


# E-Barangay: A Framework for a Web-Based System for Local Communities and Its Usability

Rex Perez Bringula, University of the East, Philippines\*

 <https://orcid.org/0000-0002-1789-9601>

Mark Anthony D. Vale, University of the East, Philippines

Jenard A. Napolis, University of the East, Philippines

Franklin Pillos Oliva, University of the East, Philippines

Daniel Joseph T. De La Serna, University of the East, Philippines

## ABSTRACT

Despite the importance of community-level e-governance, prior e-government frameworks focused on the municipal or national levels. The implementation of appropriate community-based e-governance cannot be ascertained because of the absence of a community-level e-government framework. To address this gap, this mixed-method study devised a framework for community-based online services software called the e-barangay framework. A web-based system was developed based on this framework. The usability of the system was also evaluated. Thematic analysis on the transcript of interviews with three local officials showed that filing complaints, requesting documents, sending suggestions, and posting announcements were the core elements of the e-barangay framework. Both the objective and subjective measures of usability showed favorable results. Spearman Rank correlation confirmed that the design-related factors were related to the frequency of use of the e-barangay. It is concluded that the software satisfied the needs of the stakeholders. Theoretical and practical implications are discussed.

## KEYWORDS

Community, E-Government, Governance, Services

## 1. INTRODUCTION

Different scholars have proposed e-government frameworks at the national level (Georgiadis & Stiakakis 2010; Nguyen et al., 2014), city (Paskaleva, 2008), and municipal levels (Lee-Geiller & Lee, 2019). However, despite the relevance of community-level services (Barbosa, Pozzebon, & Diniz, 2013), a framework for e-government public services at the barangay level is still unavailable. There are no frameworks that can guide e-government researchers to develop systems relevant at the community level. Without such a framework, community-based systems may not directly address

DOI: 10.4018/IJEGR.288071

\*Corresponding Author

the needs of the residents. Furthermore, these community-based systems may not be consistent or aligned to the mandate of the barangay and to the policies and programs of the country.

To address this gap, this study was conceived. The aim of the study is twofold. First, it developed a framework for the community called e-barangay. The e-barangay framework could serve as a basis in the development of a system pertinent to the needs of the local community. Second, a web-based system was developed based on this framework. Subsequently, its usability was determined. Specifically, the study aims to (1) discuss the development of a framework at the barangay level that could serve as a basis for the development of a web-based system called e-barangay, (2) determine the perceptions of the residents towards the design-related factors of e-barangay in terms of performance, reliability, responsiveness, aesthetics, information quality, and ease of use, (3) determine the subjective measures (frequency of use, satisfaction of use, intention to revisit the website, and overall user experience) and objective measures (task duration, task accuracy, and completion) of usability, and (4) determine if there is a significant relationship between design-related factors and the subjective measures of usability. It is hypothesized that there is no significant relationship between design-related factors and subjective measures of usability.

The remainder of this paper is structured as follows. The next section is Literature Review, which is divided into three sub-sections. The Methodology part, which is composed of the Qualitative and Quantitative sections, discussed how the data were collected and analyzed. The findings were then presented in the Results section and immediately followed by the Discussion section. Theoretical and Practical Implications were then offered in the light of the research findings. Limitations and future research directions were then discussed. The Conclusion section is the last part of the paper.

## **2. LITERATURE REVIEW**

### **2.1 E-Government Framework**

Paskaleva (2008) proposed a city e-readiness in Europe that entails an understanding of city e-governance, e-government, and e-democracy. Each component of e-readiness contains different systems (e.g., e-discussion, e-forums, e-surveys, etc.) that could empower residents in a city. Balahadia et al. (2017) implemented this framework. Georgiadis and Stiakakis (2010) provided a list of e-government services for citizens and businesses. The list included 12 services for the citizens and 8 for businesses, such as income taxes, job search, social security benefits, personal documents, car registration, building permission, a declaration to the police, public libraries, certificates, enrolment to higher education, an announcement of moving, and health-related activities.

Nguyen et al. (2014) proposed a framework that indicates the relationship between the government, stakeholders, and Big Data and Electronic Records Management (ERM). The main purpose of the framework was to collect and generate information which is considered as a key building block of good governance. In another study, Lee-Geiller and Lee (2019) investigated the relevance of municipal e-government practices relative to the needs of its citizens. Through a mixed-method approach, the study showed that municipal e-government practices were highly developed in basic online services (e.g., information publication) but less developed in terms of citizen engagement. The study recommended that local and national websites could provide functionality where its citizens can file complaints or send comments.

The frameworks above provided a high level of abstraction that is applicable at the national or municipal levels. Thus, a detailed, fine-grained e-government framework relevant to the services offered by the barangay is needed.

### **2.2 E-Government Website Design-Related Factors**

The study of Weerakkody et al. (2014) conducted a meta-analysis on the factors affecting user satisfaction of e-government services. The analysis of the 147 papers published from 2002 to 2012

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