy direction on employing big data analytics* that provides the ability to transform the environment of e-government initiatives such as how data is efficiently generated, maintained well, logically assessed, and optimally utilized for making future decisions based on the results produced.

Aside from a more precise analytics and greater regulatory conformity and compliance, the benefits that data analytics skills and capacities provide include improved data quality; decreased data management costs; and avenues to access needed data for scientists, analysts, and business users. It is also important to establish a concrete *policy on strategic public and private partnership to invest in building a complete data and analytics platform* because it produces social support and alignment, develops mindset, new concepts, ideas, and opportunities to improve government and business processes. This will enable institutions to *optimize the use of big data analytics*, which can distinguish patterns in a set and make projections based on past experiences that offer *justifications for making future actions* for more effective e-government initiatives.



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# LIST OF ACRONYMS

ANOVA	Analysis of Variance
BIR	Bureau of Internal Revenue
CIO	Chief Information Officer
DFA	Department of Foreign Affairs
DICT	Department of Information and Communications Technology
DILG	Department of Interior and Local Government
DOST	Department of Science and Technology
EGMP	E-Government Master Plan
FGD	Focus Group Discussion
G2B	Government-to-Business
G2C	Government-to-Citizen
G2E	Government-to-Employee
G2G	Government-to-Government
HDMF	Home Development Mutual Fund
ICT	Information and Communications Technology
MSMEs	Micro, small, and medium enterprises
PCIEERD	Philippine Council for Industry, Energy, and Emerging Technology Research and Development
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
WDR	World Development Report

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# ANNEXES

Annexe 1 Survey Form: Providers of e-Government System/Services

Annexe 2 Survey Form: Users of e-Government System/Services

Annexe 3 Questions in the Focus Group Discussion on e-Government

## Annexe 1

### Survey Form: Providers of E-Government System/Services

The study entitled E-Government: Policy and Strategy for Productivity Growth attempts to create a favourable ecosystem for the transformation of e-government services by the application of ICT for effective service delivery. Agreeing to participate is a desirable honesty from your end to acquire faithful results beneficial to the aim of this study. In assurance, all information you will be providing will be treated with utmost confidentiality and will only be used for this study. Your cooperation will be very much appreciated. Thank you.

### Part 1. Demographic Characteristics of the Respondents

*Instruction.* Please write your answer in the space provided or check the details that describe your characteristics.

A. Name (Optional): \_\_\_\_\_

B. Active Email Address: \_\_\_\_\_

- C. Age Generation: ☐ Silent (Born 1928 – 1945)
- ☐ Boomers (Born 1946 – 1964)
- ☐ Gen X (Born 1965 – 1980)
- ☐ Millennials or Gen Y (Born 1981 – 1996)
- ☐ Gen Z (Born 1997 – 2012)

D. Gender: ☐ Male ☐ Female ☐ Other Preference (Please specify): \_\_\_\_\_

E. Government Agency: \_\_\_\_\_

F. Location (of the Government agency): ☐ Rural ☐ Urban ☐ Semi-Urban

G. Years of service (in your current Government agency):

- ☐ Less than a year ☐ 5–6 years ☐ more than 10 years
- ☐ 1–2 years ☐ 7–8 years
- ☐ 3–4 years ☐ 9–10 years

H. E-Government system provided/utilised by your agency

- ☐ e-proposal ☐ e-application
- ☐ e-procurement ☐ e-processing (i.e., laboratory services, etc.)
- ☐ e-library ☐ Other/s (please specify): \_\_\_\_\_
- ☐ e-payment

## Part 2. Utilisation of E-Government Systems

*Instruction.* Please write your answer in the space provided or check the details that describe your characteristics.

A. Identify at least three major services and programs of your Agency that utilize e-government systems. Please specify them below:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

B. What percent of your agency's clients utilise the e-government system/s from your major services and programs?

- ☐ 1%–25%      ☐ 26%–50%
- ☐ 51%–75%      ☐ 76%–100%

C. Kindly specify at least three of your major customers/stakeholders that regularly utilise the agency's e-government system/s.

D. What is/are the common feedback/s from the customers/stakeholders about the Agency's e-government systems being used in major services and programs?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

## Part 3. The Expectation of the Respondents on the E-Government Systems

*Instruction.* Check the column that corresponds to your agreement. Use the following rating scale for your guide:

5—Strongly Agree      4—Agree      3—Slightly Agree      2—Disagree      1—Strongly Disagree

Sub-factor	Measuring Statement	Rating Scale				
		5	4	3	2	1
Availability	1. The government agency where I am connected has an e-government system to achieve its mission.					
	2. The agency allocates the appropriate budget to make the e-government available to the users.					
	3. The e-government system is consistently ready to perform its specified purpose under prespecified environmental conditions when called upon.					
	4. The e-government system that I am using is integrated with other government and nongovernment agencies.					
	5. The e-government system has an equivalent application downloadable to smartphones, tablets, and the like.					
	6. The e-government system that I am using can quickly connect, process traffic, and respond to the stakeholders.					
Reliability/ Security	1. The e-government system accomplishes its functions based on purpose without collapsing, in certain conditions, for a certain period, and with a certain level of trust.					
	2. The e-government system does not encounter bug occurrences.					
	3. The e-government system was sufficiently tested before the purchase from the manufacturer.					
	4. The e-government system that I am using in the agency is not obsolete.					
	5. I am using the e-government system according to its specific parameters.					
	6. I have undergone training to be sufficient in protecting and securing the e-government system while I am using it.					
	1. The e-government system has fast execution of core processes without compromising the delivery of information.					
	2. The e-government system simplified the services offered by the agency.					

Transparency/ Efficiency	3. The e-government system that I am using reduces my paperwork.					
	4. The e-government system that I am using saves communication cost.					
	5. The e-government system I am using makes me easily acquire the necessary comprehensive information.					
Convenience / Connectivity	1. I function well and do my work even when I am home using the e-government system.					
	2. The e-government system that I am using will only work and do its functions with strong and stable internet connections.					
	3. I can work smoothly without beating the deadline when I started using the e-government system.					
	4. When the e-government system was instituted for the agency, my functions in the work became uncomplicated.					
	5. I have a work-life balance when I started using the e-government system in the agency.					
Service Quality	1. Using the e-government system prevents me from doing any mistakes while doing my functions at work.					
	2. I am not receiving complaints from stakeholders after the introduction of e-the government system in the agency.					
	3. The expectations of the stakeholders concerning service delivery have been consistently met using the e-government system.					
	4. Customer satisfaction has been improved because of the e-government system.					
	5. The agency I am connected to has been receiving positive feedback since the utilization of the e-government.					

#### Part 4. Effort on the E-Government Systems as Perceived by the Respondents

*Instruction.* Check the column that corresponds to your agreement. Use the following rating scale for your guide:

5—Strongly Agree      4—Agree      3—Slightly Agree      2—Disagree      1—Strongly Disagree

Sub-factor	Measuring Statement	Rating Scale				
		5	4	3	2	1
Accessibility	1. The e-government system is accessible on a personal computer wherever I am if there is an internet connection.					
	2. I can access the e-government system through mobile phones wherever there is an internet connection.					
	3. The e-government system can be accessed even without an internet connection.					
	4. The services of the agency have become more easily accessible to all people, especially people with disabilities.					
	5. I can work outside the workplace using e-government services.					
IT Literacy	1. The e-government system can understand its functions easily.					
	2. The functions of the e-government that I am using are not complicated.					
	3. Without difficulty, I can resolve on my own, any technical problems that could occur in the e-government system while using it.					
	4. It is not necessary to be an IT expert to understand the functions of the e-government system that I am using.					
	5. The training is very comprehensive for me to learn all the functions of the e-government system.					
	6. The management supports capability development initiatives on employees' readiness to implement and utilize e-government systems.					

Usability	1. The architecture and navigation of the e-government system are nearly effortless and understandable.					
	2. After visiting the e-government, I can still remember performing the tasks in future visits.					
	3. Without difficulty, I can easily perform the tasks in the e-government system.					
	4. The interface of the e-government is appealing.					
	5. The e-government system is invulnerable to making errors while using it.					

### Part 5. Influence of the E-Government Systems on the Respondents

*Instruction.* Check the column that corresponds to your agreement. Use the following rating scale for your guide:

5—Strongly Agree      4—Agree      3—Slightly Agree      2—Disagree      1—Strongly Disagree

Sub-factor	Measuring Statement	Rating Scale				
		5	4	3	2	1
Government Mobility/Encouragement	1. The e-government mobilizes the government resources.					
	2. The e-government strengthens the government policies and regulations.					
	3. The e-government demonstrates the government's willingness to spearhead/provide efficient and effective services.					
	4. The e-government brings national, regional, and local administrations closer to the common people.					
	5. Improving the quality of work through knowledge about the software of service.					



Society/ Stakeholder Expectations/ Experience	1. The e-government system provides better delivery of services to the people.					
	2. The e-government system improves interactions with business and industry, and citizen empowerment through the information process.					
	3. The e-government system creates better management, greater convenience, cost reductions, and other benefits of productivity.					
	4. The e-government increases the citizens' empowerment.					
	5. The e-government establishes streamlined processes and procedures.					

### Part 6. Impact of the E-Government Systems on Good Governance

*Instruction.* Check the column that corresponds to your experience/perception on the time scale of the impact of e-government systems on good Governance. Use the following rating scale for your guide:

5—Major Long-Term Impact

4—Major Short-Term Impact

3—Significant Impact

2—Short-Term Impact

1—Minimal Impact

INDICATORS	5	4	3	2	1
1. Governmental tasks					
2. Processes and procedures					
3. Quality of public services					
4. Use of information in the decision-making processes					
5. Communication between government and citizens					
6. Transparency					

### Part 7. Impact of the E-Government Systems on Productivity as a Provider of E-Government Programs and Services

*Instruction.* Check the column that corresponds to your experience/perception on the time scale of the impact of e-government systems on Productivity. Use the following rating scale for your guide:

- 5—Major Long-Term Impact      4—Major Short-Term Impact      3—Significant Impact  
2—Short-Term Impact      1—Minimal Impact

INDICATORS	5	4	3	2	1
1. Improving quality and quantity of work output (personal)					
2. Achieved the target goals in a timely manner (personal)					
3. Efficiency in doing work/assigned tasks (personal)					
4. Feeling motivated at work (personal)					
5. Employee satisfaction (personal)					
6. Timely delivery of services (organizational)					
7. Timely decision-making (organizational)					
8. Collaboration between units in the agency (organizational)					
9. Customer satisfaction (organizational)					
10. Reducing operation cost (organizational)					
Others: _____					

## Annexe 2

### Survey Form: Users of E-Government System/Services

The study entitled **E-Government: Policy and Strategy for Productivity Growth** attempts to create a favourable ecosystem for the transformation of e-government services by the application of ICT for effective service delivery. Agreeing to participate is a desirable honesty from your end to acquire faithful results beneficial to the aim of this study. In assurance, all information you will be providing will be treated with utmost confidentiality and will only be used for this study. Your cooperation will be very much appreciated. Thank you.

### Part 1. Demographic Characteristics of the Respondents

*Instruction.* Please write your answer in the space provided or check the details that describe your characteristics.

A. Name (Optional): \_\_\_\_\_

B. Active Email Address: \_\_\_\_\_

- C. Age Generation: ☐ Silent (Born 1928 – 1945)
- ☐ Boomers (Born 1946 – 1964)
- ☐ Gen X (Born 1965 – 1980)
- ☐ Millennials or Gen Y (Born 1981 – 1996)
- ☐ Gen Z (Born 1997 – 2012)

D. Gender: ☐ Male ☐ Female Other Preference (Please specify): \_\_\_\_\_

E. Identify the government agency/agencies whose e-government system/s you are utilising:

Name of the Government Agency	Location		
1. _____	<input type="checkbox"/> Rural	<input type="checkbox"/> Urban	<input type="checkbox"/> Semi-Urban
2. _____	<input type="checkbox"/> Rural	<input type="checkbox"/> Urban	<input type="checkbox"/> Semi-Urban
3. _____	<input type="checkbox"/> Rural	<input type="checkbox"/> Urban	<input type="checkbox"/> Semi-Urban
4. _____	<input type="checkbox"/> Rural	<input type="checkbox"/> Urban	<input type="checkbox"/> Semi-Urban
5. _____	<input type="checkbox"/> Rural	<input type="checkbox"/> Urban	<input type="checkbox"/> Semi-Urban

F. Identify the e-government systems that you are utilising.

- ☐ e-proposal                      ☐ e-application  
☐ e-procurement                ☐ e-processing (i.e., laboratory services, etc.)  
☐ e-library                            ☐ Other/s (Please specify): \_\_\_\_\_  
☐ e-payment \_\_\_\_\_

G. Extent of utilising e-government (how long have you been using e-government?)

- ☐ Less than a year                ☐ 3–4 years  
☐ 1–2 years                            ☐ 5–more than 5 years

## Part 2. Impact of the E-Government Systems (on the Users)

*Instruction.* Check the column that corresponds to your experience/perception on the time scale of the impact of e-government systems on Productivity. Use the following rating scale for your guide:

- 5—Major Long-Term Impact      4—Major Short-Term Impact      3—Significant Impact  
 2—Short-Term Impact              1—Minimal Impact

INDICATORS	5	4	3	2	1
1. Accelerating access to information					
2. Customer-centric (addressing customer needs)					
3. Providing high-quality and straightforward services					
4. Timely response to inquiries					
5. Encouraging smooth interaction with clients					
6. Providing a user-friendly interface					
7. Fostering collaboration and participation					
8. Encouraging long-term partnerships					
9. Saving time and money					
10. Supporting other programs/initiatives					
11. Others _____					

### Part 3. Additional Matters

*Instruction.* Please write your answer in the space provided based on your perception.

A. What are the issues you have encountered in utilising e-government systems? Please specify them below.

A. If you have concerns about the e-government systems that you are utilising, please specify them below:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

B. Relative to the current e-government systems that you are utilising, kindly suggest possible improvement/s that you would like the government to address.

B. For the improvement of the e-government systems that you are utilising, what comments or suggestions would you like to address to the government agency?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

## Annexe 3

### Questions in the Focus Group Discussion on e-Government: Policy and Strategy for Productivity Growth

1. Are you a USER or PROVIDER of e-government services?
  - As a user, what e-government system/services you are utilizing in your organization?
  - As a provider, what e-government system/services has been developed/provided/used by your organization?
2. As user or provider of e-government systems/services, what do you think are the ENABLERS of e-government practices?
  - ENABLER is defined as something that makes it possible for a particular thing to happen or be done.
3. As user or provider of e-government systems/services, what do you think are the BARRIERS of e-government practices?
  - BARRIER is defined as something that prevents something else from happening or makes it difficult.
4. As user of e-government systems, what are your expectations from the services of the government in terms of the following? Availability, reliability/security, transparency/efficiency, convenience/connectivity, and service quality?
  - Do you think the government was able to meet your expectations in terms of the listed factors? Please share your experience.
5. As provider of e-government systems/services, what are the current efforts of the government in terms of the following: accessibility, IT literacy and usability?
  - Are there any challenges, barriers, or limitations in providing e-government services to your clients/stakeholder?
6. As provider of e-government systems/services, what is the current INFLUENCE of your institution in terms of (a) government mobility/encouragement and (b) society/stakeholder/expectations/experience?
  - Are there any challenges, barriers, or limitations in providing e-government services to your clients/stakeholder?
7. Based on your experience, what are the common issues that you or your organisation has encountered on the use of e-government system/services?
8. In connection to the issues you have identified, please suggest possible short-term, medium-term, and long-term interventions from the government. Why do you think these (suggested interventions) were not implemented in the past?  
Note: Short-term (3–5 years); Medium-term (5–10 years), and Long-term (10–20 years)
9. As provider of e-government system/services, do you agree that the following enlists the impact of e-government on productivity
  - Improving quality and quantity of work output
  - Achieving target goals in a timely manner
  - Efficiency in doing work/assigned tasks
  - Feeling motivated at work
  - Feeling of satisfaction

Do you have other items to add to the list?

10. As provider of e-government system/services, do you agree that the following enlists the impact of e-government on the productivity of your organization?

- Timely delivery of services
- Timely decision-making
- Collaboration between units in the agency/company
- Customer satisfaction
- Reducing operation cost

Do you have other items to add to the list?

11. As user of e-government system/services, do you agree that the following enlists the impact of e-government on you or your organization's productivity?

- Accelerating access to information
- Being customer-centric (addressing customer needs)
- Providing high-quality and straightforward services
- Timely response to inquiries
- Encouraging smooth interaction with clients
- Providing a user-friendly interface
- Fostering collaboration and participation
- Encouraging long-term partnerships
- Saving time and money
- Supporting other programs/initiatives

Do you have other aspects to add to the list?

12. Which of the following characteristics of good governance has been greatly impacted/addressed by e-government?

- Participatory
- Consensus oriented
- Accountable
- Transparent
- Responsive
- Effective and efficient
- Equitable
- Inclusive

13. Considering all the aspects discussed above, what do you think should be the most important focus of the policies that must be drawn up to sustain or improve the current e-government services in our country thereby contributing to national productivity?

Please elaborate.

