

An information technology department in a disadvantaged municipality in Mexico: need and feasibility

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ABSTRACT

The present research analyzes the need for an area for management of information and communication technologies in the local government of a disadvantaged municipality in México. Also, the feasibility of its implementation is addressed and a pilot testing is proposed considering the social and economic constraints. Specifically, the characteristics and conditions of San Andrés Paxtlán, in the state of Oaxaca, are addressed. The study includes an analysis of infrastructure and personnel; it also proposes a requirement specifications task and suggests a basic software application as a tool to reinforce the municipal government's capabilities for information processing. The research is performed within the context of the participation of UNSIS¹, a Oaxacan university, in ADIs (Agencies for Integral Development), a federal program of the Social Development Ministry (SEDESOL). The purpose is to obtain knowledge and experience which will allow us to suggest a methodology and an organizational model for other similar municipalities.

Categories and Subject Descriptors

J.1 [Administrative Data Processing]: Government; H.4.1 [Office automation]

General Terms

Management, Human Factors, Standardization.

Keywords

Municipal administration, digital gap, information technology management

1. INTRODUCTION

In this study, the concept of an *information technology department* (ITD) is an item set construed by: a building, computers and their devices, system and applications software, electric energy installations and Internet access, individuals who use computers and policies and procedures that guide their management and operation. The objectives of an ITD are: to satisfy the needs of information storage, processing and exchange in a public or private organization. Large investments are not always mandatory to achieve these objectives.

A disadvantaged municipality is one that presents low indices of human development, involving scarce public health services, scarce employment opportunities, low education levels, etc. Most of local governments in this type of municipalities receive small amounts of federal and state funding, and do not receive great amounts from municipal tax collection. These are the major reasons for the deficient managerial and technical capabilities of municipal administrations in these locations. In order to reinforce these capabilities, a deeper knowledge of the local needs is required.

This research studies the prevailing conditions in the local government of San Andres Paxtlan, a disadvantaged municipality in the state of Oaxaca, Mexico. The focus is the specific needs of information and communication technology (ICT) that allow the municipal administration to reinforce its managerial and technical capabilities. A multidisciplinary viewpoint is adopted, considering theoretical principles from both municipal administration and information systems.

In addition, once the specific requirements are identified, the study aims to propose a pilot-test to establish an ITD. The test involves identifying optimal organizational and technical conditions for the ITD operation.

The problem is relevant because the absence or deficiency of ICT that is observed in a significant number of Mexican municipalities is an important obstacle to consolidate the application of laws involving access to public information, such as [1].

In addition, national and international standards on quality of public administration, such as [2], consider ICT one of the key items to reinforce the efficiency and reliability of a government.

2. OBJECTIVES

Especially, the following questions will be answered:

- 1) What are the characteristics of infrastructure and personnel that have potential to take advantage of ICT in the local government?
- 2) What are the specific requirements of the local government regarding: software, hardware, human resources and funding?
- 3) How should an ITD be established in a municipal administration to satisfy its ICT needs efficiently at a suitable cost?
- 4) How can a municipal ITD be funded?

¹ <http://www.unsis.edu.mx>

5) How can the experiences of this study benefit other similar municipalities in Oaxaca and Mexico?

3. RELATED PREVIOUS RESEARCH

Most of related previous research on the use of ICT for municipal administration in Mexico has been performed in a number of locations that present a relatively higher economical level. For instance, the cities of Guadalajara, Jalisco [3] and Aguascalientes, Aguascalientes [4].

Other antecedent is the research performed along with the so-called *Local Government and Management (Gobierno y Gestión Local)* Award². This is a competition in which municipal governments can evaluate and improve their managerial and technical capabilities. ICT are an issue frequently addressed by the participants.

In Oaxaca, the government established the State Institute for Municipal Development (IDEMUN) in 1996. Its principal objectives are providing municipal governments with technical and legal advice to reinforce their managerial capabilities. The institute has a Research and Development Directorate that includes a Department of Municipal Information Systems. Nevertheless, a scheme that allows disadvantaged municipalities to use these technologies has not been created.

4. METHODOLOGY

The problem is studied from both the information systems and municipal administration viewpoints. Interviews with municipal officials and documental research on municipal records are performed in order to identify the technological and human resources available.

One of the major products of this research will be a specification of information needs of processing, storage and exchange to support the managerial activities performed manually by the municipal officials. The specification creation task is performed using [5] as guide. The specification will allow us to define requirements of human resources, hardware, software, organizational structure and procedures, among others, in order to establish the ITD.

Other important stage of this study is the pilot-test that will identify the optimal conditions to organize and operate the ITD.

5. INITIAL FINDINGS

The *municipal palace*, i.e. the see of the municipal government is in suitable conditions to allocate personal computers (PC) and peripherals. Two PCs and three printers are available. Municipal officials completed elementary or secondary school but most of them do not know to use PCs. Training for approximately 15 officials on basic PC operation, including office automation software, is needed. This training is offered by a UNSIS undergraduate student of information systems. The personal assistant to the Mayor completed high school and also basic courses on office automation software. Other official (the Municipal Secretary) is incipiently trained.

The PCs at the municipal palace are used by the personal assistant to the Mayor for editing official documents. The main software in the PCs is Microsoft Office. PCs are not used for massive data processing.

Internet access is not available in the municipal palace, although it is at the Community Learning Center (CCA), a nearby facility that is partially subsidized and supervised by the federal government. Its services are commonly used by secondary or high school students. The personal assistant to the Mayor, and the municipal secretary eventually use these services for needs of the local administration.

A software to support the collection of local taxes, specifically, the so-called *predial* tax, is one of the needs identified so far.

Funding to establish and operate the ITD can be obtained in accordance to state and federal laws that allow municipal governments to obtain infrastructure.

6. PILOT-TEST PROPOSAL

The pilot-testing will allow us to implement, evaluate and adequate the software for collection of *predial* tax. This is the principal need that justifies the establishment of an ITD. Its operation will be supported by documented procedures. Users in the local government will be trained so that they can take advantage of the software tool.

7. DISCUSSION AND FUTURE RESEARCH

This research is in a starting stage and it will continue for approximately six more months. Experiences might be useful to other similar municipalities in Oaxaca and Mexico.

8. ACKNOWLEDGMENTS

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9. REFERENCES

- [1] Congreso del Estado Libre y Soberano de Oaxaca. LX Legislatura Constitucional. Ley de Transparencia y Acceso a la Información Pública para el Estado de Oaxaca. Oaxaca de Juárez, Oax. México. March, 15, 2008.
- [2] International Standard Organization (ISO). 2008. ISO IWA 4:2009 Quality management systems -- Guidelines for the application of ISO 9001:2008 in local government.
- [3] López, G. 2002. Modernización catastral en Guadalajara, Jalisco. En: Cabrero, E. (Coord.), Innovación en Gobiernos Locales: un Panorama de Experiencias Municipales en México. CIDE/Premio Gobierno y Gestión Local.
- [4] Pardo, M.C. 2002. Modernización administrativa en Aguascalientes, Aguascalientes. En: Cabrero, E. (Coord.) *op. cit.*
- [5] IEEE Computer Society, Software Engineering Standards Committee. IEEE Recommended Practice for Software Requirements Specifications (IEEE Std 830-1998). USA, 1998.

² <http://www.premiomunicipal.org.mx/p2009/home.php>