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An Initial Approach to e-Government Acceptance and Use

A literature analysis of e-Government acceptance determinants

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Abstract — Information technology has become one of the core elements of electronic government (e-Government) and should figure prominently in future governance. E-Government services, through electronic means, should provide a more cost-effective and convenient way for citizens to interact with government, however their adoption is still far from a satisfactory level. The study herein has examined research on the adoption of e-Government services. Using data obtained from previous research, this article identifies the variables that contribute to the adoption of e-Government by citizens and the model created is presented. Overall, this study concludes that e-Government has been adopted by many governments, but it is still at an early stage, and there are still barriers to its more widespread adoption in society.

Keywords – e-Government; adoption, technology.

I. INTRODUCTION

Information technology (IT) has become one of the core elements of managerial reform, and electronic government (e-Government) may figure prominently in future governance. IT has opened up many new possibilities for improving internal managerial efficiency and the quality of public service delivery to citizens. E-Government is a fundamental element in the modernization of any government, serving as a means towards enhancing transparency, accountability, and good governance; making the government more results-oriented, efficient and citizen-centered; and enabling citizens and businesses to access government services and information as efficiently and as effectively as possible through the use of the internet and other channels of communication [1]. The use of IT in the government sector offers great opportunities for enhancing service quality and efficiency while trimming down on governmental expenses. An effective and operational e-Government facilitates a better and more efficient delivery of information and services to citizens. At the same time productivity is promoted amongst civil servants, while encouraging the participation of citizens in government, providing a means for citizens to feel and effectively be more empowered [2].

II. THEORETICAL FRAMEWORK

A. e-Government Conceptualization

E-Government is a generic term for web-based services of agencies of local, state and federal governments. In e-

Government, the government uses information technology and particularly the Internet to support government operations, engage citizens, and provide government services. The interaction may be in the form of obtaining information, filings, or making payments, and a host of other activities via the World Wide Web [3] [4] [5]. E-Government is defined by other sources as follows:

According to the European Commission (EC, 2016), e-Government uses digital tools and systems to provide better public services to citizens and businesses. Effective eGovernment can provide a wide variety of benefits including more efficiency and savings for governments and businesses, increased transparency, and greater participation of citizens in political life. ICTs are already widely used by government bodies, as occurs in enterprises, but eGovernment involves much more than just the tools. It also involves rethinking organizations and processes, and changing behavior so that public services are delivered more efficiently to people. The European Commission (www.ec.europa.eu) reports that: “Implemented well, eGovernment enables citizens, enterprises and organizations to carry out their business with government more easily, more quickly and at a lower cost.”

A World Bank (www.worldbank.org) definition (AOEMA report) is as follows: “E-Government refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions.”

A United Nations (www.unpan.org) definition (AOEMA report) is as follows: “E-Government is defined as utilizing the Internet and the world-wide-web for delivering government information and services to citizens.”

A Global Business Dialogue on Electronic Commerce - GBDE (www.gbde.org) definition (AOEMA report) is: "Electronic government (hereafter e-Government) refers to a situation in which administrative, legislative and judicial agencies (including both central and local governments) digitize their internal and external operations and utilize networked systems efficiently to realize better quality in the provision of public services."

A definition of the Working Group on E-Government in the Developing World (www.pacificcouncil.org) is as follows: "E-Government is the use of information and communication technologies (ICTs) to promote more efficient and effective government, facilitate more accessible government services, allow greater public access to information, and make government more accountable to citizens. E-Government might involve delivering services via the Internet, telephone, community centers (self-service or facilitated by others), wireless devices or other communications systems."

While definitions of e-Government by various sources may vary widely, there is a common theme. E-Government involves using information technology, and especially the Internet, to improve the delivery of government services to citizens and businesses. E-Government enables citizens to interact and receive services from governments twenty-four hours a day, seven days a week.

E-Government is in the early stages of development. Most governments have already taken or are taking initiatives offering government services online. However, for the true potential of e-Government to be realized, government needs to restructure and transform its long entrenched business processes.

B. e-Government VS e-Governance

E-governance is beyond the scope of e-Government. While e-Government is defined as a mere delivery of government services and information to the public using electronic means, e-governance allows citizens to have direct participation as constituents in political activities going beyond government and includes E-democracy, E-voting and participating in political activity online. So, most broadly, the concept of E-governance will cover government, citizens' participation, political parties and organizations, parliament and judiciary functions [6]. For many people there is clearly still considerable confusion relative to the explaining of e-Government and e-governance [7], and for a clear definition between these two concepts, a definition is presented here so that there is no overlap. E-government's focus is on constituencies and stakeholders outside the organization, whether it is the government or public sector at the city, county, state, national, or international levels. On the other hand, e-governance focuses on administration and management within an organization, whether it is public or private, large or small. For a clearer presentation of the concepts these are presented in Table I, in a summary made by the authors.

Table I - Table adapted from E-Government and E-Governance (Palvia & Sharma [7])

		FOCUS	
		Outside	Inside
Type of organization	Public Sector – Government Agency	E-Government (Extranet and Internet)	E-Governance (Intranet)
	Private Sector – MNCs or SMEs	Inter-Organizational Systems – IOS like CRM Systems (Extranet and Internet)	E-Governance (Intranet)

As shown in Table I, e-Governance proposes to manage organizational resources, a part of human resources, materials, machinery, and capital for both the private and public sector through the use of ICT. The role of e-Government is that of interaction of a government agency with the external environment.

C. Benefits and Struggles

With the advancement of ICT several benefits have been provided to society through the availability of public services and information on portals. It is globally recognized that ICT promotes good governance and clear government. Some benefits recognized by the OECD of ICT [8]: ICTs help improve efficiency in mass processing tasks and public administration; the adopting of a customer focus; ICT can help stakeholders share information and ideas; e-Government helps reduce corruption, increases openness and trust in government, and building trust between governments and citizens is fundamental to good governance; finally, ICT helps to increase transparency and accountability.

Ebrahim & Irani [9] identify, analyze and summarize barriers into dimensions with practical examples that include: (1) IT infrastructure, (2) security and privacy, (3) IT skills, (4) organizational and (5) operational cost of the adoption of electronic government experience in public sector organizations. They affirm that: "technology itself would not guarantee success with e-government but, it is necessary that any e-government initiative must ensure that it has sufficient resources, adequate infrastructure, management support, capable IT staff, and effective IT training and support".

The authors above identified the following as potential benefits for the adoption of electronic government infrastructure: improvement of the efficiency of public administration operations; cost reduction in the collection and transmission of improved business processes and services.

It can be concluded that despite the potential benefits for the adoption of e-Government, there are a number of barriers which prevent the realization of benefits.

III. E-GOVERNMENT ACCEPTANCE AND USE

A. Acceptance and Use Studies

The adoption of e-Government by citizens has been increasing, thus becoming an important management tool.

Although the population adopts e-Government services, the interaction rate with governments is still low, leading to the failure of e-Government initiatives.

One verifies that, according to the articles analysed, there are still articles that talk about the subject of e-Government adoption.

By analysing the evolution of the articles in the period from 2010 to 2017, in the 48 articles one verifies that the year 2014 was the year with the largest number of publications (seven articles) on the subject being studied, one also observing that in the last four years this figure has been declining (Figure1).

So far, the number of articles, in 2017, is three, but there is a possibility that there will be a rise in the number of articles published on this topic, due to the increasing adoption of e-government by citizens.

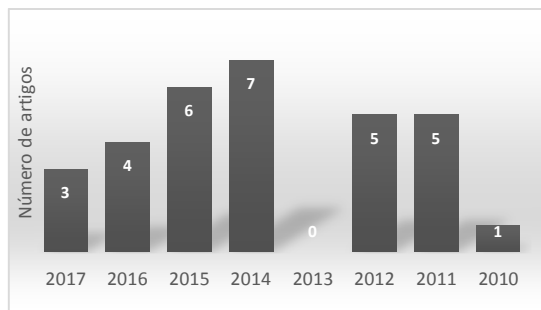


Figure 1 - Evolution of the number of publications

B. e-Government determinants

Sixty-seven publications were analysed and filtered based on the title, methodological approach and contribution. Subsequently, only forty-eight articles remained. Through a detailed analysis of the 48 articles (Table II) [7, 10-56], we arrived at the following list of variables, whose association with the acceptance and use of e-Government systems was duly proved. Table II shows for each article the variables identified in the adoption of e-Government.

As concerns Table II a brief description of each variable taken from the analysis of the 48 articles is presented:

- Trust - Is the service offered as promised, that is, in a precise, consistent and timely manner?
- Perceived ease of use - For ease of use to exist, there has to be an ease of interaction between citizens and the website.
- Social Influence - Allows to evaluate the perception of the user in relation to the opinion of other people in the social environment, where the user is inserted, on whether they should or should not use the application.

- Attitude Towards - It is the user's follow-up, whether favourable or not, in relation to using the system.
- Effort Expectancy - Is related to the degree of ease of use of the application. If a negative variable, the user has to strive.
- Performance Expectancy - Is the degree to which an individual believes that using that system will help him or her to attain gains in job performance.
- Compatibility - Services must be agreed upon.
- Internet Skill - The user has the capability and has the knowledge to perform any task on the system.
- Quality - The content and appearance of the information provided must be accurate, concise, and relevant.
- User acceptance - The user must be registered and approved.
- Management Readiness - Refers to the user getting quick results when using the system.
- Sensitivity to cost - The user does not have large expenses when carrying out his or her tasks.
- Usability - Allows the user to use the system in a way that maximizes his or her productivity.
- Computer resource requirement - Allows the user to perform tasks and to predominantly use the professional activities.
- Technical support requirement - It can be understood as a facilitating condition of available resources.
- Security Provision - Refers to a providing of security conditions.
- Services efficiency - Refers to the obtaining of the maximum effectiveness of services, using the least possible commitment, time and other means or resources.
- Perceived Credibility - When one believes one is obtaining quality of resources reliably.
- Internet Accessibility - Allows the user easy access.
- Facility conditions - Indicates the level at which the user believes that the existing organization and infrastructure supports the use of the system.
- Image - The system must have an appealing design.
- Efficiency - Getting results effectively.
- Effectiveness - It indicates to the user the existence of ethics in the service.
- External pressure - The user receives influence from someone.
- Perceived Usefulness - Is the degree to which a user believes that using the system will improve performance.

- Perceived risk - It is the risk of possibility of occurrence of loss of personal information.
- Habit - Is the prediction of user behaviour, depending on whether your habit is strong or weak.
- Perceived safety - Feeling secure in tasks.
- Perceived benefit - Can earn money when performing any service.
- Use – The user is able to perform any service.
- Intention to use - The user already has the need to use these resources for the execution of any service.
- Availability of Wireless Technology - Use of the Internet to run your services.
- Behavioural Intention to use – Refers to the strength of the intention to use the system in the future.
- Trust of Internet - The user has confidence in what he or she does, when using the Internet.
- Trust of intermediary – The user must have a minimum trust level in the services.
- Previous use of an e-Government service – Must have had prior use for better service effectiveness.
- Security – Both the user and the system have to be trustworthy.
- User satisfaction - The person feels satisfied and takes pleasure in what her or she does and in obtaining the content.
- Demographic factors – Variables (time, age, etc.) that influence user behaviour.
- E-Government Adoption – Refers to the user's adoption of the services.
- Personality – Refers to the characteristics or state that the user has.
- Technology use – Is the use of services through technology.
- Behavioural Intention – Refers to the degree to which a person has formulated conscious plans to perform or not perform some specified future behaviour(s).
- Propensity to trust – Natural tendency or force that drives a user in a particular direction.
- Perceived organizational trustworthiness – The user has to have confidence in the services of the organization.
- Privacy concerns – The user has privacy problems. A negative variable prevents the user from using a service.
- Trust in e-Government – The user has to feel confident in e-Government.
- Information Quality - The information has to be of good quality and reliable.
- Systems Quality and Service Quality - Importance of the features that the system and service have.

- Perceived Satisfaction – The user has to feel satisfied when performing a service or receiving a certain service.
- Trust in Technology – The user has to feel confident in the technology, because it is through it that a service is performed.
- Internet Familiarity – The user has to be familiar with the Internet for better execution.
- Confidentiality – User data has to be confidential.
- Perceived Public Value – The services have to be legitimate and true.
- Culture - Norms of behaviour, knowledge, habits and beliefs that differentiate one group from another; different groups will have different cultures.
- Internet – Uses the Internet to perform any action and obtain information.
- Self-Efficacy - It is the ability to complete and carry out tasks.
- Getting Information – When performing an action, the user receives information.
- Seeking Public Services – The user when doing something uses public services.
- Intention to Conduct Transactions – Refers to when a user wants to make a transaction.
- Hedonic Motivation – It is the motivation to do something due to the internal satisfaction involved.
- Price Value – This is considered an indicator of the prediction of buying behavior.

IV. RESULTS ANALYSIS AND DISCUSSION

This study allowed to collect the variables identified by the authors that influenced the citizens' intention to use e-Government services and their causal relationships with the chosen model. It was verified that the models most used according to the results were TAM (Technology Acceptance Model), UTAUT (Unified Theory of Acceptance and Use of Technology) and UTAUT2 (Unified Theory of Acceptance and Use of Technology 2). It was verified that TAM was the most used model, being present in 18 of the 48 study articles.

TAM is widely used in information systems to study user acceptance of technology.

The TAM [57] has been widely used to explain the usage of information technology (IT). According to the TAM, an individual's intention to use IT, which is often used as the proxy for usage of IT, is determined by attitude, and attitude is determined by two beliefs: perceived usefulness and perceived ease of use. Empirical studies using the TAM have shown that it is a parsimonious and robust model [57].

The UTAUT was formulated by Venkatesh, Morris, Davis, & Davis [58], and consists of four main concepts: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC). These four main concepts are independent variables which

influence the dependent variables, behavioral and usage. Gender, age, experience, and volunteers of system use have indirectly influenced the dependent variables via the four main concepts.

The UTAUT2 is a theoretic framework which was derived from the TAM and the UTAUT2, and is a powerful predicting framework being proposed by Venkatesh, Thong, & Xu [45]. The UTAUT2 can effectively explain and analyze people's technology acceptance behaviors.

Table II allows one to see which variables are most present in the studies in the adoption of electronic government services, where eight variables were identified, with the variable trust being the most present in the studies:

- (1) Trust;
- (2) Perceived Ease of Use;
- (3) Social Influence;
- (4) Effort Expectancy;
- (5) Performance Expectancy;
- (6) Facilitating Conditions;
- (7) Perceived Usefulness;
- (8) Perceived Risk.

Citizens are just beginning to get more meaningful information about the benefits and consequences of using e-Government services. Thus, the trust variable is important and will have a major impact on the adoption of e-Government through its influence on trust of the Internet and trust in government.

V. CONCLUSIONS

A. Theoretical and Practical Implications

This study allowed us to extract factors that influence consumer behavior, that is, as concerns the adoption of electronic government services and as a means of perceiving citizens' choices and preferences.

This study also allows to integrate the identification of variables and the models of adoption of electronic government. Research reports repeatedly point out that a lack of confidence makes it difficult for citizens to adopt e-Government services, hence the constant presence of this variable.

Through this study, the analysis and detailed characterization of variables and the acceptance and use of models of electronic government may be the basis for future research.

B. Future Research

As regards future work, a focus group will be held, where a group of seven people will be gathered, with the main objective of having a dialogue and checking their reactions on the topic being studied, in order to gather the maximum amount of information. Through the use of this research instrument we will be able to construct a novel perspective, which will allow for a survey of opinions and complex issues that will warrant an exploration in greater detail.

The list of variables collected from the present study will be presented to the group, and they will be asked to number them in in order of importance, thus allowing for the

visualization and prioritization of the most relevant variables. It will also be possible for the group to introduce the variables that it considers necessary in the adoption of e-Government that are not in the list.

This dialogue will also allow us to highlight the most important variables and what does or does not lead to the adoption of e-Government services by citizens, so that we can present new ways or methods to make services more suitable for the population and thus improve upon adoption levels.

Our goal is that, over time, the adoption and acceptance of e-Government services will increasingly captivate more and more citizens, eventually being extended to the whole population.

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