

Information Technology Maturity Level of the Selected Barangays of the City Government of Santa Rosa, Laguna

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Abstract. This study focuses on the current status of the barangays under the Santa Rosa City Government in Laguna regarding their information technology maturity level. The maturity level of any organization indicates its readiness to adapt to changes and demonstrates its maturity against criteria from a framework or set of areas. The study will utilize the Information Technology Infrastructure Library (ITIL) framework to develop pillars and statements for assessing each barangay. ITIL identifies maturity levels based on six levels (unidentified, initial, defined, managed, quantitative, and optimized). The pillars or areas of focus include E-government services, Technology Infrastructure, community engagement and communication, data security and privacy, and digital literacy and training. ITIL is a proven framework in the field of IT Management, as evidenced by research conducted by Potgieter, B.C., Botha, J.H., and Lew, C. (2005), which indicates that customer satisfaction and operational performance improve as the ITIL framework is implemented. Descriptive research was employed as the research design, and quantitative methods were used to collect data. The questionnaire served as the primary tool for the study. Barangays were selected as participants based on specific criteria. The study's results indicate the current status of the barangays and their corresponding level in each area. These findings will assist the city government in formulating the city's development plan, information system strategy, and information and communications technology plan. The identification of maturity levels also contributes to the body of knowledge by enhancing understanding of the technology framework used and the current status quo of the city.

Keywords: Information technology management; IT maturity assessment; ITIL framework; Digital governance; Santa Rosa; Laguna governance; Quantitative descriptive analysis; Local ICT development strategies.

1.0 Introduction

The Department of Information and Communications Technology (DICT) of the Republic of the Philippines has identified highly urbanized cities in the country to be part of the program digital cities. According to the official site of the DICT, Digital Cities aims to change or leverage the country and eventually the Filipinos to fully utilize the five main programs and digital governance is one of them.

Digital governance is the ability to govern any level of institution in the government with the means and use of technology. This project of the DICT chose cities that will be partnered for this endeavor. The city government of Santa Rosa is one of the identified places in the country to hold this title. It is better to understand the status of the city by identifying the maturity level of its barangay in terms of information technology to help the local government unit (LGU) of Santa Rosa to better assess the needs, strengths, and status quo of the barangay that will yield in developing of plans and projects. The motivation of this paper is that the results be a basis in

developing the city's development plan and be one of the major contributors in developing the ICT plan of the city.

In order to better understand the current level of the city government in terms of information technology, the study used the Information Technology Infrastructure Library (ITIL) as the official framework of the study. Questions and areas were identified in using this framework. According to Maggie Kneller (2010) adopting the ITIL framework ensures that the Information Technologies of companies align with the overall goal of the company. Thus, the IT infrastructure of the barangays is measured against the goals of the city government of Santa Rosa this will help to assess and realize if the goals of the city government in becoming a truly renowned digital city is achieved. This provides ITIL in a gesture of successful frameworks in determining maturity levels of organizations.

The main objective of the study and the gap it addresses is the identification of the information technology maturity level of the barangays of the city government of Santa Rosa in terms of areas determined by the researcher derived from the ITIL framework. To be specific, the study aimed to address the question, What is the level of maturity of the city government of Sta. Rosa in terms of the following areas identified from the ITIL framework; (1) E-Government Services, (2) Technology Infrastructure, (3) Community Engagement and Communication, (4) Data Security and Privacy, and (5) Digital Literacy and Training.

2.0 Methodology

2.1 Research Design

The research used a descriptive design. The population is well defined and has a characteristic that needs to be considered. The proposed research shall have a well-defined population which criteria are stated in the sampling design. The goal of the study is to describe and provide details regarding the level of IT maturity of the barangays which is the way how descriptive research is done. A survey questionnaire shall be done to achieve the goals of the study.

2.2 Research Participants

The population of the study was the five (5) barangays within the city proper of the city who could assess the status of the information technology. Possible samples were the barangay secretary or barangay administrator. The sampling design used was purposive sampling. A total of 5 respondents were considered in the event of data gathering.

2.3 Research Instrument

The main instrument that was used was a validated questionnaire. The questionnaire consisted of five areas, namely, e-government services, technology infrastructure, community engagement and communication, data security and privacy, and digital literacy and training. These areas had 7-9 statements. The questionnaire was administered by the researcher and commenced at the most convenient time for the respondent. The questionnaire underwent a series of revisions with a statistician and a pre-test to similar respondents of the study to assure its reliability and validity.

2.4 Data Gathering Procedure

Data gathering commenced after the validation, testing, and revisions of the instrument. All members of the population were interviewed and analyzed through MS Excel and, if needed, SPSS. The study used mean average in determining and analyzing the results.

3.0 Results and Discussion

The results of the study show the level of maturity of the selected barangays in the five areas identified at the start of the study. Each barangay is classified into different levels depending on the results of the survey which are researcher-administered. The study used the mean average in computing each area. The results of each area are presented in the following table.

Table 1. E-Government services

Barangay	Highest Average	Level
Barangay Kanluran	44.44	Level 4 - Quantitative
Barangay Malusak	55.56	Level 0 - Unidentified
Barangay Ibaba	66.67	Level 5 - Optimized
Barangay Market Area	33.33	Level 2 - Managed
Barangay Tagapo	77.78	Level 0 - Unidentified

E-Government services cover the existing website and other online portals, services offered online, mobile applications being used by the citizens, a system for collection of feedback, and allocation of budget for e-government services. Table 1 show that Barangay Ibaba has the highest level of maturity translated to optimized this means that Ibaba implements and uses standard procedures in their e-government services and continuous development of these services is in place. Meanwhile, Level 0 or unidentified was earned by Barangay Malusak and Tagapo, meaning these barangays have not implemented any e-government services and allocation of budget. For barangays with level 0 it is recommended to visit the IT infrastructure of the barangay and incorporate in the annual plan or executive agenda plan of the current administration the e-government services this could be basic such as website using drag and drop software-as-a-service applications, acquisition of basic record management and financial transactions system as other barangays who earned level 4 have.

Table 2. Technology infrastructure

Barangay	Highest Average	Level
Barangay Kanluran	37.50	Level 4 - Quantitative
Barangay Malusak	50.00	Level 1 - Initial
Barangay Ibaba	87.50	Level 5 - Optimized
Barangay Market Area	62.50	Level 4 - Quantitative
Barangay Tagapo	50.00	Level 2 - Managed

The second area measured in the study is the technology infrastructure. As shown in Table 2, Ibaba earned the highest level which the barangay is level 5 which is optimized meaning that the barangay maintains reliable and functional computer hardware and software, the barangay has a well-defined plan, and it has a centralized location for storing and managing its technology. Level 1 or initial in the interpretation was earned by Malusak meaning that the barangay has already initiated its technology infra however, it lacks monitoring, evaluation, and continuous development. With the existing infrastructure of all barangays it is suggested that those with initiative and managed levels to monitor and assess their current infra to address the needs such as maintenance, replacement and if needed to acquire new sets of IT equipment to provide the best service to its constituents.

Table 3. Community engagement and communication

Barangay	Highest Average	Level
Barangay Kanluran	85.71	Level 5 - Optimized
Barangay Malusak	42.86	Level 3 - Defined
Barangay Ibaba	42.86	Level 5 - Optimized
Barangay Market Area	85.71	Level 3 - Defined
Barangay Tagapo	42.86	Level 3 - Defined

Community engagement and communication was the third area measured in the study. As shown in Table 3, both Barangay Kanluran and Barangay Ibaba gained the top level of optimization. This means that the barangays mentioned are well equipped and has continuous development for communication channels between officials and the citizenry, encourage residents in participating to decision-making using technology as the medium, and effectively address the resident's concerns and complaints. Other barangays are level 3 or defined this implies that all barangays have already initiated, defined, and managed the area of community engagement

which is expected in *Sangguniang barangays*. Visiting the process and continuous improvement of the barangay is the suggestive ideas and action plan of the study as provided the barangays are in level 3 – 5 in communicating to their constituents in utilizing technology.

Table 4. Data security and privacy

Barangay	Highest Average	Level
Barangay Kanluran	42.86	Level 3 – Defined
Barangay Malusak	28.57	Level 2 – Managed
Barangay Ibaba	42.86	Level 3 – Defined
Barangay Market Area	57.14	Level 3 – Defined
Barangay Tagapo	71.43	Level 0 – Unidentified

Second to the last area is data security and privacy. This area measured the barangay to determine if the respondents have a formal data privacy policy, implement security measures in handling their data and technology infrastructures, provide residents with access to their information, and allocate a budget for security purposes. Table 4 shows most of the barangays have a well-defined protocol for data security. This area of the study is one of the most sensitive areas as it deals with security of data and information. The proponent suggests given their level of maturity to maintain and adopt a plan in information security and incorporate the acquisition of security products (hardware and software) in the annual budget of the barangay.

Table 5. Digital literacy and training

Barangay	Highest Average	Level
Barangay Kanluran	42.86	Level 4 - Quantitative
Barangay Malusak	42.86	Level 3 - Defined
Barangay Ibaba	71.43	Level 5 - Optimized
Barangay Market Area	42.86	Level 2 - Managed
Barangay Tagapo	85.71	Level 0 - Unidentified

The last area is the digital literacy and training. Table 5 shows that both barangay Ibaba and Kanluran have a high level of maturity in this area. This implies that the two barangays have already implemented and continuously developed the literacy of the staff and residents about information technology. This provides knowledge that these barangays offer programs or initiatives to promote digital literacy skills, provide basic computer training, and collaborate with other organizations in offering digital programs for their constituents. There are varying results of this area it is suggested to maintain for those barangays with high level of maturity the training being provided and for low level maturity, it is highly recommended to incorporate digital literacy in barangay activities in various ways such as partnering with schools and companies to reduce the cost still achieving the goal of digital literacy.

The results of the maturity levels in information technology shows that even though these barangays are large land areas, high population, high generated investment revenue, strategically located in the city, and especially these barangays are exposed to technological advancement are still lacking or gain low level maturity level. The proponent suggests in general to address the areas of the study which are urgent such as the E-Government services due to the growing number of population and the inclusion of the city in the digital cities project of the national government. Another urgent area is the IT infrastructure, barangays must acquire equipment to fully implement e-governance. Also, the barangay may partner with schools, companies, non0-government organizations, and other stakeholders who promote digital literacy and some who offer CSR on software development. It is suggested that this partnership be planned out seriously to grasp its advantages and benefits.

The study would benefit the barangays in understanding their current situation and could use the study in their planning stages. Also, other stakeholder can use this study to understand the need and propose a project to the barangays to leverage their information technology maturity level. Laslty, this study would help future

researchers to understand the field of information technology management, IT maturity, and the use of IT governance framework such as ITIL.

4.0 Conclusion

This study provides an overview of the information technology maturity level of the barangays of the city government of Santa Rosa. The results show that despite the barangay(s) being one of the growing, economically centered, and large barangays of the city still exist low-level areas of information technology. Several reasons can be attributed to the result of this study it could be the organizational structure, politics, management, budget allocation, etc. The results would provide an avenue to strategize and develop an action plan on how these barangays can create and develop more programs, allocate resources, and manage their information technology well. Also, this shows that there are places where information technology is mature enough, some have initially defined their process, and others are striving to progress. The ITIL framework has provided an avenue to measure the local government units in a quantifiable manner. The researcher suggests that the research be conducted in total enumeration to generalize per area of the IT maturity level.

5.0 Contributions of Authors

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7.0 Conflict of Interests

The author declared that he has no conflicts of interest as far as this study is concerned.

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