

DEVELOPMENT OF E-TRANSPARENT GOVERNANCE INFORMATION-BASED DASHBOARD: A DECISION SUPPORT SYSTEM FOR LOCAL ELECTED OFFICIALS TOWARDS EFFECTIVE PUBLIC SERVICE

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ABSTRACT

The study serves as a mediator between the barangay officials and citizens in the Local Government Unit of Isulan. The goal of the study was to provide a system that would support the local government unit to strengthen the existing processes of barangay profile information and their financial document reports in daily, weekly, monthly, quarterly and annual basis in promoting transparency and accountability towards effective public service. Specifically, it aims to automate profiling of barangay officials' information and financial document reports, develop a functional and efficient e-logbook, e-document request and e-appointment service to support existing office transactions, design information-based dashboard for transparent dissemination of information and reports to citizens, and generate graphical data analysis of barangay performance and reports. The system was developed using the evolutionary prototyping model, and a 5-point scoring rubric questionnaire were used to evaluate the system's functionality, accessibility, reliability, and usability. Based on evaluation results, it was found out that the system is highly functional, highly accessible, highly reliable, and highly usable. This result indicates that the system met its requirements.

Keyword: - *Electronic Transparent Governance, Information-Based Dashboard, Decision Support System (DSS), Local Elected Officials, Effective Public Service*

1. INTRODUCTION

Abraham Lincoln said, the government of the people, by the people and for the people. Transparency in all government transactions is of a great call to all government employees and officials. Everything shall be under the lens of the citizens.

With the current trend, policies, executive orders like the ease of doing business and freedom of information bills, local government units tried their very best to disclose important information. However, giving the public needed information also entails great risks, needs to be accurate, updated, and validated so as citizens will not be misled.

The electronic government concept is the use of internet and ICT tools for better delivery of services and information to citizens [1]. It is a process of automation or application of related information systems in order to enhance government processes and communicate with the general public [8]. In this regard, plans, acts, and policies in the Philippine government has already been developed and mandated to ensure that all the processes and service transactions of every government agency will be performed electronically. For this reason, in today's government initiatives of this electronic government for major agencies were also adopted by the Local Government Units in

promoting transparency. It was a part of the idea for electronic governance initiated by the coordinated effort of the Department of Science and Technology (DOST) and the National Computer Center (NCC) to integrate electronic governance to the government agencies.

The concept of e-governance or electronic governance has been widely recognized in most countries in the world because it increases openness and transparency to completely give benefits to its citizens. To ensure the success of e-government implementation, there were several frameworks and model was developed. The integration of ICT and governance provides a method for government officials to act openly and support the government to improve their credibility with their performance. These actions give way in the foundation of electronic governance in promoting transparency and accountability. With the right of the citizens to information concerning public interests to access all government documents paved way in the implementation of acts and policies for electronic transparent governance like the Freedom of Information (FOI).

In the municipalities, the Municipal Local Government Operations Officer (MLGOO) under the supervision of the Department of the Interior and Local Government, one of the functions is to mandate to establish a system of collaboration among the citizenry and barangay officials, to ensure effective and efficient delivery of services. In the case of the Municipality of Isulan, the increasing population in the seventeen (17) barangays and with the traditional system, promoting transparency, accountability and good governance is on the line. The local elected officials and citizens surfaced many unsatisfying conditions in terms of paper-based methods of managing information and financial document reports. As mandated, the local elected officials are required to disclose or post financial reports in conspicuous places in the municipal area such as public buildings, public market, barangay hall with Full Disclosure Board, etc.

With these current problems that surfaced in the Local Government Unit of Isulan, the researcher comes to its senses to develop an information system to support the existing management processes in promoting transparency between the Office of Municipal Local Government Operations Officer (MLGOO) and seventeen (17) barangays respectively. Hence, the proposed study will use the idea of electronic governance by making use of technology tool and internet to centralize the management of barangay and SK profile information, financial document reports and other related services. It will provide data dashboard to visually analyze, track and display barangay reports with key performance indicators. The concept and the use of the electronic tool will provide responsive service, more streamlined, greater access to information and reports, and enhance the quality of service being provided by the local elected officials to its citizens as part of the Full Disclosure Policy. It will help to strengthen the interactions and collaborations of barangay officials and citizens in promoting transparency and accountability towards effective public service.

1.1 Goals and Objectives of the Study

This study generally aimed to design and develop an e-Transparent Governance Information-Based Dashboard: A Decision Support System for Local Elected Officials towards Effective Public Service. This supports the Office of the Municipal Local Government Operation Officer, seventeen (17) barangays including Sangguniang Kabataan officials to strengthen the existing processes of barangay profile information and their financial document reports in a daily, weekly, monthly, quarterly and annual basis to promote transparency and accountability towards effective public service.

Specifically, the study aims to:

1. Automate profiling of barangay officials' information, and financial document reports.
2. Develop a functional and efficient e-logbook, e-document request and e-appointment service to support existing office transactions.
3. Design information-based dashboard for transparent dissemination of information and reports to citizens.
4. Generate graphical data analysis of barangay performance and reports.
5. Evaluate its system's functionality, accessibility, reliability and usability.

2. SYSTEM THEORIES

2.1 Electronic Governance Theory

The e-Governance or the electronic governance is considered as a mediator between government officials and citizens; it makes use of modern information and communication technologies (ICT) for better government functioning, it is a tool for achieving good governance, uphold transparency, improve efficiency, and provide effective public services. This will make elected officials in the government positions more accountable by

increasing the opportunity of citizens to access timely about government records, information, financial document reports and participation in the governance process and bringing citizens closer to elected officials.

The e-Transparent Governance or the electronic transparent governance in government actions and its decision-making processes is the key to have a well-informed public, a transparent governance with seamless access, secure and authentic flow of information crossing the inter departmental barrier and providing fair and unbiased services to the citizens [11]. Transparent governance implies not hiding something or anything to people especially in financial transactions, not taking part in obscure arrangement or not making eccentric or discretionary decisions.

The study entitled Development of e-Transparent Governance Information-Based Dashboard: A Decision Support System for Local Elected Officials towards Effective Public Service has also come up with a similar model like Gartner's for its e-governance initiative. The four phases of the e-governance model are shown in (Fig-1).

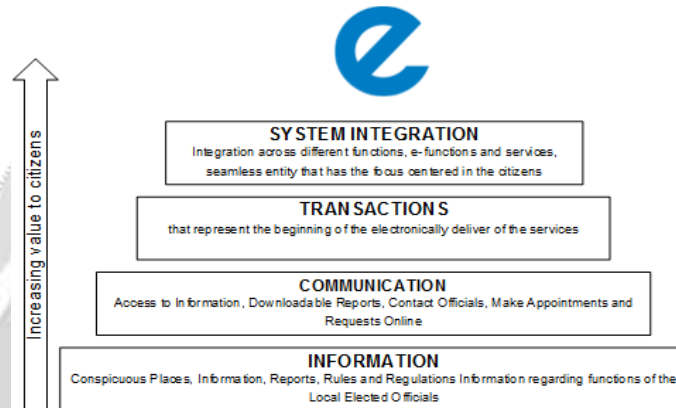


Fig-1: Diagram/schematic of e-Government

2.2 The Technology-Organization-Environment Framework

The Technology-Organization-Environment (TOE) framework is an organizational-level theory that explains the effects of decision-making on three (3) different elements in a company context. The TOE contexts are the three elements that are presuppose to influence technological innovation [18].

The study entitled Development of e-Transparent Governance Information Based Dashboard can be interpreted as a technological innovation made possible by Information and Communication Technology (ICT). Using the Government to Citizen (G2C) Framework, the system provide quality services and information to its citizens, having a two-way communication between the local elected officials in the Local Government Unit, and citizens via an efficient electronic means.

In the technological context, it includes all the required technology relevant to the users, it suggests new system that will be accessible, with good user interface design which enable the user to understand and navigate the system easily, and increases user involvement. In the government, it is indeed important for such a system to provide efficient delivery of services to citizens towards effective public service.

The organizational framework refers to the assets and characteristics of the organization including transparency in government activities and its decisions making process. This study can deliver public service efficiently with transparency, accountability and good governance.

The environmental context, it emphasizes the importance of communication between the government officials and its citizen in promoting transparency, accountability and good governance, which impels the adoption of innovation. The centralization of information for full disclosure, political stability requires that the government officials act openly with citizens and government regulations which are important factors on certain actions. It has been observed that the penetration of the Internet also has an influence on the adoption and implementation of certain technologies.

Thus, the diagram (Fig-2) shows the relationship and factors of the technological, organizational and environmental contexts that influenced adoption decisions.

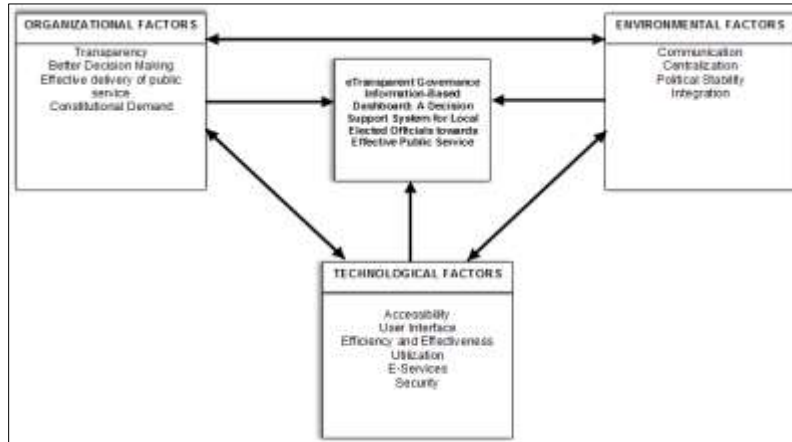


Fig-2: Diagram/schematic of e-Government

2.3 Process Model of the System

The (Fig-3) shows the context diagram of the system. It shows the flow of information between the system, its environment and the entities that interact with it. Based on the process model, there are three (3) entities namely; MLGOO (administrator), barangay secretary, and citizen. In the process, the MLGOO manage users’ account, barangay performance areas/rating, barangay scholarship type, type of financial documents, and calendar of activities, send document feedback, upload and download document files. In addition, the administrator can view barangay and SK information, annual budget/IRA, demographic, economic, political profile, view document request notification and print list of reports. The barangay secretary can log in on the system, can manage barangay basic information like; barangay officials’ information, SK official’s information, scholars’ information, annual budget/IRA, demographic, economic and political profile, upload and download document reports, receive document request notification, document feedback notification, view calendar of activities, use ID with QR code to submit and receive document reports and can print list of reports. Further, the citizen can interact with system, it can view their own barangay profile information, Sangguniang Kabataan, can view and download the Full Disclosure documents files including barangay programs and projects, send document requests and appointment schedules.

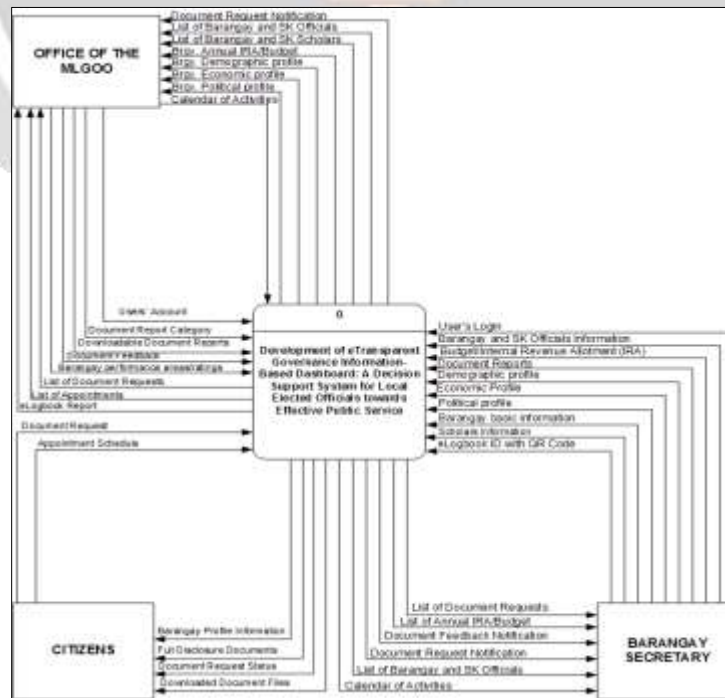


Fig-3: Context Diagram of the System

2.4 System Architecture of the System

The system is a web-based application for the management of barangays and SKs related profile information, e-logbook management using an ID with QR Code, full disclosure of documents, e-services for office appointments, document requests for citizens and decision support for local elected officials. Web interface (frontend) was written in PHP, a server-side scripting language, HTML, CSS, and JavaScript Language and MySQL which served as the database (backend) of the system. The system provides system interfaces; Office of the Municipal Local Government Operation Officer (MLGOO), barangay secretary per barangays and citizens as shown in (Fig-4).

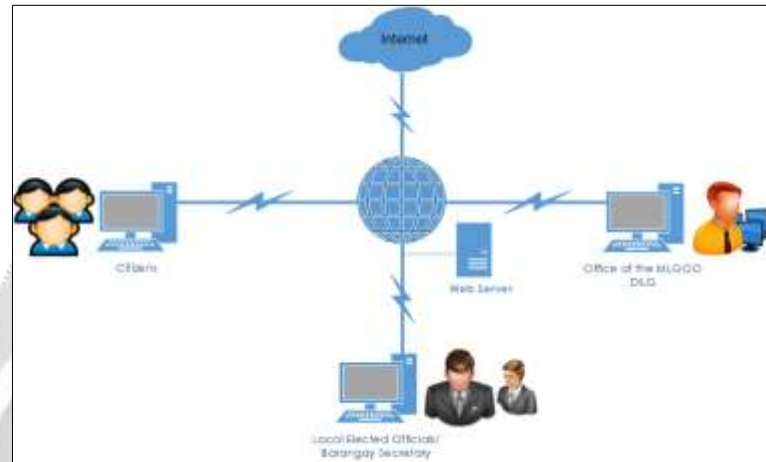


Fig-4: System Architecture of the System

3. LITERATURE REVIEW

The study entitled Development of e-Transparent Governance Information-Based Dashboard: A Decision Support System for Local Elected Officials towards Effective Public Service support the office of the Municipal Local Government Operation Officer (MLGOO), seventeen (17) barangays and SK officials to improve the execution of management and monitoring processes of local government information, records and reports in order to make better decisions to promote transparency, accountability and good governance towards effective public service

Transparency in government activities and its decision-making procedures is the key for having well-informed citizens. Transparency grasps the standards of public relations and stakeholder management theory, both of which stand up for responsive correspondence that includes various collaborators in the communication. Transparency refers to the increased flow of timely, availability, accessibility, relevant, comprehensive, high quality and reliable information concerning government activities to the public [9].

Governance speaks about consistent policies, consistent management, process, guidance and right decision for a certain area of responsibility. If the purpose is good or advantageous to everyone, then that is good governance. The term transparency refers to the availability and accessibility of information to the general public and clearness about government rules, regulations, and decisions. Transparent governance, therefore, means not hiding anything to people, not making whimsical decisions, and openness is encouraged [12].

In [7], it states that, it is the right of the citizen to information on matters of public concern in which shall be recognized by the government. Access to official government documents pertaining to government transactions, acts or decisions shall be provided the citizen subject to such boundaries as may be provided by law. It was also stated that the FOI executive order typically set limits of access or grounds for refusal of requests, grounds for refusal usually include a list of exemptions, which include these types of information: (1) security, national defense and public safety, (2) information relating to unfinished/ongoing legal proceedings, (3) investigations, trade and business/commercial interests, (4) international relations/diplomacy, and; (5) administrative matters such as inter or intra agency memoranda and personal privacy.

According to Federal Institute for Access to Public Information (Mexico, 2008), there are three elements of government transparency: (1) honesty of information from the government; (2) knowledge sharing on the part of citizens that includes communication, (3) accountability or justification of decisions taken by the government. The looming challenge for government in the 21st century is to make citizens trust government agencies [10].

According to Section 288 and 354 of R.A. No. 7160 and DILG Memorandum Circular No. 2011-134, a strict compliance for Full Disclosure Policy relative to the posting of all financial related document reports". It is a government's policy requires local elected officials to fully disclosing particular financial transactions such as documents of the Local Government Unit (LGU) to keep their citizens informed of how the government agency's budget is used, managed and disbursed. Local Government Units (LGUs) including barangay and Sangguniang Kabataan officials to disclose financial reports in conspicuous places (CP) as mandated [16].

In [17], it aims to improve efficiency in the delivery of government services to the general public by preventing graft and corruption and reducing bureaucratic red tape. This act also requires both government and private sectors to maintain responsibility and honesty among government officials and employees, and shall take appropriate actions to promote transparency and good governance with regards to public transactions. It also states that government offices are accountable to the public with fast, convenient, efficient and reliable services.

In [15], it aims to improve business conditions by cutting red tape, it orders government agencies and local government units to eliminate unnecessary requirements and processes that tend to delay the business and government transactions.

ICT plays a crucial role in increasing access to information, enforced to building the ability to track the decisions and actions of government employees, and ensuring that rules and guidelines are transparent [3]. According to this, using ICT means that governments can speed up and simplify information management and transactions, especially in providing services to the public [14].

ICT offer services to citizen, providing services to improve and support management processes, surrogate service channels to fulfill government requirements therefore the direct interaction between officials and citizens [11].

Internet has significantly reduced the cost of distributing, collecting, and accessing public information [3]. As a result of such contributions, recent years have seen trends toward using electronic tool to reduce the interactions between corrupt officials and citizens for greater access to information and for promotion of transparency, accountability, and anti-corruption goals towards effective public service.

The e-governance is the use of ICT for government services, transactions, interactions, information, and communication within the government structure. E-governance promotes more efficient and effective government, allows greater public access to information, facilitate more accessible government services, and makes government more accountable to citizens [2].

Decision Support System (DSS) is shared system based on models to use data, information and database to undertake unstructured problem. Diverse to information management and rational occurrence of data, it is controlled, it also used to incorporate models along with systematic methods to access, process and retrieve data or information effectively and efficiently [5]. The Decision Support System was developed to facilitate organizations particularly in decision making of complex situations by the application of communication and information technologies (ICTs), data, knowledge and available documents [6].

Moving from a traditional paper-based work system to an electronic system helps organization to reduce costs, minimizing errors, automating processes and increased document security. Provide users in the institution with a simple and efficient mechanism to access and share their documents using new techniques and modifying some features in security and management. The electronic document system facilitates users to control, share, synchronize and considers the support of various client devices [13].

Electronic management of record is extremely important to every organization. Records support decision making, demonstrate compliance, document, and enable the organization to do their jobs. Document records need to be properly managed in order to minimize their cost and maximize value. In implementing good records management practices, the organization can avoid, control, and even reduce the costs of record maintenance and improve the efficiency of operations [4].

4. METHODS

Methods in developing information system ensure satisfaction of the requirements among existing system. It is a methodology that the requirements, planning, development, testing, and implementation of the system follow logical approach and technical ways.

The Evolutionary Prototyping Model by Pressman was used in the development of the system. It is used when developer are faced with undefined or rapidly changing requirements. Evolutionary prototyping model is a software development method where the developer first constructs a prototype. After receiving initial feedback from the clientele, consequent prototypes are produced, with additional functionality or improvements, until the final result emerges. Prototyping is most useful in development of systems with high level of users' interactions such as

web-based or online systems. Systems fill out forms or various screens before data is processed can use prototyping method very effectively to give the exact look and feel even before the actual software. With this model in which a prototype is built, test, and then reworked when needed until an acceptable prototype is achieved. It also creates a base to produce the final system. This model works best in scenarios where the project's requirements are not known. It is an iterative, trial, and error method which take place between the developer and the client. Fig-5 shows the steps involved in the Model.

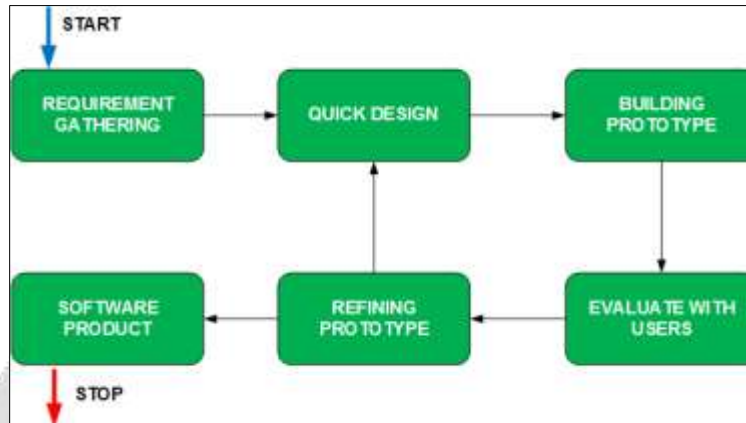


Fig-5. The Evolutionary Prototyping Model

4.1 Requirement Gathering

On this activity, the researcher determines the initial user requirements and very basic system requirements most especially in terms of user interface design. In this phase, data from the office of the Municipal Local Government Operations Officer (MGLGO), barangays and SKs was collected and identified, and the profiling of data was established.

4.2 Quick Design

This step the developer starts designing the user interface, graphical design, as well as building the initial requirements of the new system.

4.3 Building Prototype

This step the developer starts building the model, in this phase the actual process, interfaces and functionality was defined. In this phase also gathered data were used to test algorithm if it displays the correct result.

4.4 Users Evaluation

In this step, the designed prototype was presented to the end-users and the other important respondents in the project for testing and implementation. A test case was developed to gather feedbacks. The result of the evaluation will be used for additional enhancements in the development of the system.

4.5 Refine Prototype

In this step, the users' feedback and suggestions were analyzed and discussed, important and constructive changes in the designed prototype will be accepted for the refinement of the prototype. Refinement stage will be reconstructed until the end-users expectations in the requirements are met.

5. RESULTS

The system was pilot tested and evaluated at the Department of the Interior and Local Government - Office of the Municipal Local Government Operations Officer and seventeen (17) barangays in the Municipality of Isulan. This was participated by the MGLGO and its staff, barangay secretaries and citizens as system users. This study made use of the evaluation rubric questionnaire and a follow-up interview in collecting the data. Questionnaires

were constructed and administered to the three (3) groups of respondents; MLGOO (1) and office staff (2), barangay secretaries (17) and (30) randomly selected citizens in the Municipality of Isulan.

5.1 Overall Evaluation Results of the System

Table-1: Overall Evaluation Results of the System

| | Over-all Result | MEAN | Interpretation |
|---|------------------------|-------------|--|
| 1 | Functionality | 4.68 | Highly Functional |
| 2 | Accessibility | 4.94 | Highly Accessible |
| 3 | Reliability | 4.56 | Highly Reliable |
| 4 | Usability | 4.92 | Highly Usable |
| | Over All Mean | 4.77 | Highly Functional, Accessible, Reliable, Usable |

Table-1 shows the overall result of the system's evaluation with an overall mean of 4.77, which implies that the system is highly functional, highly accessible, highly reliable and highly usable. This result of the evaluation indicates that the system met its requirement and accepted by the Department of the Interior and Local Government - Municipal Local Government Operations Officer, barangay secretaries from seventeen (17) barangays and citizens in Local Government Unit of Isulan.

6. CONCLUSION

Based on the evaluation of the system, the following conclusions were drawn:

- The system's functionality with 4.68 weighted mean, it implies that the system is highly functional has the capability to provide functions and performs correctly and met the stated and implied needs of users under the specified conditions of usage.
- The system's accessibility with 4.94 weighted mean implies that the system is highly accessible; it also means that the system users can interact, navigate and understand easily.
- The system's reliability with 4.56 weighted mean implies that the system is highly reliable and has its capability to maintain a specified level of performance when used under specified conditions.
- The system's usability with 4.92 weighted mean implies that the system is efficient, effective and satisfying to be used based on the user's experience.

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