



Digital Literacy among Elected Barangay Officials as an Input to a Community Extension Program

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Abstract – The study determined the digital literacy among elected barangay officials in Agno, Pangasinan as an input to a competency development. A complete enumeration technique was used due to the small size of the population. A total of 56 elected barangay officials comprised the study respondents. The findings revealed that some barangay officials have access to personal computers and digital gadgets at home and in the office using their own mobile data and office internet connectivity. However, the study also observed that some barangay officials have attended training seminars, workshops and tutorials sessions related to basic computer program skills that will generally enhance their knowledge about the fundamental functions and usage of computers at present. This could be a big help to the barangay officials for them to improve their role in service delivery and public administration and effectively and efficiently accomplish their assigned tasks. It calls for better public service through improved efficiency and effectiveness, promotion of transparency, and increased responsiveness. With the support from the Local Government Unit (LGU), it was found that most of the respondents are still on the intermediate level in terms of digital literacy. As limitations towards the usage of digital gadgets and equipment, the study respondents still experienced limitations such as there is fear in using computer and digital gadgets along with not enough supply of electricity. Consequently, it was found that there were no significant differences in terms of abilities and limitations among the male and female barangay officials towards the usage of digital gadgets and equipment. It can be concluded that study respondents are able to use computers at home and in the office using different mode of internet connectivity to access information they need due to the convenience and availability of resources. The study respondents were competent enough to handle their job well however, they listed that “personal knowledge or experience is still insufficient to use digital gadgets and equipment” and “accessing the internet connectivity is costly” may hamper their usage of digital gadgets and equipment. Research implications were also offered.

Keywords – Digital Literacy, Barangay Officials, Competency Development, Information and Communications Technology, Local Government

INTRODUCTION

As the global environment ages, the emerging trend for Information Technology, such as the use of digital equipment and other electronic gadgets, has risen above the surface of development initiatives. As a process innovation, it lies at the center of streamlining processes both in the public and private sectors. It becomes less of a choice but more of a requirement for individuals, as computers play a crucial role in assisting people in organizing, storing and retrieving huge amounts of information. It likewise serves as a tool which enables its users to do more tasks, hence making it a vital commodity especially in working environments. The application of information and communication technology for improving governance, particularly in the barangay level, by enhancing government's role in

service delivery, public administration, and the promotion of participatory democracy has been gaining momentum not only in the Philippines but in many parts of the world (Carpio, 2020).

The use of Information and Communication Technology (ICT) has been recognized as the most powerful resource to an extensive and worldwide dissemination, sharing and transfer of information. The usage and provision in both formal and non-formal ways mark its boom as the most integral and influential (Islam et al., 2017). The expanding sphere and influence of ICT in contemporary times cannot be simply undermined. Since the inception of internet technology in the 1960s, countless studies have been done to plot the development and the growing interface of ICT in our everyday lives. Computer technology has outgrown itself



from the independent and stand-alone machines meant initially to compute and process data to repositories of electronic information that may be freely accessible to e-citizens anywhere in the world at any given time. A considerable number of studies have already been done to facilitate the connection between ICT and governance around the world. Most of these studies are firmly anchored on the belief that ICT is one of the most efficient, if not most effective, tools to good governance. ICT's role as a participative mechanism for development could not just be taken for granted. The assumptions bring one to a realization that ICT knits people closer together in the same way that it allows wider use of ICT for development. The Philippine ICT Development envisioned a society where citizens have access to technologies that will provide efficient government service, greater source of livelihood, and a better way of life through innovations. This calls the government leaders, and other government sectors particularly the information and communications technology (ICT) to come together to make solutions faced by the industry to cope with and succeed in the changing landscape of the digital economy (GISW, 2008). The convergence of media has been utilized to explore economic, social, and political development. ICTs utilization can promote and bring an array of social and economic changes. This contributed toward the progress of humankind as a whole (Islam et al., 2017).

The Philippines is generally composed of more than forty-two thousand (42,000) barangays nationwide. Barangay as the smallest political unit serves as the primary implementer of developmental programs, projects and policies. The nation's public service delivery system will falter at the grass roots without the inspired and dedicated work of the barangays. Barangays at the bottom level of the bureaucracy have more people engagement compared to other government units. Thus, the empowerment of individual barangay could eventually lead to a stronger, more resilient and more prosperous society. Barangay is where the initial planning and implementation of projects and undertakings in the community take place but ironically it has the least amount of available information that serves as a baseline for planning and policy implementation and competency development (Carpio, 2020).

The Local Government Code of 1991 envisions local government units to be self-reliant and effective

partners in the attainment of national development. As such they should have programs, projects, activities and services for the benefit of their constituents. (Carpio, 2020). The Barangay is expected to perform efficiently including the utilization of ICT. The performance efficacy is measured in terms of quality and efficiency of submission of reports to higher authorities and in disseminating information to its locality. Two of the most relevant strategic visions towards ePhilippines is to provide government services to stakeholders online and develop an Information Technology (IT) enabled workforce. The same way is applied to elected officials in government service. The skills acquired by barangay officials through attending seminars and training in ICT will give them the benefit in the application of ICT in everyday life (Santiago, Jr. et al., 2020). In the barangay level, in order to perform effectively, the barangay officials should at least require basic digital knowledge and information technology with the use of office computers and equipment to facilitate their jobs efficiently.

Common in the new public sector reforms is the use of Information and Communication Technology (ICT) in improving government procedures and processes and the linkage between government, citizens, and other groups in governance to promote a more active and participatory political deliberation and decision making—a strategy known as e-governance. Growing evidence over the past decades demonstrates the emergence of a global field of inquiry at the intersection of government, society, and information and communication technologies. This field is characterized by terms such as “Digital Government”, “e-government”, “e-governance”, or “information society”. At the initial stage, the term was a little more than a general recognition of the confluence of information technology developments and the application and use of these technologies by government entities. Subsequently, it has been used as a symbol of institutional reform leading to a new social paradigm. In lieu of this trend, e-government can therefore best be defined as the use of information technology to manage public affairs more effectively, deliver public service more efficiently, and achieve democratic governance more equitably. Therefore, data is indispensable in sound decision-making. However, these tasks could not be carried out by the Barangay Chairman alone. Thus, with the power vested on him as the local chief executive, he appoints the Barangay Secretary and the Barangay



Treasurer to serve as his hands in dealing with administrative and fiscal relations. The Barangay Secretary performs most of the administrative operations of the barangay. Though, selected barangays already made use of computers and electronic devices to carry out official transactions, conversely, most are still caged with the manual-based operations. Clearances and certifications are prepared with less to no base-line data to assure reliability. (Carpio, 2020)

According to Martin, Cabo, and Nicolas (2009), due to limited resources, the challenges in the Philippine ICT sector have been battled. There have been initiatives to support the government's digital transformation projects through a National Information and Communication Technology Summits. Lua (2018) mentioned that connectivity, ubiquity, trust, and interoperability are key to digital transformation and overcoming the bureaucratic and cultural barriers to change, digital transformation will be the best thing to happen in the country. Thus, the Department of Information and Communications Technology (DICT)'s National ICT Ecosystem Framework (NICTEF) launching in 2019 aims to address the absence of strategic roadmap for ICT formulation and direct responses to ICT challenges. The realization of NICTEF thrusts on participatory e-governance would manifest best practices through strengthening and capacitating the ICT sector and applied all over the country. Despite huge government efforts on investment in infrastructure improvement, ICT challenges remains almost the same. The potential of ICT to make barangay officials more effective and efficient in the service is when they embrace all forms of media including voice information system, and the use of personal computers fitted with a modem or supply technologies that facilitate communication, processing and transmission of information (Omotesho, 2012). It is vital that barangay officials utilize technologies in sending and receiving information to make their duties more productive in improving the delivery of services. Through the recognition and development of ICT infrastructure of the local government, the economic and social status of its citizens can be lifted. ICTs can give a new impetus to the social and government organizations to productive activity, which could become a major factor in the transformation stages (Islam et al., 2017) of barangay officials.

The main objective of the study is to determine the level of digital literacy among elected barangay officials in Agno, Pangasinan, Philippines as an input to community extension program. In its analysis, the availability of digital gadgets and sets of equipment, their abilities, and limitations will be explored.

MATERIALS AND METHODS

The study area was conducted in the Municipality of Agno, Pangasinan. Complete enumeration technique was employed to the entire population of sixty (60) barangay officials. According to Crossman (2018), total enumeration was done when the target group is small and set apart by unusual and well-defined characteristics. Hence, all sixty (60) barangay officials will constitute the study respondents. To gather the data, the researcher asked permission from the Barangay Captains thru the Office of the Liga ng mga Barangay, DILG-Agno and the Local Government Unit of Agno, Pangasinan. The questionnaire was distributed to 17 barangays for a period of two weeks. Data were collected, tabulated and employed with the identified statistical tools. For data analysis and interpretation of results, simple descriptive statistics involving the use of frequencies and percentages were used to present the personal profile and digital access of the study respondents. Weighted Mean was used to present the abilities and limitations towards digital literacy among male and female barangay officials. The study questionnaire was adapted from the study of Omotesho, Ogunlade, and Muhammad (2012). The specific parts of the questions adapted from the study were the personal access of barangay officials and abilities and limitations towards digital literacy. The demographic and abilities questions were made by the researcher. The researcher added some questions such as gross monthly income, length of service of the barangay officials, any training or workshops related to basic computer skills attended by them, etc. A four-point Likert type scale was used to evenly split the study respondents' answers into simple dichotomies. The goal was to report one number simply or directly without considering neutrality or middle responses. The following scale for the abilities and limitations faced by the barangay officials will use: 3.51-4.00: Proficient; 2.51-3.50: Advance; 1.51-2.50: Intermediate; 1.0-1.50: Beginner, and 3.51-4.00: Strongly Agree; 2.51-3.50: Agree; 1.51-2.50: Disagree; 1.0-1.50: Strongly Disagree, respectively.

OBJECTIVES OF THE STUDY



The study defined Barangay Officials as appointed officials in particular barangays of Agno, Pangasinan, Philippines.

(1.8%). Lastly, table 1 shows gross monthly income grouped into three (3) ranges – below P 5,000 (12.5%), P 5,001 to P 8,000 (48.2%), and P 8,001 and above (39.3%).

RESULTS AND DISCUSSION

Table 1. Demographic Profile of Barangay Officials

Respondents Profile (N = 56)	n	%
Sex		
Male	31	55.4%
Female	25	44.6%
Age		
18-25 years old	17	30.4%
26-35 years old	7	12.5%
36-50 years old	23	41.1%
51 and above	9	16.1%
Civil Status		
Single	24	42.9%
Married	30	53.6%
Widow/Widower	2	3.6%
Separated	None	
Highest Education Attained		
Elementary	None	
High School	12	21.4%
Vocational	10	17.9%
College	34	60.7%
Length of Service in the Barangay:		
0 to 3 years	27	48.2%
3 to 6 years	28	50.0%
6 to 9 years	1	1.8%
Gross Monthly Income		
below P5,000	7	12.5%
P5,001 to P8,000	27	48.2%
P8,001 and above	22	39.3%

Table 1 shows the Demographic Profile of Barangay Officials in Municipality of Agno, Pangasinan, Philippines. As shown in Table 1, profile of barangay officials constituted male (55.4%) and female (44.6%). Participants’ age is grouped into four (4) ranges – 18-25 years old (30.4%), 26-35 years old (12.5%), 36-50 years old (41.1%), & 51 and above (16.1%). Further, Table 1 shows the civil status of the respondents classified into single (42.9%), married (53.6%), widow/widower (3.6%), & separated (0%). Majority of the respondents highest educational attainment were college (60.7%) followed by high school (21.4%) & vocational (17.9%). Most of the barangay officials served 3 to 6 years (50.0%) followed by 0 to 3 years (48.2%) & 6 to 9 years

Table 2. Availability of Digital Gadgets and Equipment of Barangay Officials

Indicators	Male		Female	
	n	%	n	%
Availability of personal computer/laptop at home				
YES	14	45.2	10	40.0
NO	17	54.8	15	60.0
Availability of computer/ laptop in the barangay office				
YES	30	96.8	25	100
NO	1	3.2	-- ^a	0.0
Availability of personal digital gadgets such as smartphone, tablet, etc.				
YES	29	93.5	25	100
NO	2	6.5	-- ^a	0.0
Availability of printer, scanner, photocopier in the barangay office				
YES	30	96.8	25	100
NO	1	3.2	-- ^a	0.0
Availability of internet connectivity in the barangay office?				
YES	14	45.2	19	76.0
NO	17	54.8	6	24.0
Mode of internet connectivity:				
Mobile Data	18	58.8	13	52.0
Broadband WIFI	6	19.4	8	32.0
Pocket WIFI	2	6.5	2	8.0
Public WIFI	-- ^a	-- ^a	-- ^a	0.0
None	5	16.1	2	8.0
Attended any training seminars, workshops, tutorial sessions related to basic computer skills				
YES	11	35.5	13	52.0
NO	20	64.5	12	48.0

Note. N=56,
P=F/N*100



^a No response reported

Table 2 shows the Availability and Digital Gadgets and Equipment of the Barangay Officials of Agno, Pangasinan, Philippines. Table 2 presents two group responses categorize as male or female. In terms of male group, it was found that computer/laptop; printer, scanner, photocopier is available in the barangay office (96.8%). The same is true with the barangay office of the female group which reported 100% availability of the above-mentioned digital gadget equipment. Further, there is a high availability of personal digital gadgets such as smartphone, tablet, etc. to both male (93.5%) and female (100%). Furthermore, personal computer/laptop

of connectivity mode was on mobile data (male = 58.8%; female =52.0%). Lastly, in terms of attending training seminars, workshops, tutorial sessions related to basic computer skills female group reported high percentage (52.0%) while male reported lower (35.5%).

Table 3 shows the Abilities Towards the Usage of Digital Gadgets and Equipment of Barangay Officials. The male and female barangay officials' abilities towards the usage of digital gadgets and equipment obtained a composite mean score of 2.43 (male) and 2.13 (female) with an overall mean score of 2.30 to denote intermediate, respectively. For male barangay officials in

Table 3. Abilities Towards the Usage of Digital Gadgets and Equipment of Barangay Officials

Indicators	Male		Female		Combined	
	\bar{x}	Interpretation	\bar{x}	Interpretation	\bar{x}	Interpretation
Able to turn on and turn off computer, digital gadgets and equipment	1.9	Intermediate	1.7	Intermediate	1.8	Intermediate
Able to identify and direct to the settings of computer, digital gadgets, etc.	2.32	Intermediate	2.4	Intermediate	2.3	Intermediate
Able to use, identify and use basic functions of computer, digital gadgets, etc.	2.26	Intermediate	2.2	Intermediate	2.2	Intermediate
Able to demonstrate the different functions to co-workers	2.61	Advanced	2.1	Intermediate	2.4	Intermediate
Able to access the internet using available resources such as Mobile Data, WIFI, etc.	2.13	Intermediate	1.8	Intermediate	2	Intermediate
Able to work with any Microsoft Office applications in the computer	2.48	Intermediate	2	Intermediate	2.3	Intermediate
Able to identify computer errors or issues that hinders the performance of tasks	2.87	Advanced	2.6	Advanced	2.8	Advanced
Able to fix from simple to complex computer and digital gadgets' issues	2.94	Advanced	2.6	Advanced	2.8	Advanced
Able to use the functions of printer, scanner and photocopier	2.35	Intermediate	1.9	Intermediate	2.2	Intermediate
Composite Mean	2.4	Intermediate	2.1	Intermediate	2.3	Intermediate

Legend: 3.51-4.00:Proficient; 2.51-3.50:Advanced; 1.51-2.50:Intermediate; 1.0-1.50:Beginner

at home reported to have an almost equal percentage of unavailability (male = 54.8%; female = 60.0%) and availability (male = 45.2%; female 40.0%). Moreover, it was found that barangay office of female respondents have reported high availability of internet connectivity (76%) while male reported (45.2%). A high percentage

particular, the highest value of mean score is evident by an ability to fix from simple to complex computer and digital gadgets' issues with a mean score of 2.94 to denote advanced. For female barangay officials in particular, the highest value of mean score is evident by an ability to identify computer errors or issues that



hinders the performance of tasks with a mean score of 2.60 to denote advanced. The combined highest mean score obtained is an ability to fix from simple to complex computer and digital gadgets' issues with a mean score of 2.77 to denote advanced, respectively. This implied that some of the barangay officials were able to adapt the skills they learned in the context of basic computer skills training and from their day to day experience in using computers in accomplishing their tasks, hence, will promote a concrete economic well-being and quality of life. Garrido, Sullivan, and Gordon (2010) mentioned that the role of ICT skills delivers in improving employment for low-income groups. The significant investment to human capital will be an asset and a commitment to lifelong learning (NICTEF 2019), so as to address the programs and projects of the government for the benefit of economic and social systems of the country. Further, ITU (2016) found that there was a strong association between economic and ICT

development. Access to computers with internet connection coupled with the skills required in the performance of duties changed the way ICT facilities and delivered results to individuals, government, organizations and other sectors.

Table 4 shows the Limitations Towards the usage of Digital Gadgets and Equipment of Barangay Officials. The male and female barangay officials' limitations towards the usage of digital gadgets and equipment obtained a composite mean score of 2.18 (male) and 2.03 (female) with an overall mean score of 2.12 to denote disagree, respectively. For male barangay officials in particular, the highest value of mean score is a limitation that there is fear in using computer and digital gadgets with a mean score of 2.87. For female barangay officials in particular, the highest value of mean score is evident by a limitation there is not enough supply of electricity with a mean score of 2.48 to denote disagree. The combined highest mean score obtained is a limitation that there is fear in using computer and digital gadgets with a

Table 3. Limitations towards the usage of Digital Gadgets and Equipment of Barangay Officials

Indicators	Male		Female		Combined	
	\bar{x}	Interpretation	\bar{x}	Interpretation	\bar{x}	Interpretation
The cost of computer, digital gadgets and equipment are high	1.61	Disagree	1.5	Strongly Disagree	1.6	Disagree
There is not enough supply of electricity	2.52	Agree	2.5	Disagree	2.5	Disagree
The internet speed is low that makes connection and communications weak	1.48	Strongly Disagree	1.7	Disagree	1.6	Intermediate
The computer shops and other facilities are too far from the residence	2.03	Disagree	1.8	Disagree	1.9	Disagree
The economic status is low to afford computer, digital gadgets and equipmen	2.03	Disagree	1.8	Disagree	2	Disagree
The personal knowledge or experience is insufficient to use digital gadgets and equipment	2.39	Disagree	2.2	Disagree	2.3	Disagree
Accessing the internet connectivity is costly	1.87	Disagree	2.1	Disagree	2	Disagree
There is fear in using computer and digital gadgets	2.87	Agree	2.4	Disagree	2.6	Disagree
The computer and digital gadgets are difficult to explore	2.81	Agree	2.4	Disagree	2.6	Agree
Composite Mean	2.2	Disagree	2	Disagree	2.1	Disagree

Legend: 3.51-4.00:Strongly Agree; 2.51-3.50:Agree; 1.51-2.50:Disagree; 1.0-1.50:Strongly



mean score of 2.66 to denote agree, respectively. It means that some barangay officials especially those who are already aged are vulnerable to adapt to the latest technologies, especially those who reside in remote areas, where the lack of electricity is another factor to this limitation. In addition, Stam et al. (2012), claim that economic constraints affect ICT activities and practices to obtain good performances by the barangay officials. As mentioned by N. Roztocki, Soja, and Weistroffer (2019) productive activities will improve the economic position of a region hence, providing the fundamental facilities and equipment of barangay officials will build positive effects to economic status. Seki (2008) mentioned that ICT sector's importance is vital, it is the fastest way of using and communicating knowledge where ICT productivity could be transformed into economic competitiveness. The increasing contribution of ICT to economic productivity is a key factor in the economic and social developments due to its positive effects on economic growth, productivity, and employment (Toader et al., 2018). Awhareno and Nnadi (2017) mentioned that limitations are more serious especially in rural areas just like the place of the study. The limitations that the personal knowledge or experience is insufficient to use digital gadgets and equipment and accessing the internet connectivity is costly are realized also as limitations.

CONCLUSIONS

Barangay officials access computers at home and in the office using their personal internet connection, office internet connectivity and use different modes of internet access. The basic skills of barangay officials are remarkable due to the collective effort of the community and the LGU in capacitating local officials with the abilities towards the usage of digital gadgets and equipment. Through this, the barangay officials are able to demonstrate ICT abilities needed in their functions like composing emails, submitting reports and presenting outputs to the higher office. Further, their competence towards using ICT enabled them to perform their job regardless of unstable internet connectivity that is available. The slow network performance affects the barangay officials' usage in ICT. The indicator that there is fear in using computer and digital gadgets, not enough supply of electricity, the personal knowledge or experience is insufficient to use digital gadgets and equipment and accessing the internet connectivity is costly were recorded as limitations of the barangay

officials. While, there were no significant differences on the abilities and limitations of the study respondents. The results revealed the same for both groups of study respondents. In order to maintain the interests of barangay officials with their digital literacy, the LGU may create a program that could further improve the skills and cope with the demands in ICT usage. These could be attained through collaboration with SUCs and other NGO, or GAs. Likewise, the LGU should make adequate provisions in improving ICT facilities, such as internet connectivity and ICT resources that could be readily available for the barangay officials. Furthermore, the price affordability of availing internet connections should be considered for economic competitiveness. The national government as part of its 10- point agenda has opened the said market in order to promote competition and improve service quality. This can be a ground breaking opportunity to help improve the quality of life and offer affordable services. In doing future research, a study may focus on the respondent's soft skills and professionalism since they are at the forefront of the local service. Other attributes like social responsibility and good governance, integrity and honor may be explored. Likewise, an impact assessment on digital gadgets and equipment usage capturing the economic and social outcomes brought about by the nature of their jobs. All of these could be inputs for a community extension program for the target municipality.

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