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M. Sc. Dissertation in Engineering

**Acceptance of IT governance
framework in Ecuadorian Public
Institutions; Case of study:
Ecuadorian Social Security Institute**

에콰도르 공공기관의 IT 거버넌스 프레임워크 수용:

사례연구: 에콰도르 사회보장기구

June 2018

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**Acceptance of IT governance
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이 논문을 공학 석사학위 논문으로 제출함

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Abstract

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The adoption of information systems, especially IT governance models, has taken strength in recent years and has become a necessary element for the success of public and private institutions. Its correct implementation guarantees that the investments made in IT support the achievement of the institutional objective.

The IT governance, provide the reference framework for the development and application of policies and regulations to be applied on the ICT office which will be reflected in the efficient, effective, transparent and un-bureaucratized delivery of services offered by diverse mechanisms to the citizens.

The use of IT governance frameworks is essential to achieve the e-government goals and so reduce the digital divide. According to public reports related to the current state of global e-government, Ecuador is in an intermediate position about the rest of the countries in the region. This position is not according to the investment and planning carried out by the Ecuadorian government, which through its national e-government plan has tried to use technology as a development mechanism and instrument of interaction between the different individuals that make up a society.

For this study, the Ecuadorian Social Security Institute has been selected because it is the most significant e-government services provider in Ecuador. Their achievements or failures significantly influence Ecuador's electronic government indexes.

Numerous studies recommend that when new information systems are going to be implemented, or when it is necessary to identify critical success factors for technologies already deployed, it is recommended to use standardized models of acceptance analysis such as the Technology Acceptance Model (TAM) or the Unified Theory of Acceptance and Use of Technology (UTAUT). Their analysis results are useful to determine the critical factors needed for a successful implementation.

In this case, a modified acceptance model based on TAM and UTAUT will be developed. The information of its constructors will be fed with data from around 200 surveys conducted from nationwide Public IT servers that are in charge of the IT leadership and management in each administrative and operational unit of the institution case of study. With the collected information

a quantitative analysis will be carried out using Structural Equation Modeling (SEM).

The results will allow determining the degree of influence of the acceptance factors analyzed and thus generate a meaningful input that will enable the development of policies and procedures that improve the acceptance of the IT governance frameworks.

Keywords: IT governance, IT governance acceptance, Unified Theory of Acceptance and Use of Technology, IT governance in public institutions, Ecuador.

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Chapter 1. Introduction

1.1 Introduction

Since last century, Information and Communications Technologies (ICT) are gaining in importance and development around the world. ICTs are being used by different sectors such as the government institutions, like a platform for delivering services or solving public administration issues, making the governmental structures more efficient, giving better services to the population and evolving in the way how people interact with their governmental institutions. (Ngafeeson & Merhi, 2013).

Governments around the world like the case of the Ecuadorian Government, are making significant efforts for improving their electronic services quantity and quality. As part of the adoption and use of ICT technologies, the governments are developing national plans for the implementation of new information systems, aspiring to get a better level of digital development, providing the biggest possible scope of cost-effective services for the citizens and thus, achieve the proper distribution of digital dividends (Ali & Green, 2007).

Because of the importance and increasing investment that public institutions are applying on ICT, it is necessary to understand the implication of keeping an adequate ecosystem to keep working the ICT infrastructure. This ICT ecosystem, by its definition, is commanded by the IT governance, which for many institutions has the characteristics and treatment of laws (Hardy, 2006).

The IT governance purpose is to define a framework in which are described the guiding principles directed to institutional managers with the aim of ensuring the effective and efficient support of IT investment for achieving the corporate strategies and objectives, achieving sustainable competitive advantages. (CALDER, 2008; Pang, 2014).

Previous studies have determinate that there must exist a good understanding between IT and Business. A lack of connection between them can result in the entire investment in IT being inefficient. In this way, for an effective IT governance is needed proper communication mechanisms and the most important, creates a participative/collaborative environment (S. De Haes & Van Grembergen, 2004), in which the common element is the use.

A successful implementation of information systems or governance frameworks does not only depend on the kind intentions and efforts of public institutions; it also depends on the stakeholder's intention to use the structures and frameworks that support its working and composes the IT governance ecosystem (DeLone & McLean, 2016).

For this research, intention to use will be defined as “the willingness of a user of information systems technology to adopt and accept new IT initiatives” (Bradley, 2009). Intention to use is determined by factors analyzed by acceptance models such as the Technology Acceptance Model proposed by Davis, or the Unified Technology of Acceptance and Use of Technology (UTAUT) suggested by Venkatesh.

Previous studies have demonstrated the influence that factors such as perceived usefulness, ease of use, trust, subjective norms or effort expectancy,

have over the intention to use information technologies (F. Chan et al., 2010; Fred D. Davis, 1989; Xie, Song, Peng, & Shabbir, 2017). The influence of these factors over the intention to use also could be moderated by influences such as age, gender, incomes or user demographics (Min, Ji, & Qu, 2008; Sapio et al., 2010; V Venkatesh, Morris, Davis, & Davis, 2003).

This research adapts the Unified Technology of Acceptance and Use of Technology Model to identify what are the determinant factors that affect the acceptance of IT governance framework by IT leaders and managers in the institution case of study where despite IT governance framework has been developed and implemented; it is not broadly used.

The research results will allow determining the determinant factors that influence the intention to use and thus, generate a meaningful input that will enable the development of policies and procedures that improve the acceptance of the IT governance frameworks.

1.2 Research gap

The study of the acceptance and intention to use technology is widely studied by models such as the Technology Acceptance Model (TAM) or the Unified Theory of Acceptance and Use of Technology (UTAUT); both of them are based on social psychology theories like the Theory of Reasoned Action (TRA). (Fred D. Davis, 1989; V Venkatesh et al., 2003). Researchers used and are using adapted acceptance models according to their necessities, getting essential contributions for the academic and scientific world. For example, the study developed by Carter and Belanger has determined that the ease of use,

compatibility, and trustworthiness are factors that determine the intention to use e-government services (Carter & Bélanger, 2005).

However, most of the acceptance models had been applied for determining the acceptance of the technology. The application of acceptance models for studying the intention of use frameworks like the IT governance framework is a field that has not been widely addressed (Ahmad., Hilali, Qutaifan, & Amer, 2012). It is needed to develop studies for determining if the same factors that affect the intention to use technology, have the same significance for ascertaining the intention of use frameworks.

Countries around the world have their singularities, generating a variety of classifications and groupings. One of the most used clusterings is the distinction between developed and developing countries. According (Musa, 2006), “Many of the theories developed in the information systems field have focused on developed countries,” in which exist a common element which is the relatively easy access to technology and resources. This characteristic is reflected in the use of certain variables on acceptance models, variables that could not have the same influence over the intention to use if the study is settled in developing countries in which “contextual issues could play significant roles in the applicability of theories” (Musa, 2006). Developing countries have a common characteristic that is the constraint of resources. This constraint influences the intention to use (Mathieson, Peacock, & Chin, 2001). For this reason, it makes sense to choose the most appropriate influence factors, according to the characteristics of the environment where the study will be developed.

Finally, in the Ecuadorian context, there is not too much evidence of studies related with the determination of acceptance factors or the use of acceptance models applied on technology or information systems, generating a gap that is intended to be tackled with this research.

1.3 Research Background

Together with the society, technology also is evolving. Nowadays technology is playing a leading role in the achievement of universal objectives as is the case of the Sustainable Development Goals proposed by the United Nations (United Nations General Assembly, 2015).

In organizational environments, Information Technology (IT) is not seen only as investment or expenditure. Now, IT is being considered as a fundamental supporting element for achieving the organizational goals (Sergio Borja, 2018).

The information generated within the IT is an element that needs to be handled appropriately. It is necessary to establish a set of correlated components that allow the information generated, processed, stored and disseminated are available to support the needs of an organization related with analysis, coordination, control, and decision-making process inside organizations (Altmann, Heshmati, & Al-Athwari, 2017; Bourgeois, 2014).

Information systems are providing bi-directional and 24 hours available services that are being used by multiple society actors especially by government institutions with the aim of transforming the relationships with citizens, business and other arms of governments enhancing communications, breaking

geographical constraints and changing traditional bureaucratic structures into structures with redistributed power and functional responsibilities for achieving the government efficiency and transparency on the services delivery to citizens (Fountain, 1999; MUNDIAL, 2002; West, 2004).

But the endowment of electronic services is a concept that goes beyond the use of technology for shortening distances. Behind it, it is necessary to establish a set of policies and regulations in charge of managers to provide supporting, planning, coordinating and controlling effectively. (Manandhar, Kim, & Hwang, 2015; Palvia & Sharma, 2007).

According to the mentioned definitions, and for avoiding confusion is needed to clarify that e-government and e-governance are not the same concepts. In the academic world there are numerous studies in which their titles make reference to e-governance but in the development of the document they talk about government. This confusion could come because “the ICT industry has a long tradition of re-labeling technologies” (Bannister, 2009). In the same way, politicians in enriching their speeches, often make misuse of terminology, giving as a result, broad and inadequate use of these concepts (Bannister & Connolly, 2012).

To encourage a desirable e-government and e-governance management is needed that the senior IT management establishes a set of processes, standards, metrics and frameworks for achieving efficient and effective use of information, enabling the IT governance and thus, ensuring compliance with institutional goals. (Campbell, McDonald, & Sethibe, 2010; Steven De Haes, Van Grembergen, & Debreceeny, 2013; Proença, Vieira, & Borbinha, 2017).

Many governmental organizations, including Ecuadorian public institutions, are making significant efforts to support e-government services through the application of diverse strategies, being one of the most important the implementation of IT governance frameworks (Adaba & Rusu, 2014).

1.4 Research Problem description

The development of countries through the use of technology is under constant analysis by governments; the developing countries are not the exception.

In the case of Ecuador, the government developed the e-government national plan, in which are described all the strategies and procedures to achieve a desirable level of e-government. As part of the strategies, the plan classifies the electronic services under three categories: citizens, government, and productive sectors. Each category provides specialized e-services to citizens.



Figure 1. Organization of Ecuadorian electronic services
(Secretaría Nacional de la Administración Pública, 2016)

The Ecuadorian e-government national plan considers some metrics that must be accomplished for achieving a referent position on the global e-government indexes. According to the National Secretary of Public Administration, for 2016 some national goals were achieved. Results are described in the following table, and they are considered for international organizations to develop their reports.

Indicator	Achieved	Goal
Online services	142	100
Online services provided through a single portal	21	100
Number of virtual online courses	68	57
Percentage of automated process	21%	50%
Percentage of public Institutions that offer web services	34.07%	39%

Table 1: e-government status in Ecuadorian public institutions
(Secretaría Nacional de la Administración Pública, 2016)

International organizations develop reports in which are described the situation of the countries related to specific subjects. For this case, the United Nations launches the e-government survey. In this report is described in detail facts related to the e-government evolution. As was being mentioned, IT governance is essential for achieving effective e-government.

Ecuador is part of this report. According to United Nations Survey, for the year 2016, the index of South American countries is 0.5660, value that is better than the world average. Ecuador was in the 74 position, with an index of 0.5625, the value that gives the 7th position of 13 South American countries (NATION, 2016).

Position	Country	Rank 2016	EGDI 2016
1	Uruguay	34	0.7237
2	Argentina	41	0.6978
3	Chile	42	0.6949
4	Brazil	51	0.6377
5	Colombia	57	0.6237
6	Trinidad y Tobago	70	0.5780
7	Ecuador	74	0.5625
8	Peru	81	0.5382
9	Venezuela	90	0.5129
10	Paraguay	95	0.4989
11	Bolivia	101	0.4821
12	Suriname	110	0.4546
13	Guyana	126	0.3651

Table 2. E-government development index 2016
(NATION, 2016)

This position is not satisfactory for the Ecuadorian government. According to the vision of the e-government national plan, Ecuador “For the year 2017 will be the regional reference of electronic government with consolidated bases of the highest stage of maturity: connected level. To measure compliance with the vision will be used, the United Nations electronic government index”.(Secretaría Nacional de la Administración Pública, 2016).

As part of the efforts made by the Ecuadorian government to determine the causes of the non-compliance of the e-government national plan vision, the National Secretary of Public Administration launched a study based on COBIT framework to evaluate the status of the nationwide IT processes. The study evaluated five pillars: IT governance, process planning, process implementation, services delivery and support, and process evaluation. The results are not satisfactory.

The IT governance achieved a value close to 0% of fulfillment. The process planning achieved 8% of fulfillment; process implementation reached 25% of fulfillment. The best value corresponds to the services delivery and support with 46% of fulfillment. Finally, the process evaluation reaches 2% of fulfillment. (Secretaría Nacional de la Administración Pública, 2016).

The Ecuadorian public sector is composed of Central Government, Sectionals Governments and Autonomous entities (Ecuador, 2018a). As part of the autonomous entities is The Ecuadorian Social Security Institution (IESS). According to the Ministry of Labor, by number of employees and users, The Ecuadorian Social Security Institute is the most prominent Ecuadorian public institution (Ecuador, 2018b). By law, all citizens with a labor relationship must be enrolled in the security system. (Instituto Ecuatoriano de Seguridad Social, 2001). According to the institutional webpage: www.iess.gob.ec, the number of users is around 8.4 million, and the number of employees is approximately 20.000 (IESS, 2018).

The essential characteristic of the Ecuadorian Social Security Institute is that it is the biggest e-government services provider in Ecuador. Its contribution to the indicators that compose the national e-government index and its e-government development is superior in comparison to the other Ecuadorian public institutions. The services provided by the institution are available in almost all the electronic services classification of the Ecuadorian e-government national plan described in figure 1.

Indicator	NATIONAL INDEX	IESS
Online services	142	58
Online services provided through a single portal	21	10
Number of virtual online courses	68	5
Percentage of automated process	21%	5%

Table 3. IESS e-services participation
(IESS, 2018)

According to the Institutional functional organic regulation: CD 457 of August 2013 approved by the Board of Directors, the Institution is divided into operative processes and subprocesses, each one in charge of providing services to the citizens. The internal office in charge of the technological management and coordination with administrative and operational units is the National Direction of Information Technology.

The National Direction of Information Technology as part of its attributions issued a regulation in which is described the roles and functions that must be followed by the IT leaders and managers in each one of the nationwide administrative and operative units. This regulation gives the power of taking their own decisions related to the IT management, among them the faculty to use the institutional IT governance framework.

As part of the efforts for providing a better IT governance ecosystem, the Board of Directors arranged the generation of the IT governance framework that should be based on the most used governance frameworks around the world. Since this disposition and for many years, the governance framework is available for the institutional use.

In previous years, the Board of Directors with the aim of understanding how the IT governance framework is working decided to contract an external consultancy service. Some objectives of this consultancy are to determine the governance framework maturity level and develop the SWOT matrix.

According to academics Capability Maturity Models (CMM) can be used to measure alignment between IT office and the achievement of institutional goals and how IT governance frameworks support them (S. De Haes & Van Grembergen, 2004). The concept contained in Maturity Models is highly associated with the organizational evolution (CALDER, 2008).

The Information Systems Audit and Control Association (ISACA), proposes a maturity level index that is used in the academic world by prominent researchers such as Steven De Haes and W. Van Grembergen. The scale used in this measurement index starts in 0 or incomplete that means that is not evidence of the achievement of the goals of a process. 1 or initial means that the process implemented achieves its purpose but is un-organized. 2 or repeatable means that exist management of the process. 3 or defined means that the managed process follows an implementation process that allows the achievement of the process goals. 4 or Managed means that the established process works and is able to achieve their goals. Finally, level 5 means that the process is optimized and is subject to continuous improvements for the achievement of defined and prospected business goals (ISACA, 2012).

The outcomes of the private consultancy were not satisfactory. The results are described in the next figure.

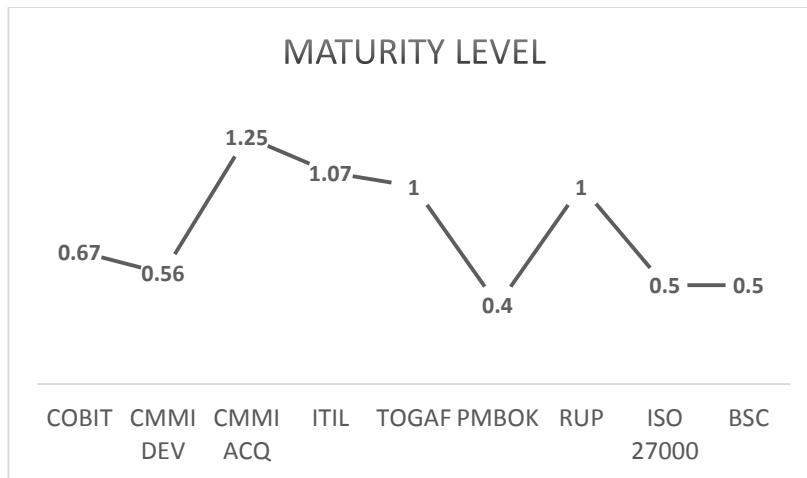


Figure 2. IT governance framework maturity level

As is observed, the index of the governance frameworks is worrying. The better value is 1.25, and the worst is 0.4, giving as an overall result for the IT governance framework a value of 0.77. According to the index proposed by ISACA, it shows there does not exist evidence of the achievement of the goals or use of the processes defined.

The consultancy document concluded that there is an acknowledgment of the existence of problems in the *USE* of analyzed frameworks showing that the IT governance office is an environment lacking mechanisms for analysis and control for the use of the governance frameworks with which it works. The IT governance framework is oriented to be used by the IT leaders and managers in all the institutional administrative and operational units, but according to the consultancy document, it is not happening.

According to the study developed by the National Secretary of Public Administration, the IT governance index in public institutions is close to 0%,

revealing “Little use of processes that ensure the achievement of organizational objectives by aligning IT with the strategy of the institution generating the *risk of failure to adopt new technologies appropriately*” (Secretaría Nacional de la Administración Pública, 2016).

According to Venkatesh (Viswanath Venkatesh, Thong, & Xu, 2012), the adoption and the use of technology or for this case the adoption of IT governance frameworks, is a central concern for the researchers. Despite efforts, the issue related to the under-utilization of systems continue, generating lackluster returns from the investment performed. “Understanding and creating the conditions under which information systems will be embraced by the human organization remains a high-priority research issue” (Viswanath Venkatesh et al., 2012). Davis described that the intention of use of technology or information systems, are influenced by some features such as the perceived usefulness or ease of use (Fred D. Davis, 1993).

1.5 Research Objective and questions

Based on the private consultancy report that shows:

- A lack of use of IT governance frameworks by the nationwide IT leaders and managers,
- The low maturity level of IT governance frameworks indexes,
- The necessity of understanding in which conditions the IT governance framework will be accepted;

The primary objective of this research is:

“To identify the determinant factors that affect the acceptance of IT governance framework by nationwide IT leaders and managers.”

Because of new acceptance models related with information systems are exposed to the academic world, the aim of this work also is to study, the new factors and challenges proposed that affect the intention to use IT governance frameworks in particular in governmental institutions.

Research Questions

To achieve the research objective, the primary research question is:

What are the determinant factors that influence the intention to use the IT governance framework in the institution case of study?

The secondary research question:

What are the effects of moderators in the relationship between determinant factors and the intention to use the IT governance framework?

1.6 Research Methodology

Structural Equation modeling is prevalent on numerous researchers related with the acceptance of technology because it provides the most appropriated statistical approach for analyzing the cause-effect relationship between dependent and independent variables (Hair, Black, Babin, Anderson, & Tatham, 1998).

Once collected information, the data analysis under Structural Equation Modelling should follow next steps: First, checking data consistency and

reliability. Second, perform the exploratory factor analysis (EFA) to explore the underlying factors. Third, confirm the factors structure through the Confirmatory Factor Analysis (CFA). Finally test the hypotheses (Kam Sing Wong, 2013).

1.7 Research Process

A research process must follow a set of steps that includes various decision points. It is necessary to understand how choices such as maintaining ethic research influences on the entire research and how they contribute to future investigation works (Bordens & Abbott, 2002). Seen in another way, a research process describes how the research must be conducted from the beginning to its culmination (Leedy & Ormrod, 2010). The following chart presents the process followed by this investigation. The process includes:

- Chapter 1: Research background, problem definition, research objective and research questions.
- Chapter 2: Literature summary regarding the thesis topic.
- Chapter 3: Methodology, hypotheses definition, and research model.
- Chapter 4: Data analysis, results, and discussion.
- Chapter 5: Conclusions, contributions, implications, and limitations.

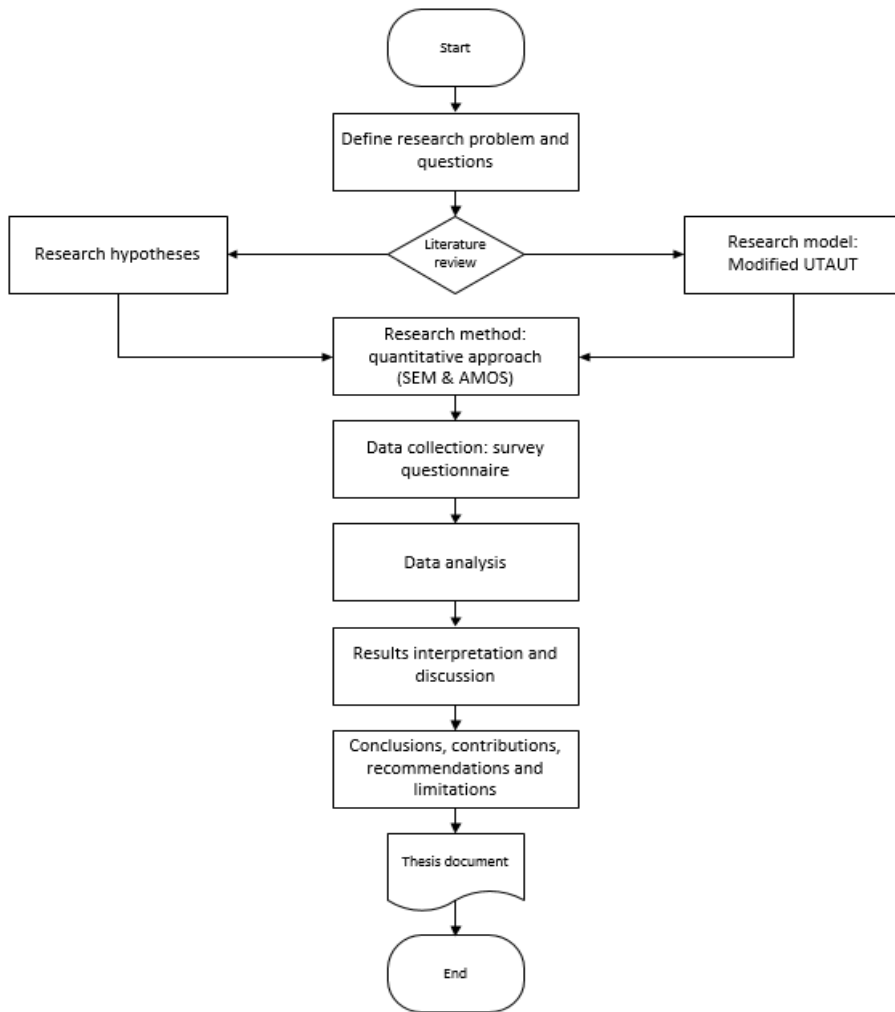


Figure 3. Research process

1.8 Contributions

For this research it is planned to introduce the acceptance models to determine the intention to use IT governance frameworks. For that will be chosen the appropriate constructors and acceptance models according to the environment where the study will be developed.

The contribution for the Institution case of study consists in providing a tool that fits perfectly on the IT governance implementation process previously

defined.

This study is the first study of this class performed in Ecuador. It is expected that its results contribute to the improvement of the national indexes related to technology.

The results of this research will allow determining the degree of influence of the acceptance factors analyzed and thus generate a meaningful input that will enable the development of policies and procedures that improve the acceptance of the IT governance frameworks.

1.9 Research outline

The structure of the thesis is organized into five chapters. In the introductory section, are discussed items such as research background, problem, objectives and research questions, finalizing with the research contribution. The rest of the thesis has the following structure: Chapter 2 presents a literature review introducing concepts related to Governance, IT governance, IT governance frameworks and acceptance models fundamentals. Chapter 3 introduces the research paradigm and approach, proposes research hypothesis, for finally presenting the research model. Chapter 4 includes the data collection method, demographic analysis, descriptive data analysis, description of the assessment procedure and hypothesis results using SEM technique for finally describing the effects of mediators on the constructor's relationship. Finally, chapter 5 discusses the results, presents conclusions, contributions, implications, and limitations.

Chapter 2. Literature Review

2.1 Introduction

The content of this chapter is oriented to discuss literature review related to IT governance and technology acceptance models that conform to the research field.

Conducting a literature review is an essential stage in the research development because of based on the exploration of previous theories and issues, could be achieved the clarification of the research difficulty and finally for building knowledge (Gray, 2014; Leedy & Ormrod, 2010).

In this chapter: section 2.2 explain what is governance as a basic concept; 2.3 provides definitions of IT governance and IT governance in public institutions; section 2.4 includes information related to the IT governance framework; section 2.5 discusses relevant details on Technology acceptance models providing an overview of relevant theories. Finally, section 2.6 provides a chapter summary.

2.2 Governance

To get an appropriate understanding of the concept of IT governance it is first necessary to understand what corporate governance is. Corporate governance refers to the use of frameworks, systems, and process by which authority is exercised for controlling organizations and for promoting investor confidence (ASX Corporate Governance council, 2014).

Because of some corporative scandals that happened at the beginning of the century, governments such as the United States government launched a set of policies and regulations for ensuring a right governance environment to keep the confidence level between investors and organizations (Sergio Borja, 2018).

For supporting a good governance environment, Weill and Ross (2004) propose a model in which is described the relationship between corporate governance and six key assets needed for generating the maximum benefit for the organization and confidence for stakeholders.

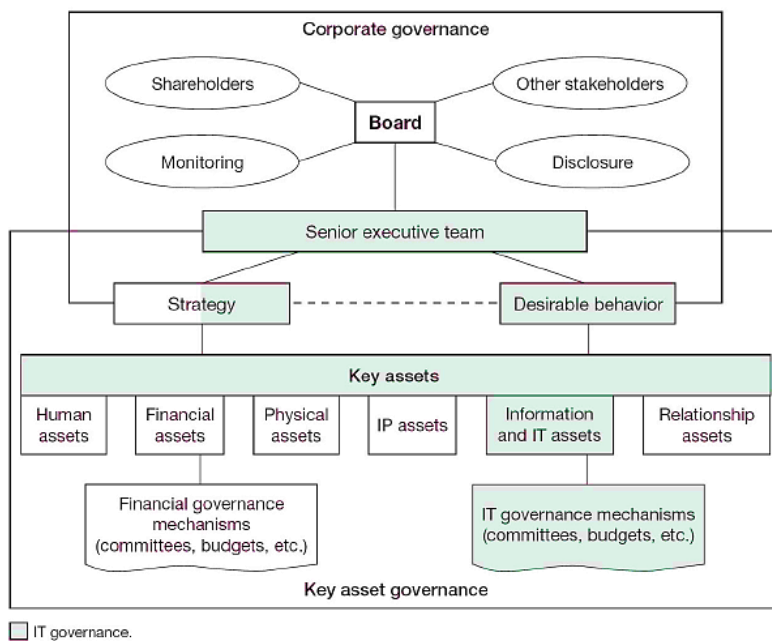


Figure 4. The corporate governance model
(Weill & Ross, 2004)

For controlling each one of the key assets, is needed to establish a set of organizational mechanisms, some of them must be unique as the case of the Information and IT asset that needs IT-governance mechanisms for ensuring synergy between them. In this way, IT-governance mechanisms are primordial

to preserve and protect the corporative environment (Ali & Green, 2007).

2.3 IT Governance

As part of the Information Technology and Information Systems development, IT-governance concept also has been evolving until becomes a primordial part of the development of the public and private organizations. In past years, many organizations have achieved success despite weak IT management practices. In current organizations, the role of IT-governance is increasing, getting a strong link with organizational processes (Weill & Ross, 2004).

It is therefore meaningful to understand what IT-governance is and how the concept differs from concepts associated such as e-government.

In short words, e-government is the use of information technologies for delivering government information and services (Taie & Kadry, 2013).

IT-governance is much more difficult to define because there is not a single definition about it. (Willson & Pollard, 2009). Nowadays, there exists around 26 definitions of what is IT-governance (Mahy, Ouzzif, & Bouragba, 2016). For this study, the definitions provided by Weill and Ross (2004) and Calder (2008) will be used for generating a new enhanced concept because they are some of the most used concepts in researches related with governance and also fits with the aim of this research.

“IT governance is a multi-disciplinary formal framework that provides a structure for organizations, encouraging desirable behavior in using IT and ensuring that your organization's IT infrastructure supports and enables the

achievement of corporate strategies and objectives.”

It is needed to keep harmony between IT managerial decisions and business objectives to achieve positive investment returns and avoid ineffective technology adoption. (ISACA & IT Governance Institute, 2011). This harmony is provided by IT governance frameworks.

2.3.1 IT Governance and public institutions

Private and public institutions differ in their objectives. Public institutions are oriented to procure the society welfare through the provision of public goods and services, allocating the necessary public budget in the development of projects in which technology has a primordial role. Private sectors are oriented to get the highest possible profits, and their resources allocation are not controlled by the government (Campbell et al., 2010; Omari, Barnes, & Pitman, 2012).

In public institutions, the effective IT-governance process is essential and should not change. In public institutions, the investment performed on IT is high. Through proper management of IT governance it is possible to increase the value that IT investment provides over strategic priorities. In the same way, a well-managed IT governance offers good strategic opportunities for developing new inter-institutional business and new relationships with stakeholders (Weill & Ross, 2004).

2.4 IT Governance Framework

Once understood the IT governance concept and the implications of keeping

a well-managed environment in particular in public institutions.

In the last decade, governmental institutions have developed their own IT governance frameworks based on a combination of governance frameworks according to own perspectives. In the first instance, Board of Directors is in charge of the selection of the standards that compose the general governance framework. These decisions are based on facts such as the strategic objectives, executive compromises or for enhancing internal control (Cefaratti, 2014; Selig & Wilkinson, 2008).

According to Calder (2008), governance frameworks have been evolving in order to provide support and guidance for specific IT areas. Each framework has their own strengths and weakness, facts that give their characteristics and usefulness according to the field in which are implemented.

ISO/IEC 38500 is the high-level governance framework that conjugates the most recognized governance frameworks to deliver guidance for the organizational IT managers (Ballester, 2010) and includes:

2.4.1 COBIT

Control Objectives for Information and Related Technology V5.0 (COBIT v5.0), is the international accepted good practice composed of five principles that explain how IT process delivery information for the business goals achievement (Cadete, 2015; Choi & Yoo, 2009).

2.4.2 ISO/IEC 27002:2005 and ISO 27001:2005

Because of the increasing information importance, it is needed to establish the most appropriate security mechanisms. ISO/IEC 27002:2005 and ISO

27001:2005 are broadly recognized standards oriented to provide security mechanisms for the organizational information (Disterer, 2013).

2.4.3 ITIL

The Information Technology Infrastructure Library (ITIL) was created in 2011 and nowadays is significantly used by IT specialists (Ahmad. et al., 2012).ITIL is a well-structured and integrated set of best practices oriented to IT operation and services management (Marrone, Gacenga, Cater-Steel, & Kolbe, 2014).

2.4.4 ISO 22301

Previously known as BS25999, the ISO 22301 is the standard oriented and designed for the continuity management with the aim of minimizing the risk of interruptions caused by disasters (Castro Marquina, 2014). It provides specifications that can be adapted by IT governance frameworks (CALDER, 2008).

2.4.5 PMBoK

The Project Management Body of Knowledge is a framework oriented to provide robust mechanisms, norms, methods, processes, and practices used by a broad range of professionals for the effective IT project management (PMI, 2001).

2.4.6 TOGAF

The Enterprise Architecture (EA) is part of the IT governance framework and for its operation needs a guide to performing well management. The architecture framework of the Open Group (TOGAF), provides the required

tools for delivering a proper EA management (Buckl, Ernst, Matthes, Ramacher, & Schweda, 2009).

2.4.7 BSC

The Balanced Score Card (BSC) is an IT governance framework designed to be a performance measurement indicator and strategic implementation tool, oriented to manage the continuous improvement of the learning and innovation capabilities (Kaplan, 2010; Soderberg, Kalagnanam, Sheehan, & Vaidyanathan, 2011).

2.4.8 GREEN-IT

Green-IT explains how Information and Communication Technologies could contribute to the reduction of the ecologic impact caused by productive processes. Green IT provides the framework that supports the use of alternative energy sources as the use of virtual technologies for the management of the sustainable development (Velte, Velte, & Elsenpeter, 2008).

The following diagram resumes the composition of the IT governance framework, which is formed by six governance principles with its working frameworks proposed by Alan Calder.

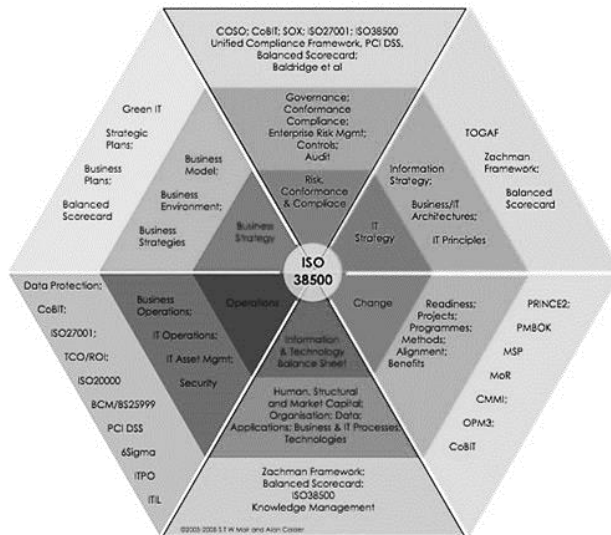


Figure 5. IT Governance Framework
(CALDER, 2008)

Governmental institutions are facing new challenges in which are embedded the flourishing need for adopting IT governance frameworks. These frameworks provide a broad understanding of the critical role that executives have on IT governing (F. Lin, Chou, & Wang, 2011). The adoption process finishes with a successful implementation. According to some researchers for achieving successful implementation, it is needed to transform generic IT governance frameworks into meaningful frameworks according to the characteristics of the environment where they are implemented (Raghupathi, 2007).

In the same way, for many governmental organizations, the challenge is to develop a coordinated and integrated IT governance framework that allows a shift from a reactive to a proactive IT operation. In the book, Alan Calder (Calder 2009) proposes that for keeping an appropriate IT governance, it is necessary to include ITIL, COBIT, and ISO 27002 frameworks, because with

them are delivered corporative governance control objectives related with service management, internal control, and security.

Because of the limited budget that some governmental institutions have, in particular in developing countries, it is needed to identify Critical Success Factors (CSF) for evaluating key activities that allow successful implementation of IT governance frameworks (Tu & Yuan, 2014).

The following table resumes some critical success factors to be considered at the moment of implementing the IT governance framework.

Framework	Critical Success Factors
ITIL	<ul style="list-style-type: none"> • Top Management Support • Change management and organizational culture • Monitoring and evaluation • Communication and cooperation • Project management and governance • Training and competence • ITIL process implementation
COBIT	<ul style="list-style-type: none"> • Understanding • Organizational change • Perceived benefits • External certification • Expertise support
ISO 27002	<ul style="list-style-type: none"> • Business Alignment • Top management support • Commitment of funding (resources) • Organizational Structuring • Staff awareness and training • Information security culture • IT Competence • Risk management

-
- Security policies implementation
 - Standards compliance
 - Performance Evaluation
-

Table 4. IT Governance Frameworks CSFs.

(Ahmad. et al., 2012; Jo, Lee, & Kim, 2010; Tu & Yuan, 2014)

2.5 Acceptance theories

The determination of critical success factors is a crucial step for the framework success, but it is also necessary to find the appropriate mechanism so that the proposed governance framework will be adopted in the organization. Adoption could be defined as: “the first use or acceptance of a new technology or new product” (Khasawneh, 2008). All the efforts made for developing an excellent IT governance framework could be fruitless if it is not used. The critical success factors can be associated with acceptance factors, which would be later analyzed in the context of adoption models (Ahmad. et al., 2012; Jo et al., 2010; Wang, Sun, & Yan, 2011).

In the academic world are available theories related to adoption that according to its point of view can be categorized as: technological, organizational and individual (Barnes & Matthew Hinton, 2012).

For this study are considered theories related with the individual point of view because they are associated with elements such as social norms or situational factors that influence the individual behavior for adopting new technological innovations (V Venkatesh et al., 2003; Viswanath Venkatesh & Davis, 2000). Under this category, the most used theories are Technology Acceptance Model (TAM), Theory of Reasoned Action (TRA) and the Unified

Theory of Acceptance and Use of Technology (UTAUT).

2.5.1 Theory of Reasoned Action (TRA)

The Theory of Reasoned Action (TRA) is considered as the first theory that attempts to explain the technology acceptance. The theory developed by Ajzen and Fishbein illustrates the relationship between independent variables such as beliefs, attitudes, subjective norms, intention and behaviors for predicting human behaviors (Ajzen & Fishbein, 1980). The limitation of this model is that it does not include demographic variables assuming that everyone has the same experience at the moment to process the model (Armitage & Conner, 1999).

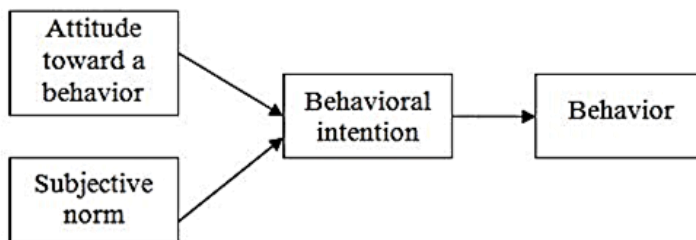


Figure 6. Theory of Reasoned Action

(Ajzen & Fishbein, 1980)

2.5.2 Technology Acceptance Model (TAM)

The Technology Acceptance Model developed by Davis (1989), is the most commonly used model in e-government researches related with the determination of acceptance and use, providing a robust explanation and prediction about the motivational issues that have influence on the acceptance by individuals (H. C. Chan & Teo, 2007; Viswanath Venkatesh & Davis, 2000).

The main determinant factors studied in this model are the perceived usefulness and perceived ease of use. According to Davis (Fred D. Davis, 1989),

perceived usefulness is “the degree to which a person believes that using a particular system would enhance his or her job performance.” Perceived ease of use is “the degree to which a person believes that using a particular system would be free from effort.”

The model has been evolving. The first evolution (TAM2) expands the analysis of the perceived usefulness dividing it into five factors, being the most remarkable moderator the subjective norm (Viswanath Venkatesh & Davis, 2000). The next evolution (TAM3), was focused on the explanation of the content of perceived ease of use, focusing on the high-level usability (Viswanath Venkatesh & Bala, 2008).

The effects of the mandatory system usage over the model could be considered as a limitation. In this case, perceived usefulness is more important, but when the system usage is not mandatory, perceived ease of use is more important (S. A. Brown, Massey, Montoya-Weiss, & Burkman, 2002). The original model considers the system usage as not mandatory (Fred D. Davis, 1989).

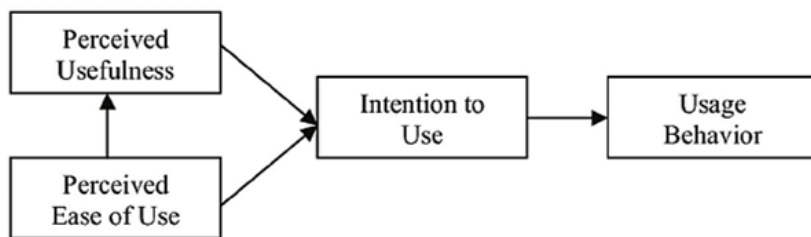


Figure 7. Technology Acceptance Model
(Fred D. Davis, 1989)

2.5.3 Unified Theory of Acceptance and Use of Technology (UTAUT)

Nowadays, the Unified Technology of Acceptance and Use of Technology has a primordial role at the moment of determining the technology acceptance (Viswanath Venkatesh, Thong, & Xu, 2016). This model was developed by Venkatesh in 2003 with the aim of providing a complete vision of the acceptance process. The UTAUT model merges the most significant and empirically similar variables of eight previous acceptance models (TRA, TPB, TAM, TAM2, Motivational Model (MM), Model of PC Utilization (MPCU), Diffusion of Innovation Theory (DOI) and the Social Cognitive Theory (SCT)) (V Venkatesh et al., 2003).

According to figure 9, this model considers four key constructors as direct determinants of usage intention. The effect of the relationship between these determinants and the intention or usage are moderated by factors such as gender, age, experience and voluntariness of use (V Venkatesh et al., 2003).

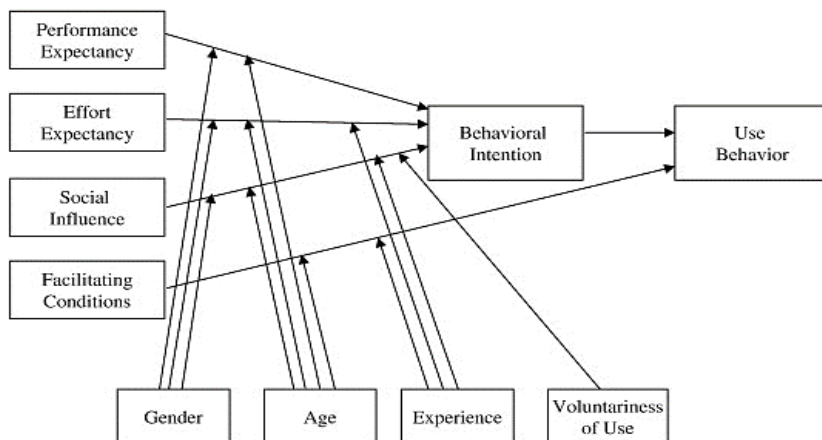


Figure 8. Unified Theory of Acceptance and Use of Technology

(V Venkatesh et al., 2003)

One of the advantages of this model is its capacity to be configured according to the characteristics of the study in which it is applied. On the other hand, the high variation coefficient could be reached only with the inclusion of moderators (Van Raaij & Schepers, 2008).

2.6 Summary

In this chapter was described the importance of IT governance, its background and their significance in public institutions. Next, was explained the IT governance framework in the context of the frameworks that compose it. Then, was described some critical success factors of IT governance frameworks and their association with acceptance factors that could be analyzed with acceptance models. After that was provided a brief description of the most prominent acceptance models oriented to determine the intention to adapt and use technology.

To finalize, it is appropriate to remark that in the academic world, many theories and models recognize the importance of the user involvement in IT governance. However, literature is most focused on process, structures and frameworks than social aspects (Proença et al., 2017). There is a lack of research focused on studying the social influences that users have at the moment of adopting and using IT governance frameworks in particular in governmental institutions.

Chapter 3. Research Methodology

3.1 Introduction

Once described in literature review some fundamental concepts related to the study field, this chapter will introduce the methods or techniques involved in the research. Research methodology is the process that begins with the selection of the research method then, the definition of hypothesis for finally, collect, structure and analyze data for presenting the results (Neuman, 2014). In section 3.2 justifies the paradigm and research method. In section 3.3 is described the research hypothesis. After that, section 3.4 the research model is defined. Next section 3.5 shows the data collection methodology, and description of the instrument used. Finally, section 3.6 summarizes the chapter contents.

3.2 Selection and justification of Research Method

According to the previously mentioned in chapter one, the primary objective of this research is “To identify the determinant factors that affect the acceptance of IT governance framework by nationwide IT leaders and managers.” To reach this objective, the Unified Theory of Acceptance and Use of Technology is employed because of its characteristics and versatility. On the other hand, it is necessary to consider the different perceptions that users have about the IT governance framework in the institution case of study. This research considers the positivist paradigm which together with the quantitative approach allows to

achieve the research objective and to answer the research question.

3.2.1 Justification of using positivist paradigm

The positivism putting forward hypothesis and questions as assumptions in order to understand the phenomena, making an empirical test within controlled conditions “for discovering and confirm a set of probabilistic causal laws that can be used to predict general patterns of human activity” (Neuman, 2014).

The positivist paradigm is broadly used for testing the hypothesis. For this case, the hypothesis is born from the relationship between the UTAUT constructors and the dependent variable that for this research is the intention to use the IT governance framework in the institution case of study. In the same way, the positivism evaluates the hypothesis that comes from the moderator effect of variables such as experience for the use and staff turnover over the relationship between dependent and independent variables on the proposed modified UTAUT model.

3.2.2 Justification of using the quantitative approach

This approach is focused on the facts that cause behaviors, then the information collected is transformed into numbers. These numbers will be analyzed using mathematical process; given as outcome, information expressed in statistical terminologies (Golafshani, 2003).

For getting information, the UTAUT model employs surveys as a primary data source. The numeric information collected is processed with analysis techniques to answer the research question. This research applies the Structural Equation Modelling (SEM) because it is a versatile tool that allows a set of

relationship between one or more variables involving multiple regression factor analysis. The objective of SEM is to establish a model based on linear structural relationships between the sample and model-predicted covariance matrix (Dion, 2008; Nachtigall, Kroehne, Funke, & Steyer, 2003).

As SEM advantages could be considered its capacity to consider several equations simultaneously for testing theoretical models. Another advantage is its capacity to deal with latent variables that are connected to observable variables by a measurement model (Nachtigall et al., 2003).

This study considers the SEM's two-step analysis approach. These are the Confirmatory Factor Analysis (CFA) and Exploratory Factor Analysis (EFA). CFA is used to measure the constructor's factor validity. EFA is used for examining one by one the model relationships and for exploring the validity of the scales (Hair et al., 1998).

The SEM analysis could be conducted using diverse software, but because of its versatile characteristics, the Statistical Package for Social Sciences (SPSS) version 15 and its complement AMOS version 24, both property of IBM, were chosen as the tools for the data analysis process.

3.3 Research Hypothesis

The hypothesis is the starting point of further research and is a supposition made on the basis of limited evidence. As part of the mentioned evidence it is important to consider the results of the private consultancy developed in the institution case of study and constitutes an essential input for the hypothesis formulation.

As was mentioned, the private consultancy was in charge of providing understanding about the IT governance maturity level, but as a complement, the S.W.O.T.(Strength, Weakness, Opportunities, and Threats) matrix also was developed. The results are described in the following table:

Strength
<ul style="list-style-type: none"> • Staff with third and fourth level professional training. • Presence of IT governance framework based on the best practices. • Scalable infrastructure to support the expansion of services coverage. • Top managers support.
Weakness
<ul style="list-style-type: none"> • IT governance framework not accepted • Lack of trust in frameworks, policies, and regulations promoted by the ICT office. • ICT office is not ready for supporting the business • Insufficient skills to fill the required roles. • Frameworks, policies, and regulations promoted by the ICT office aren't easy to follow or useful.
Opportunities
<ul style="list-style-type: none"> • There is a high capacity for the availability of resources. • There are central government policies that promote the growth of the use of technology and e-government. • Rethinking the institutional business.
Threats
<ul style="list-style-type: none"> • Lack of credibility and trust of the business units towards IT office • High turnover of authorities. • Deficiency in the management of human resources subsystems.

Table 5. S.W.O.T. Matrix

The use of IT governance framework could be a risky process, in particular in public institutions because of some of the members of the board of directors or IT managers, motivated by political issues, are likely to resist to use previous IT structures. It is needed to create the appropriate environment for the IT governance framework in order to achieve its successful use (CALDER, 2008).

As a result of the literature review, current IT governance issues in the institution case of study and the needed to include organizational culture aspects. Next, hypothesis are postulated to investigate the determinant factors that influence the intention to use the IT governance framework.

3.3.1 Key constructors for the hypothesis

The key originators for hypothesis come from the relationship between dependent and independent variables. It is essential to clarify that does not exist too many studies related to the acceptance of IT governance frameworks. It is expected to get congruent results with previous acceptance analysis in different fields considering the environment where the study will be developed. Next, are described the hypothesized relationships.

3.3.1.1 Intention to Use the IT governance framework (BI)

Unified Theory of Acceptance and Use of Technology are based on previous models such as the Theory of Planned Behavior in which it was proposed that Intention to Use is the “individual intention to use a particular technology directly affects actual usage” (Iqbal, Nisha, & Rifat, 2018). This study considers the intention to use as a dependent variable.

3.3.1.2 Perceived Usefulness (PU)

The Perceived Usefulness concept was introduced by Davis et al. (1989) and is related with the “degree to which a person believes that using a particular system would enhance his or her job performance” (F D Davis, Bagozzi, & Warshaw, 1989).

Previous acceptance studies have demonstrated that Perceived Usefulness has a positive influence on the Behavioral Intention to use (Dohan, 2013; Karavasilis, Zafiroopoulos, & Vrana, 2010; Renny, Guritno, & Siringoringo, 2013), so on this study it is hypothesized that:

***H1:** Perceived Usefulness influences the Intention to Use the IT governance framework.*

3.3.1.3 Effort Expectancy (EE)

Effort Expectancy is defined as “the degree of ease associated with the use of the system” (V Venkatesh et al., 2003). The positive influence of effort expectancy over the behavioral intention to use is supported by studies as developed by (Alkhasawneh & Alanazy, 2015; Oye, A.Iahad, & Ab.Rahim, 2014). Because of the point of view to which effort expectancy is submitted in Latin America, the results of this hypothesis is subject to particular attention.

***H2:** Effort Expectancy influences the Intention to Use the IT governance framework.*

3.3.1.4 Facilitating Conditions (FC)

Facilitating conditions are: “the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system” (V Venkatesh et al., 2003). Facilitating conditions are related to the

relatively unexplored organizational culture facts. However, few studies consider this fact (H. bumm Kim, Kim, & Shin, 2009; Lakhal & Khechine, 2016; Shea, Pickett, & Li, 2005).

***H3:** Facilitating conditions influences the Intention to Use the IT governance framework.*

3.3.1.5 Subjective Norms (SN)

Organizational culture facts are closely related to the subjective norm. According to Ajzen (1980), the subjective norm is “the perceived expectations from others that influence a user to perform a particular behavior” (Ajzen & Fishbein, 1980). Previous studies have found a positive influence of subjective norm over the technology acceptance (Lakhal & Khechine, 2016; Rogers, 1995; Taylor & Todd, 1995). Subjective norms are different in each context were they are analyzed. Culture and customs are aspects associated with subjective norms.

***H4:** Subjective Norms influences the Intention to Use the IT Governance Framework.*

3.3.1.6 Trust (TD)

Trust is a synonym of reliability, honesty, and safety. Nowadays, trust is considered as a barrier to overcome to achieve the information systems acceptance (Alharbi, 2014). The inclusion of trust in acceptance studies can generate good results without considering the medium in which the study will be developed (Esteva-Armida & Rubio-Sanchez, 2014). For the current study, trust is hypothesized as:

***H5:** Trust influences the Intention to Use the IT governance framework.*

3.3.1.7 Trust in Technology (T)

In the same way, it is needed to be confident about the technology involved in governance frameworks. Previous studies have demonstrated that trust in technology has a positive influence on the adoption of technology (Susanto & Aljoza, 2015). For this study:

H6: Trust in technology influences the Intention to Use the IT governance framework.

3.3.2 Moderating hypothesis

Once defined the primary relationships between dependent and independent variables, is proposed the inclusion of another kind of variables that affect positively or negatively the relationship between them. This kind of variables are named moderators (Baron & Kenny, 1986). For this study will be considered the effect of two moderators proposed in each relationship on the main model. These moderators are:

3.3.2.1 Experience for the use (EU)

Experience for the use is defined as the experience that we generate and accumulate from the interaction we have with technology (F. Chan et al., 2010).

For this study it is hypothesized:

H1A: The experience for the use moderates the relationship between Perceived Usefulness and the Intention to Use the IT governance framework.

H2A: The experience for the use moderates the relationship between Effort Expectancy and the Intention to Use the IT governance framework.

H3A: The experience for the use moderates the relationship between

Facilitating Conditions and the Intention to Use the IT governance framework.

H4A: *The experience for the use moderates the relationship between Subjective norms and the Intention to Use the IT governance framework.*

H5A: *The experience for the use moderates the relationship between Trust and the Intention to Use the IT governance framework.*

H6A: *The experience for the use moderates the relationship between Trust in Technology and the Intention to Use the IT governance framework.*

3.3.2.2 Staff Turnover (ST)

Staff Turnover is “the rate at which employees leave a company and are replaced by new employees” increasing the work of the remaining staff, generating dissatisfaction, social gaps and reduced productivity (Butali, Wesang’ula, & Mamuli, 2013). The Staff turnover moderator is associated with organizational culture facts.

H1B: *The Staff Turnover moderates the relationship between Perceived Usefulness and the Intention to Use the IT governance framework.*

H2B: *The Staff Turnover moderates the relationship between Effort Expectancy and the Intention to Use the IT governance framework.*

H3B: *The Staff Turnover moderates the relationship between Facilitating Conditions and the Intention to Use the IT governance framework.*

H4B: *The Staff Turnover moderates the relationship between Subjective norms and the Intention to Use the IT governance framework.*

H5B: *The Staff Turnover moderates the relationship between Trust and the Intention to Use the IT governance framework.*

H6B: *The Staff Turnover moderates the relationship between Trust in*

3.4 Research model

The hypothesis proposed for this study corresponds to the relationships described in the research model. The research model is mostly derived from the UTAUT model with some modifications that are meaningful according to the context in which the research is developed.

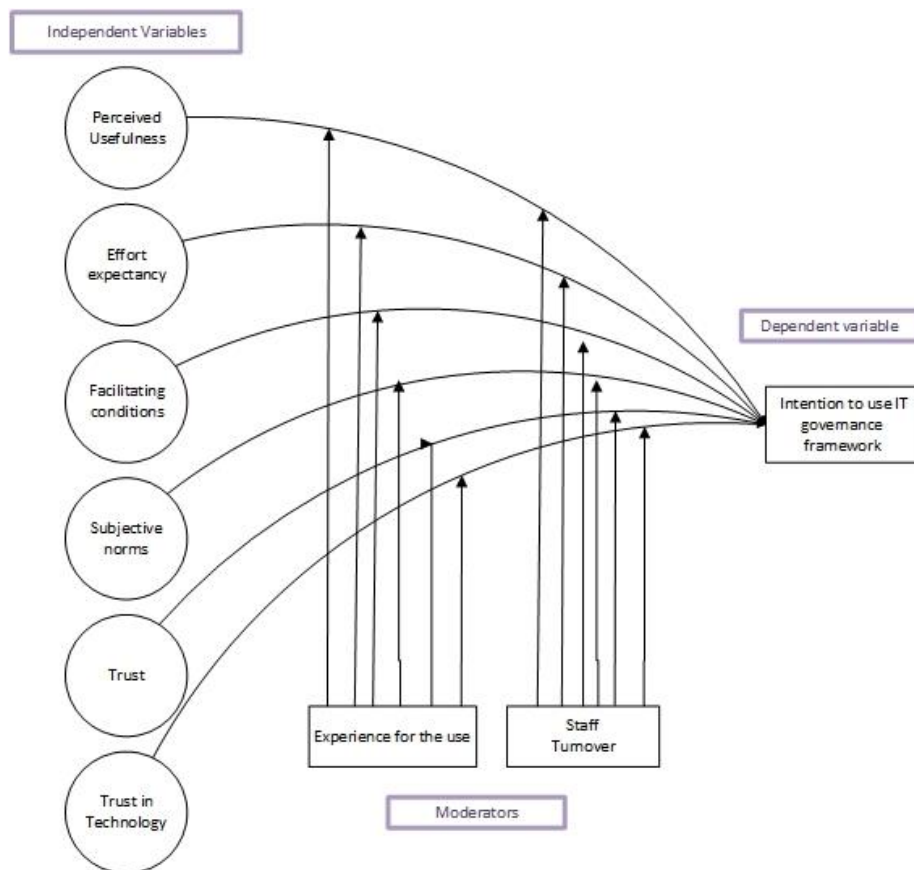


Figure 9. Research Model

3.5 Data collection

The data collection process is a primordial step for the research development. To collect data, researchers employ a variety of strategies. Among them are: the experiments that are useful for determining strong casual inferences; questionnaires that are used for collecting a vast amount of data in a representative sample of respondents and on the third place are the techniques used on qualitative researches such as interviews, observation or focus group (Hox & Boeije, 2005).

Due to the quantitative approach of the study, the questionnaire method was selected. The questionnaire is a cost-effective method for collecting large quantities of data from respondents that are not necessarily close to the researcher in a short period (Flynn, 1990; Gray, 2009). The questionnaire should contain a set of well-designed set of questions, most of them based on previously validated instruments (Gray, 2009).

On this study, the questionnaire developed is based on previous studies related with the determination of technology acceptance based on the models proposed by (Ajzen & Fishbein, 1980), Davis (1989), Venkatesh (2003) and (Lezin, 2005), always keeping in mind how to solve the research question.

The purpose of the instrument developed is to get relevant information from IT managers and administrators of each administrative and organizational unit that belong to the Institution case of study. This instrument provides understanding about aspects in which are involved the intention to use the previously implemented IT governance framework.

To be able to solve each one of the research hypothesis and based on the

research model, a set of specific questions were developed. Appendix A and B show the English and Spanish final versions of the instrument designed for this study.

The questionnaire is divided into four sections for providing an easy reading, comprehension, and delimitation of the different features related to the study.

The first section is related to demographic information. This section pretends to understand the respondent position regarding the society and working status. Section two contemplates questions related to the respondent knowledge status such as experience, certifications or knowledge level. Section three surveys topics related to organizational details such as the level of understanding of the grade of support from the Board of Directors and the budget allocated for IT in each administrative and operational unit. Finally section four is divided into then blocks. The first one is associated with the existence of IT policies, procedures, and standards. The remaining nine blocks: perceived usefulness, effort expectancy, facilitating conditions, subjective norms, trust, trust in technology, experience for the use, staff turnover and behavioral intention; are focused on questions related to the acceptance factors that determine the intention to use.

For measuring the questions and for getting the respondent attitude, the questionnaire includes the Likert scale. The use of Likert scale is suggested by Davis (1989) and provides five levels of possible answers that starts in 0 (Disagree) to 5 (Agree) (Matell & Jacoby, 1971). Some sections included options such as “Other” or “Not sure” to mitigate the risk of missing information.

Once developed the instrument, next step is to perform a pilot test. The pilot test is a crucial element of the study design. In the same way, a pilot test is vital for minimizing errors, getting validity and reliability and finally for increasing the success likelihood (van Teijlingen & Hundley, 2002).

The pilot test for this study was applied to three groups. The first group was composed of ten researchers (Masters and Ph.D. students) that have a good understanding of IT governance. The second group was composed of five IT governance experts. Because the study is developed in a Spanish-speaking country it was needed to form a third group which is arranged by five Spanish-speaking in charge of providing comments about the clarity, adequacy, and simplicity of the survey. According to feedback from each group, the final version of the instrument was developed and presented to the Social Security Authorities for its approval.

The questionnaire approved was digitized using the electronic tool provided by Google (Google Forms) that produces an electronic link, the same one that was distributed via mail to the 216 nationwide IT administrators and managers that work in each administrative and organizational unit that belongs to the institution case of study. To reach the participants was used the institutional ICT employees contact list.

Google Forms is a free tool where personalized questionnaires could be developed, personalized and distributed around the world in a fast and efficient way (Google, 2018). The questionnaire was available online for a period of three weeks. Once finished the data collection period, the responses rate was 100%. As a strategy for achieving the commitment of the respondents is the

inclusion of a letter signed by the research advisor that was sent to the Board of Directors in which is described the necessity for providing support to the ongoing research and thus to get valuable results for the institution case of study. Another critical success factor was the commitment of the Board of Directors to support the development of the data collection stage, and therefore of the study.

The Constructors' indicators come from the questionnaire available on appendix A. Their formulation are supported by previous studies described in the following table.

Constructor	Indicator	Questionnaire Reference	Questions Source
Perceived Usefulness (PU)	PU1	Q17	(Fred D. Davis, 1989)
	PU2	Q18	
	PU3	Q19	
Effort Expectancy (EE)	EE1	Q20	(Moore & Benbasat, 1991; V Venkatesh et al., 2003)
	EE2	Q21	
Facilitating Conditions (FCF)	FCF1	Q22	(Viswanath Venkatesh et al., 2012; Venkatesh & Zhang, 2010)
	FCF2	Q23	
	FCF3	Q24	
Subjective Norms (SN)	SN1	Q25	(H. bumm Kim et al., 2009; H. S. Park & Smith, 2007; Spil & Schuring, 2005)
	SN2	Q26	
Trust (TD)	TD1	Q27	(McKnight, Choudhury, & Kacmar, 2002; Spil & Schuring, 2005; V Venkatesh et al., 2003)
	TD2	Q28	
Trust in	T1	Q29	(Glaeser, Laibson,

Technology (T)	T2	Q30	Scheinkman, & Soutter, 2000; Moorman, Deshpande, & Zaltman, 1993)
	T3	Q31	
Experience for the use (EU)	EU1	Q32	Formulated by the researcher
	EU2	Q33	
	EU3	Q34	
Staff Turnover (ST)	ST1	Q35	Formulated by the researcher
	ST2	Q36	
Intention to use (BI)	BI1	Q37	(V Venkatesh et al., 2003; Viswanath Venkatesh & Davis, 2000)
	BI2	Q38	
	BI3	Q39	

Table 6. Definition of Constructors, Indicators and Questions Sources.

Based on previous studies related with the determination of acceptance factors in information systems and on the basis of the SEM model requirements, it was considered that a universe of around 200 respondents could be enough to develop this kind of works (Hair et al., 1998; Hasbullah et al., 2016; Nejatian, Ganani, & Belgacem, 2016; J. Park, Yang, & Lehto, 2007). All responses collected were stored in a spreadsheet to be used in the data analysis process.

3.6 Chapter Summary

This chapter introduced concepts related to the positivist, constructivist, realist and criticism paradigm for being able to understand which of these categories takes place the study. Then, was described the meaning of the qualitative and quantitative approach. With those theories, the research hypothesis was formulated based on the appropriate paradigm and approach. To complement the hypothesis formulation, criteria related to the institution case of study was introduced. Theoretically, the hypothesis was sustained in

constructor's definitions and some previous studies. Next, was presented the research model in which was included the research variables. After that, was shown the methodology used for collecting data in which was described the instrument used and its validation process. In the same way, a description of the data analysis methodology was presented for finally, display a table in which is included the reference of constructors, indicators and questions source utilized in the study.

Chapter 4. Data analysis and results

4.1 Introduction

Once defined all the methodological aspects that this study follows, and once getting the questionnaire results, the next step is the data analysis. The information collected through the instruments, at first glance they cannot reveal meaningful results. On this point, it is needed to start a process that includes several operations with the aim of finding answers that are able to support the hypothesis and thus, answer research questions (Spiggle, 1994). The descriptive statistics starts in section 4.2 with the survey accomplishment index. Then, section 4.3 continues with the presentation of demographic analysis. Next, section 4.4 shows the statistical analysis. Then, section 4.5 shows the SEM analysis and results of the hypothesis testing. After that, section 4.6 presents the results discussion. Finally, section 4.7 provides the chapter summary.

4.2 Accomplishment index

The survey was sent to a universe composed of 216 IT managers and administrators that belong to each administrative and organizational units of the institution case of study. All respondents completed the questionnaire. One primordial factor for achieving this successful rate is the compromise of the Board of Directors and Technology Director to support this study. Specifically, The Director of the National Direction of Information Technology sent a communication requesting the questionnaire completion. According to Kline

(2011), a universe between 100 and 200 respondents allows to get good results on the EFA, CFA and SEM analysis (Kline, 2011).

4.3 Demographic analysis

The first data analysis corresponds to demographic characteristics. From the universe composed of 216 respondents, 127 identify with masculine gender (58.60%) and 88 respondents identify with the feminine gender (40.93%).

Regarding age, the biggest group of respondents are located between 31 and 40 years old (46.05%), then the group composed by respondents between 41 and 50 years old are in second place (25.58%). In third place are the group formed of respondents between 21 and 30 years old (21.40%). The fourth group is composed of respondents between 51 and 60 years old (6.05%). Finally, sharing the rest of the distribution with the same percentage, are the groups composed of over 61 years old and less than 20 years old (0.47%).

Talking about education level, most of the respondents have a bachelor's degree (66.98%). Followed by the post-graduate degree (25.12%). Far from that groups, the third group is composed of technicians (6.98%). Finally, just one respondent has a certificate or similar and another respondent is identified at the high school level.

The summary of the demographic results is shown in next table.

Demographic detail		Frequency	Percentage
	20 or less	1	0.47%
Age	21-30	46	21.40%
	31-40	99	46.05%

	41-50	55	25.58%
	51-60	13	6.05%
	Over 61	1	0.47%
Gender	Male	127	59.07%
	Female	88	40.93%
Education level	High school	1	0.47%
	Certificate or similar	1	0.47%
	Technician	15	6.98%
	Bachelor's degree	144	66.98%
	Post-graduate degree	54	25.12%
Computer knowledge	Very poor	0	0%
	Poor	0	0%
	Moderated	2	0.93%
	Good	101	46.98%
	Very good	112	52.09%
IT governance general knowledge	Very poor	3	1.40%
	Poor	39	18.14%
	Moderated	84	39.07%
	Good	69	32.09%
	Very good	20	9.30%
IT governance frameworks knowledge	BSC	4	1.86%
	BSC, PMBOK	3	1.40%
	COBIT	14	6.51%
	COBIT, BSC	3	1.40%
	COBIT, ISO	4	1.86%
	COBIT, ISO, BSC	2	0.93%
	COBIT, ITIL	17	7.91%
	COBIT, ITIL, BSC	5	2.33%
	COBIT, ITIL, BSC, PMBOK	3	1.40%
	COBIT, ITIL, ISO	18	8.37%
	COBIT, ITIL, ISO, BSC	5	2.33%
	COBIT, ITIL, ISO, BSC, PMBOK	22	10.23%

COBIT, ITIL, ISO, PMBOK	2	0.93%
COBIT, ITIL, PMBOK	3	1.40%
COBIT, PMBOK	1	0.47%
ISO	13	6.05%
ISO, BSC	4	1.86%
ISO, BSC, PMBOK	1	0.47%
ISO, PMBOK	1	0.47%
ITIL	42	19.53%
ITIL, BSC	1	0.47%
ITIL, ISO	6	2.79%
ITIL, ISO, BSC	1	0.47%
ITIL, ISO, BSC, PMBOK	1	0.47%
ITIL, ISO, PMBOK	1	0.47%
PMBOK	1	0.47%
None	37	17.21%

Table 7. Demographic details

Based on demographic knowledge results, it is important to underline that the most significant percentage of respondents (39.07%) have a moderated knowledge level about what is IT governance. In the same way, most of the respondents have an understanding of ITIL framework (19.53%) closely followed by the absence of IT governance frameworks understanding (17.21%). The knowledge characteristic could have an influence on the intention to use the IT governance framework (Ifinedo, 2016).

As an introduction to the main questionnaire, the respondents were consulted about their understanding of the IT governance deployment level, getting the following results.

IT governance general detail		Frequency	Percentage
IT Policies	Not sure	0	0.00%
	None	44	20.47%
	In progress	94	43.72%
	Established	77	35.81%
IT Standards	Not sure	1	0.47%
	None	49	22.79%
	In progress	109	50.70%
	Established	56	26.05%
IT Procedures	Not sure	3	1.40%
	None	12	5.58%
	In progress	73	33.95%
	Established	127	59.07%

Table 8. IT governance general detail

Based on these results, this study found that for respondents IT policies and standards are in progress stage. Over them are the IT procedures with an established level.

4.4 Statistical analysis

After completing the demographic analysis and with the aim of confirming or rejecting the hypothesis postulated, in this section is described in detail the results obtained in each stage of the process.

4.4.1 Reliability

Previous studies suggest that the first step in the statistical analysis is to test the model reliability (Tarhini, Hone, & Liu, 2014). The objective of the reliability test is to determine the degree of internal consistency of the variables in the context of a single measurement scale (Kline, 2011). For this study,

reliability is measured using the Composite Reliability (CR) and Cronbach's Alpha reliability tests.

In the case of Composite Reliability and according to Hair (1998), to get good reliability, the value should be over or equal to 0.70 (Hair et al., 1998).

For the Cronbach's Alpha test, Bacon (1995) suggests that the value that shows reliability must be 0.70 or higher (Bacon, Sauer, & Young, 1995). According to the results obtained by Venkatesh (2003) in his definition of the UTAUT model, the Cronbach's Alpha must be 0.7 or high. (V Venkatesh et al., 2003).

On this study, Perceived Usefulness (PU), Effort Expectancy (EE), Facilitating Conditions (FCF), Subjective Norms (SN), Trust (TD), Trust in Technology (T), Experience for the use (EU), Staff Turnover (ST) and Intention to Use (BI) were defined as constructors. The results of the reliability test are shown in the following table.

Variable	Cronbach's Alpha	Composite Reliability (CR)
Perceived Usefulness (PU)	0.874	0.880
Effort Expectancy (EE)	0.944	0.943
Facilitating Conditions (FCF)	0.832	0.842
Subjective Norms (SN)	0.781	0.738
Trust (TD)	0.83	0.836
Trust in Technology (T)	0.763	0.791
Experience for the use (EU)	0.906	0.915
Staff Turnover (ST)	0.705	0.711
Intention to use (BI)	0.862	0.866

Table 9. Model Reliability

According to results; the range for Cronbach's Alpha test is between 0.705 and 0.944 being the lowest value to which corresponds to the Staff Turnover constructor (0.705). For the Composite reliability test, the range is between 0.711 and 0.943. The lower value also belongs to the Staff Turnover constructor (0.711). However, both values are greater than 0.7, showing appropriate reliability.

The constructor validity is considered as a part of the statistical analysis. According to Bagozzi et al. (1991), the constructor validity process is defined as "the extent to which an operationalization measures the concept it is supposed to measure" (Bagozzi, Phillips, & Yi, 1991). The factor analysis is considered as a way of constructor validity because it examines the variation existent in the interrelationship between clusters of items for justifying their existence as a factor (Fabrigar, Wegener, MacCallum, & Strahan, 1999).

In this study, the Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) are used for validating the unidimensionality, convergence, and discriminancy.

4.4.2 Exploratory Factor Analysis (EFA)

The objective of the Exploratory Factor Analysis is to identify the relationships between measured variables (Norris & Lecavalier, 2010).

Previous studies refer to the methodology proposed by James Gaskin for performing the Exploratory Factor Analysis. (Aarts & Itansa, 2016; De Bruyckere & Kirschner, 2017; Dos Santos, Santoso, & Setyohadi, 2017; K Ngugi & Goosen, 2017). According to Gaskin, the EFA divided into four steps: Adequacy, Convergent Validity, Discriminant Validity and Reliability.

4.4.2.1 Adequacy analysis

The measure of sampling adequacy indicates the factors variance caused by underlying factors “in the model and for the complete model” (Cerny & Kaiser, 1977). For analyzing the model adequacy, this study considers the Kaiser-Meyer-Olkin (KMO) test, Bartlett’s Test of Sphericity, the study of commonalities and variance.

According to Kaiser (1977) for the KMO test, the result could be in the range from 0 to 1 with different meanings. A result between 0.00 and 0.0049 is not acceptable; between 0.50 and 0.59 is miserable; between 0.60 and 0.69 is mediocre; between 0.70 and 0.79 is middling; between 0.80 and 0.89 is meritorious and between 0.90 and 1.00 is marvelous (Cerny & Kaiser, 1977).

For this study, the result of KMO test is 0.825 that according to Kaiser Index is a meritorious value.

For Bartlett’s Test of sphericity, values less than 0.005 on the significance level, indicates that the matrix is not an identity matrix. In other words, the variables are enough interrelated providing a meaningful EFA (Reddon & Jackson, 1984).

The significance level for this study is 0.000, showing that the variables are appropriate for this study. Findings are resumed in the following table.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,825
Bartlett's Test of	Approx. Chi-Square	2976,674
Sphericity	df	253
	Sig.	,000

Table 10. KMO and Bartlett's Test results

Finally, the study of communalities provides comprehension about the correlation between model elements. According to Samuels (2016), a good value for communalities is over 0.2 (Samuels, 2016). According to Gaskin, a suitable value for communalities is greater 0.4(Gaskin, 2012). This study will consider the score proposed by Gaskin because it gives more reliability to the exploratory factor analysis.

The result of commonalities analysis shows that the lower value is 0.44 and the higher is 0.99, values that show model consistency.

Commonalities					
	<i>Initial</i>	<i>Extraction</i>		<i>Initial</i>	<i>Extraction</i>
PU1	,591	,600	T2	,449	,440
PU2	,706	,886	T3	,464	,463
PU3	,674	,712	T4	,550	,839
EE1	,832	,950	EU1	,591	,585
EE2	,834	,854	EU2	,865	,932
FCF1	,614	,624	EU3	,852	,896
FCF2	,660	,909	ST1	,351	,481
FCF3	,529	,511	ST2	,396	,641
SN1	,518	,999	BI1	,651	,688
SN2	,524	,496	BI2	,628	,693
TD1	,539	,508	BI3	,668	,847
TD2	,583	,999			

Table 11. Commonalities table

Talking about variance, in this study nine factors explain the 71.96% of the variance with 1.0% no redundant residuals with absolute values greater than 0.05. According to Mayers (2013), an optimal value of no redundant residuals must be below 5% (Mayers, 2013).

4.4.2.2 Convergent Validity

Convergent validity demonstrates that two or more items are correlated within the same constructor being evident with the factor loading index.

According to Bagozzi (2012), loadings under 0.5 could be satisfactory but it is better to get values greater than 0.5 (Bagozzi & Yi, 2012).

According to Gasking (2012), the factor loading for each item must be according to the sample size (Gaskin, 2012). The values are summarized in the following table.

Sample size	Sufficient factor loading
50	0.75
60	0.70
70	0.65
85	0.60
100	0.55
120	0.50
150	0.45
200	0.40
250	0.35
350	0.30

Table 12. Factor loading according to sample size

Because the sample size for this study is 216, an appropriate factor loading is 0.40.

The pattern matrix shows load values for the indicators are greater than 0.4. In the same way, indicators are grouped according to factors showing no heavy cross-loadings.

	Pattern Matrix								
	<i>Factor</i>								
	<i>PU</i>	<i>EE</i>	<i>FCF</i>	<i>SN</i>	<i>TD</i>	<i>T</i>	<i>EU</i>	<i>ST</i>	<i>BI</i>
<i>PU1</i>	,654								
<i>PU2</i>	,983								
<i>PU3</i>	,847								
<i>EE1</i>		1,007							
<i>EE2</i>		,900							
<i>FCF1</i>			,742						
<i>FCF2</i>			1,031						
<i>FCF3</i>			,574						
<i>SN1</i>				1,026					
<i>SN2</i>				,512					
<i>TD1</i>					,702				
<i>TD2</i>					,996				
<i>T1</i>						,530			
<i>T2</i>						,653			
<i>T3</i>						,966			
<i>EU1</i>							,643		
<i>EU2</i>							1,011		
<i>EU3</i>							1,007		
<i>ST1</i>								,694	
<i>ST2</i>								,812	
<i>BI1</i>									,519
<i>BI2</i>									,845
<i>BI3</i>									,989

Table 13. Pattern Matrix

4.4.2.3 Discriminant validity

Discriminant validity is a test for demonstrating that the indicators that compose a factor have a strong inner correlation, but factors are distinct and uncorrelated (Carlson & Herdman, 2012). In other words: they are measuring different things. Correlations between factors must not be greater or equal than 0.7. According to next table, all correlations between factors do not exceed 0.7.

	Factor Correlation Matrix								
<i>Factor</i>	<i>PU</i>	<i>EE</i>	<i>FCF</i>	<i>SN</i>	<i>TD</i>	<i>T</i>	<i>EU</i>	<i>ST</i>	<i>BI</i>
<i>PU</i>	1,000	,442	,491	,438	,327	,571	,216	,316	,353
<i>EE</i>	,442	1,000	,241	,449	,299	,452	,140	,210	,212
<i>FCF</i>	,491	,241	1,000	,333	,486	,525	,203	,376	,341
<i>SN</i>	,438	,449	,333	1,000	,483	,435	,376	,418	,138

<i>TD</i>	,327	,299	,486	,483	1,000	,398	,282	,442	,264
<i>T</i>	,571	,452	,525	,435	,398	1,000	,167	,380	,267
<i>EU</i>	,216	,140	,203	,376	,282	,167	1,000	,216	,055
<i>ST</i>	,316	,210	,376	,418	,442	,380	,216	1,000	,101
<i>BI</i>	,353	,212	,341	,138	,264	,267	,055	,101	1,000

Table 14. Factor correlation matrix

4.4.2.4 Reliability

As was shown in section 4.4.1, the Cronbach’s Alpha and Composite Reliability tests for this study show values greater than 0.7, demonstrating that the model is reliable.

4.4.3 Confirmatory Factor Analysis (CFA)

Once finished the Exploratory Factor Analysis, next step is to proceed with the Confirmatory Factor Analysis (CFA). With EFA, the factor structure was explored. The aim of CFA is to confirm the proper fit of the structure explored with EFA (T. A. Brown, 2006).

Previous studies for CFA, suggest first evaluate the model fit; then, the convergent and discriminant validity. (T. Brown, 2015; T. A. Brown, 2006; Thompson, 2004).

4.4.3.1 Model fit

“Model fit refers to how well our proposed model accounts for the correlations between variables in the dataset” (Gaskin, 2012). The more good correlations, the better model fit.

To measure model fit, there are specific measures. According to Hu and Bentler (1999), next are described the most commonly used metrics with their

Thresholds.

Measure	Terrible	Acceptable	Excellent
CMIN/DF	> 5	> 3	> 1
CFI	<0.90	<0.95	>0.95
SRMR	>0.10	>0.08	<0.08
RMSEA	>0.08	>0.06	<0.06
PClose	<0.01	<0.05	>0.05

Table 15. Hu & Bentler's CFA measures

According to measure indicators thresholds, and the results provided by the analysis performed in AMOS, the proposed model has an excellent model fit.

Measure	Estimate	Threshold	Interpretation
CMIN	335.189	--	--
DF	194	--	--
CMIN/DF	1.728	Between 1 and 3	Excellent
CFI	0.951	>0.95	Excellent
SRMR	0.059	<0.08	Excellent
RMSEA	0.058	<0.06	Excellent
PClose	0.097	>0.05	Excellent

Table 16. CFA model fit measures

4.4.3.2 Convergent and discriminant validity

For determining model validity in CFA, it is necessary to establish convergent and discriminant validity. If these tests are not achieved, the proposed model could be considered as not valid. According to Hair et al. (1998), to evaluate convergent and discriminant validity the thresholds of Composite Reliability (CR), Average Variance Extracted (AVE), Maximum Shared Variance (MSV) and the analysis of the AVE square root compared with AVE.

To perform the convergent and discriminant validity, the threshold values proposed by Hair et al. (1998) are used.

Measure	Threshold
CR	>0.7
AVE	>0.5
	MSV < AVE
	$\sqrt{\text{AVE}} > \text{Inter-construct correlations}$

Table 17. CFA Convergent and discriminant validity thresholds
(Hair et al., 1998)

The convergent and discriminant validity test performed on the proposed model was satisfactory. All indicators meet the thresholds previously explained.

	CR	AVE	MSV
TD	0.836	0.720	0.326
EU	0.915	0.784	0.285
PU	0.880	0.711	0.193
T	0.791	0.561	0.360
SN	0.738	0.592	0.326
BI	0.866	0.683	0.360
FCF	0.842	0.642	0.355
EE	0.943	0.893	0.311
ST	0.711	0.554	0.120

	<i>TD</i>	<i>EU</i>	<i>PU</i>	<i>T</i>	<i>SN</i>	<i>BI</i>	<i>FCF</i>	<i>EE</i>	<i>ST</i>
<i>TD</i>	0.848								
<i>EU</i>	0.206	0.885							
<i>PU</i>	0.160	0.427	0.843						
<i>T</i>	0.447	0.415	0.356	0.749					
<i>SN</i>	0.571	0.246	0.240	0.381	0.769				
<i>BI</i>	0.230	0.499	0.259	0.600	0.260	0.826			
<i>FCF</i>	0.413	0.397	0.439	0.596	0.427	0.353	0.801		
<i>EE</i>	0.189	0.534	0.429	0.516	0.196	0.558	0.399	0.945	
<i>ST</i>	0.068	0.329	0.236	0.171	0.058	0.347	0.160	0.249	0.744

Table 18. Convergent and discriminant tests results

4.5 SEM analysis

The SEM analysis, allows us to perform the validation of the proposed hypotheses; for that, many criteria must be met. The criteria start in the global test with the model fit and r-square test, finishing in local tests with p-value test. For example: If it is found an excellent p-value between two variables but model fit measures are not good, we cannot have confidence in the p-value. In the same way, if is found a good p-value but the r-square value is low, the relationship is not meaningful because of the small variance between variables.

Like the previous step, is needed to determine if on the dataset, exist a single or a set of observations that influence the linear regression model (C. Kim & Storer, 1996). To determine it, is used the Cook's distance.

According to Kim et al. (1996), an influential observation is one that is greater than one in the Cook's distance test¹. On the model dataset, was not found any value higher than one on Cook's test.

Another initial test previous hypothesis validation is the multicollinearity test. Multicollinearity test could be measured using the Variance Inflation Factors (VIF) test and the Tolerance test. According to Hair et al. (2010), to pass VIF and tolerance tests it is needed to obtain the following values: For VIF the value must be less than 3, and for tolerance, the value must be greater than 0.2 (Hair, Black, Babin, & Anderson, 2010). Following table shows the successful tests results.

¹ Cook's distance test is a measure based on confidence ellipsoids, developed for judging the contribution of each data point to the determination of the least squares estimate of the parameter vector in full rank linear regression models (Cook, 1977).

Collinearity Statistics		
	Tolerance	VIF
<i>PU</i>	0.642	1.558
<i>EE</i>	0.526	1.902
<i>FCF</i>	0.450	2.223
<i>SN</i>	0.527	1.899
<i>TD</i>	0.508	1.970
<i>T</i>	0.399	2.509
<i>EU</i>	0.575	1.740
<i>ST</i>	0.835	1.197

Table 19. Collinearity statistics

As was explained in section 4.4.3.1, the model passed the model fit global test. Next step is to evaluate the r-square of each relationship analyzed to finally, analyze the hypothesis with the p-value. Following table explains the results.

Path	r-squared	p-value	Hypothesis
PU --> BI	0.57	0.345	H1: Rejected
EE --> BI	0.309	0.001	H2: Accepted
FCF --> BI	0.116	0.115	H3: Rejected
SN --> BI	0.073	0.283	H4: Rejected
TD --> BI	0.78	0.260	H5: Rejected
T --> BI	0.567	0.001	H6: Accepted

Table 20. Testing structural model and hypothesis without moderators

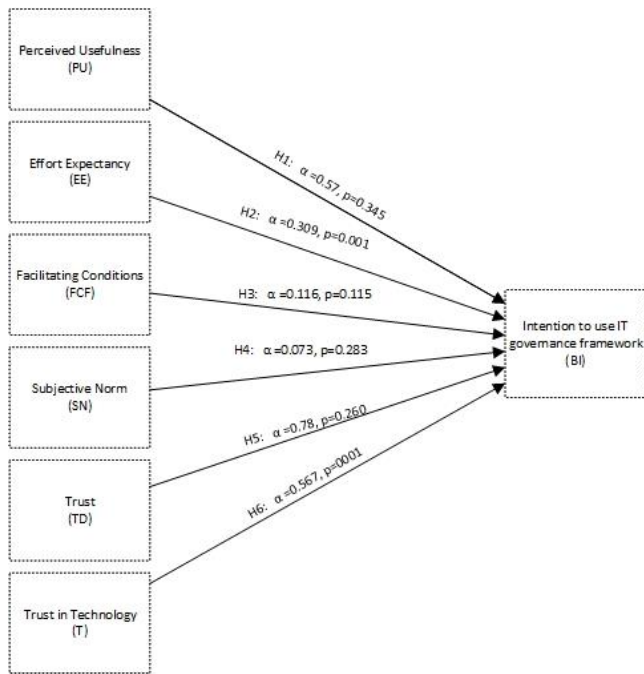


Figure 10. Model and hypothesis without moderators

According to the literature, for each modification performed on the original model, is needed to re-apply the model fit, r-square, and p-value tests.

Because of this study consider the effect of two moderators in the main model (experience for the use and staff turnover), is needed to run the mentioned tasks for testing the moderator's hypothesis again.

Measure	Estimate	Threshold	Interpretation
CMIN	1.861	--	--
DF	1.000	--	--
CMIN/DF	1.861	Between 1 and 3	Excellent
CFI	0.999	>0.95	Excellent
SRMR	0.005	<0.08	Excellent
RMSEA	0.063	<0.06	Excellent
PClose	0.281	>0.05	Excellent

Table 21. Model fit experience for the use moderator

Measure	Estimate	Threshold	Interpretation
CMIN	1.709	--	--
DF	1.000	--	--
CMIN/DF	1.709	Between 1 and 3	Excellent
CFI	0.999	>0.95	Excellent
SRMR	0.005	<0.08	Excellent
RMSEA	0.058	<0.06	Excellent
PClose	0.303	>0.05	Excellent

Table 22. Model fit Staff turnover moderator

As result of the model analysis including moderators, was found that if experience for the use is considered as another independent variable, it has a p-value of 0.172 and alpha of 0.114, being its relationship with BI insignificant. In the same way, if staff turnover is considered as another independent variable, it has a p-value equal to 0.180 and alpha of 0.105 considered as irrelevant for the study.

Considering experience for the use and staff turnover as relationships moderators, the findings show that in the case of experience for the use, it moderates only a few relationships. In the case of staff turnover is not present the moderator effect. Results are shown on next tables.

Path	r-squared	p-value	Hypothesis
EUxPU --> BI	0.140	0.030	H1a: Accepted
EUxEE --> BI	-0.181	0.004	H2a: Accepted
EUxFCF --> BI	-0.073	0.387	H3a: Rejected
EUxSN --> BI	0.015	0.813	H4a: Rejected
EUxTD --> BI	0.012	0.642	H5a: Rejected
EUxT --> BI	0.60	0.493	H6a: Rejected

Table 23. Testing structural model and hypothesis with EU moderator

Path	r-squared	p-value	Hypothesis
STxPU --> BI	0.055	0.483	H1b: Rejected
STxEE --> BI	0.062	0.416	H2b: Rejected
STxFCF --> BI	-0.082	0.346	H3b: Rejected
STxSN --> BI	-0.022	0.731	H4b: Rejected
STxTD --> BI	0.017	0.795	H5b: Rejected
STxT --> BI	-0.067	0.448	H6b: Rejected

Table 24. Testing structural model and hypothesis with ST moderator

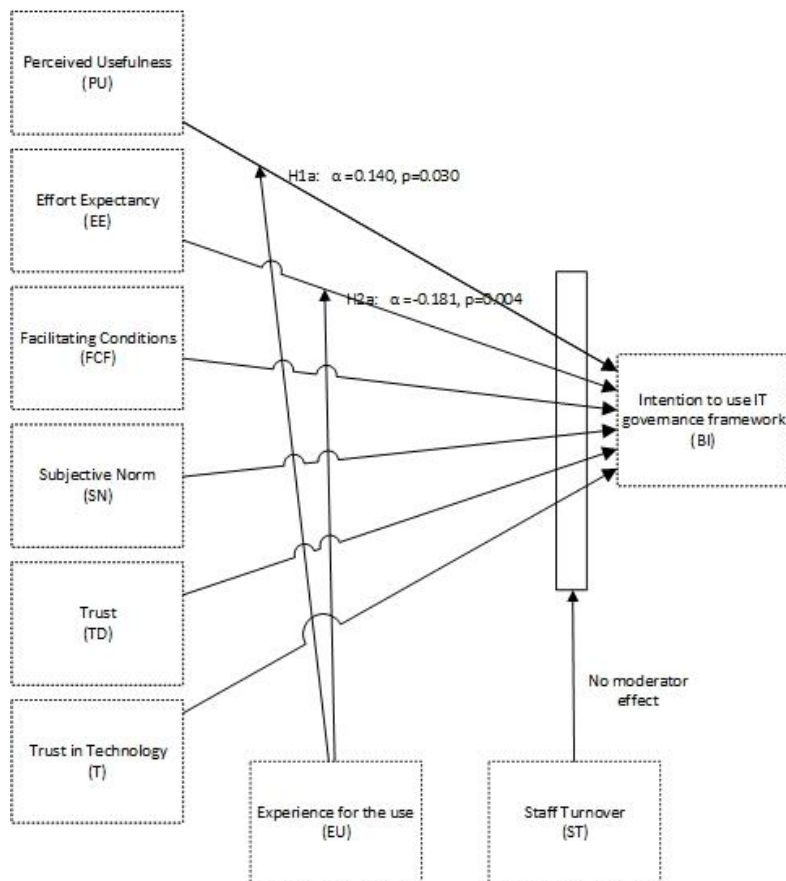


Figure 11. Model and hypothesis with moderators

4.6 Results discussion

Results described in section 4.5 demonstrates that findings of previous studies in the field of the determination of acceptance factors should not necessarily be the same for all related studies. In this study, two critical features must be considered. The first one for considering is that this study was developed in an environment where the access to resources and technology is not generalized. This constraint generates different results comparing with related studies, but the most important is that the previous reviews of acceptance were applied in technology. Application of models for determining the acceptance of frameworks is a field not profoundly explored. (Ahmad. et al., 2012).

In this context, previous studies have demonstrated that Perceived Usefulness influences the intention to use (Almahamid, Mcadams, Kalaldehy, & Eed, 2010; Renny et al., 2013; Viswanath Venkatesh & Davis, 2000). In the current study, perceived usefulness does not influence the Intention to use the IT governance framework ($\alpha = 0.57$, $p = 0.345$), rejecting the first hypothesis. When is included the moderator experience for the use in the relationship between perceived usefulness and intention to use, the relationship becomes significant at the 0.05 level. In this case, experience for the use has the moderator effect on the relationship, accepting the hypothesis 1A ($\alpha = 0.140$, $p = 0.03$).

Considering the effects of the staff turnover moderator on the relationship between PU and BI, the results are not significant. In other words: staff turnover does not have the moderator effect on the relationship, rejecting the hypothesis

1B ($\alpha = 0.55$, $p = 0.483$).

For this constructor is needed consider that, according to the demographical details, a low number of respondents have some understanding about what is an IT governance framework. In concrete, only 19.53% of respondents know what ITIL is. In the same way, the 39.07% of respondents have an understanding of IT governance frameworks, have a moderated knowledge. These numbers reflect that there exists a lack of knowledge about IT governance. The knowledge through the reasoning allows us to understand the nature, qualities, mechanisms, and characteristics of things (Zagzebski, 1999).

If the users do not know precisely the characteristics of the element that will be adopted, there can hardly find it usefulness. In this case, because of the respondents do not know about the usefulness of the IT governance framework, they do not consider it significant at the moment of adopting the Institutional IT governance framework.

The scenery changes at the moment to include the experience for the use. In this case, experience also is associated with knowledge. Experience allows deepening the relationship between object and subject. The objects are represented by their characteristics and the subject represented by its knowledge. In the same way, experience provides a connection between isolated clusters of knowledge (Fisher, Pazzani, & Langley, 2014).

On this study, the experience for the use that few respondents have about IT governance allows finding the usefulness that the IT governance framework has, activating the intention to use the IT governance framework based on this fact ($\alpha = 0.140$, $p = 0.030$).

On the other hand, staff turnover implies the existence of vacant positions. While the position is empty, the remaining employees must fulfill the tasks that have stopped being performed generating extra work loading, discomfort and work environment degradation (Russell & Bvuma, 2001). These staff turnover facts are not closely associated with the perceived usefulness on its relationships, generating that its moderating effects are also not related. This lack of relationship is reflected in the results of the moderator variable ($\alpha = 0.055$, $p = 0.483$).

Talking about the effort expectancy, the data analysis process shows that it has a significant relationship with the intention to use the IT governance framework ($\alpha = 0.309$, $p = 0.001$), allowing to accept the second hypothesis.

The explanation of this result comes from the human logic. People will be willing to use some instrument or technology if they perceive that it is easy to use or if in their usage is not needed to employ a lot of effort (Granollers & Lorés, 2004).

For the respondents, a crucial factor that influences their intention to use the IT governance framework is their expectation about the amount of effort they must apply. The fact that a person has little knowledge of frameworks implies that this must make more effort to use it. Therefore, it is significant that the framework is usable (Neilsan, 2001).

The importance of the usability is reduced when the experience for use enters to scene. For people with experience, it is not so important that the technology be easy to use insomuch as they have enough knowledge to try to use it.

The results of the inclusion of experience for the use in the model as moderator of the relationship between effort experience and intention to use ratifies this thought ($\alpha = -0.181$, $p = 0.004$). In other words, the experience for the use has a significant negative effect on the relationship between effort expectancy and intention to use, generating the acceptance of the 2nd hypothesis.

In the case of staff turnover, the results demonstrate that staff turnover does not have moderator effects over the relationship between effort expectancy and intention to use ($\alpha = 0.062$, $p = 0.416$), rejecting the hypothesis 2B.

According to Macleod (1994), the staff turnover is inversely proportional to the usability. In other words, as much more usable the system is, the significance of staff turnover is less, keeping high the productivity, effectiveness, and efficiency of the process involved (Macleod, 1994). In this study, the usability of the IT governance framework is high, being a significant factor in the intention to use the IT governance framework. This characteristic diminishes the effects of staff turnover over the previous relationship.

Previous studies related with the analysis of acceptance factors have found that perceived usefulness and effort expectancy have significance on the intention to use (Adams, Nelson, & Todd, 1992; Alharbi, 2014; J. C.-C. Lin & Lu, 2000). Most of them analyze technology where the knowledge factor is not deeply related. For the frameworks case, the knowledge is very important. In the Ecuadorian context, the access to quality education and knowledge is hard to achieve (Briones, 2018). This deficiency generates difficulties at the moment to adopt governance frameworks. There are few cases in which advanced

knowledge in governance issues is demonstrated. Most of them have acquired knowledge or have specialized thanks to national and international scholarship programs, turning into significant those elements in which knowledge of IT governance is involved. Studies related to education have demonstrated the importance of providing quality education since early stages (Duerrenberger & Warning, 2018; Egert, Fukkink, & Eckhardt, 2018; Whitebread, 2018).

At this point, it is worth remembering that the IT governance provides the framework for ensuring that the IT infrastructure supports the business objectives.

In this study, the IT governance framework is providing the facilitating conditions for the achievement of business objectives. The intention to use the framework is according to the support level that it offers. The private consultancy results show that the IT governance framework maturity level is near to 0, the value that determines that the framework is not significant support for the organizational objectives achievement. The study results reflect that the facilitating conditions of the framework are not significant at the moment of determining its intention to use ($\alpha = 0.116$, $p = 0.115$), rejecting the third hypothesis. Unlike previous studies where facilitating conditions have significance (McInerney, Dowson, & Yeung, 2005; Patnasingam, Gefen, & Pavlou, 2005; Viswanath Venkatesh, Brown, Maruping, & Bala, 2008) this study does not find significance. It is motivated by the Ecuadorian context. According to the e-gov national plan, the IT governance maturity is close to 0% motivated by the focusing of public institutions in the supply of services and not in the development and use of IT governance frameworks. According to

literature, for keeping a healthy e-government environment is needed to keep an adequate IT governance framework (S. De Haes & Van Grembergen, 2004).

Under these conditions, the experience does not have moderator effects over the relationship because of the maturity level in which is the IT governance framework, does not requires a lot of experience for its use. According to results, to have extensive experience is not a differentiating element ($\alpha = -0.073$, $p = 0.387$). The hypothesis 3A is rejected.

According to its concept, the subjective norms are highly related to social pressure. In the case of study, this concept is not 100% applicable because of the characteristics of the IT governance framework.

This framework is intended to be used by high hierarchy members (Board of Directors, Directors, Managers, and Administrators). At this level, the social pressure is almost null. Their actions are governed by institutional objectives and not by social pressures. At the end of every year, Ecuadorian Public Institutions must develop its next Annual Operative Plan. Here, the pressure comes from the need to developing a reachable and real plan. Once it is defined and approved it must be accomplished throughout the year resting significance to the social pressure that could exist. This high-level characteristic makes insignificant the effect that subjective norms have over the intention to use the IT governance framework ($\alpha = 0.073$, $p = 0.283$). These values allow rejecting the fourth hypothesis.

On the development of the second version of the Technology Acceptance Model, authors found that the experience has significant moderator effect over the relationship between subjective norm and perceived usefulness, but this

moderator effect is negative. The origin of this negativity is because of “members that have gain experience over the time, they rely less on social information” (Viswanath Venkatesh & Davis, 2000). The results of the current study are different from those found by the model developers ($\alpha = 0.015$, $p = 0.813$). Finally, the acceptance study is applied over a framework that it is different from a technology or service. In this logic, the hypothesis 4A is rejected.

Institutional objectives are the guiding elements that govern the actions of managers. These objectives are independent of the person who must reach them. If in a certain period there is a high turnover, each of the members who have held the management position must comply with the objectives, making the subjective influence of the social environment insignificant. The results show its reality ($\alpha = -0.022$, $p = 0.731$). The negative sign demonstrates that a high staff turnover weakness the influence of subjective norms over the intention to use the framework. The lack of prolonged contact reduces the possibilities to conforming social relationships in the work environment, decreasing the influence of social actors on the decision-making process (Mullins, 2011) rejecting the hypothesis 4B.

The fulfillment of the IT objectives is the responsibility of a horizontal structure group. This group called the circle of trust is composed of the Technology Director, IT administrators and managers nationwide. According to Sinha et al. (2012), the circle of trust is constituted by members who trust each other since they show discipline and good judgment (Sinha, Mani, & Sinha, 2011).

Previous studies determined that trust is a determining factor in the intention to use some kind of technology and in an environment where its adoption is optional. Unlike these, this study aims to determine whether the trust is a determining factor within the circle of trust where the adoption of the governance framework is mandatory and governed by institutional objectives. The results show that the trust measured within the circle of trust in a mandatory environment is not a determining factor in the intention to use the IT governance framework, rejecting the fifth hypothesis ($\alpha = 0.78$, $p = 0.260$). In the Ecuadorian society, the administrators of power are part of politically defined circles of trust (Vanoni-Martínez & Rodríguez-Romero, 2017) making negligible the trust factor analyzed individually, since the circle of trust that addresses it broadly.

The inclusion of experience as a moderator in the established relationship also has no significant effects ($\alpha = 0.012$, $p = 0.642$). This result is caused by the characteristic that the use of the IT governance framework is mandatory, subtracting significance from the fact that whether the adopters have experience or not. With this, hypothesis 5A is rejected.

To avoid organizational chaos, there must always be a person or a group of people who are in the circle of trust and direct the employees. When staff turnover exists within the circle, the vacancy must be filled quickly. While this occurs, the functions are subrogated to the other members of the circle (Menéndez Montero, 2015). The trust between the members of the circle is maintained. When a new member enters the circle, it has the same level of confidence as the rest for finally, restoring the organizational chain of command.

In this study, because of the political shape of the circle of trust in Ecuador, staff turnover has no effect on the trust between the members of the circle nor in its relation to the intention to use the governance framework. The results obtained show that staff turnover has no significant moderating effect on the relationship between confidence and intention of use ($\alpha = 0.012$, $p = 0.642$), rejecting hypothesis 5B.

The IT governance framework is designed to support the achievement of the organizational goals, so its foundations must be reliable. Considering trust in technology from the point of view of the standards that compose the institutional IT governance framework, results show that it has a significant positive effect over the intention to use the IT governance framework ($\alpha = 0.567$, $p = 0.001$) accepting the sixth hypothesis.

Ecuadorian people give great importance to the quality and reliability of the elements that compose the products used (Santamaria, 2014). According to the Ecuadorian culture, for increasing the intention to use the IT governance framework, is meant that it is composed by internationally recognized standards. This cultural premise coincides with the current composition of the institutional IT governance framework (ITIL, COBIT, BSC, ISO, among others), giving significance to the results found.

From the point of view of experience and staff turnover as moderators, the results show that they do not have effects over the relationship between trust in technology and the intention to use the framework ($\alpha = 0.60$, $p = 0.493$) ($\alpha = -0.067$, $p = 0.448$), rejecting the hypothesis 6A and 6B.

These results reflect, on the one hand, the thinking of the board members

who believe that having a governance framework composed of reliable standards, it is not necessary to have a high level of experience for its use. Likewise, the high level of confidence in the technology used in the framework is sufficient to support the staff turnover that may occur.

4.7 Chapter summary

At the beginning of this chapter was presented the demographic details that allow to understand the social composition of the sample. Here, an interesting result is that related to the low level of understanding and knowledge about IT governance frameworks. This result could explain future details on the analysis process. After that was presented the process regarding the model validity including the reliability analysis, exploratory factor analysis, and confirmatory factor analysis, for finally start the SEM process for the testing hypothesis in the model without moderators then including moderators. Results are diverse and interesting. The data analysis process shows that the results could vary according to the context in which the study was developed.

Chapter 5. Results discussion, conclusions, and limitations

5.1 Introduction

Concluded the data analysis process and once found valid numerical results that support or reject the set of hypothesis proposed. In this chapter, the observed results will be discussed for becoming them in a meaningful input for future proposals in the field of IT policy development that contributes to the equitable spreading of the digital dividends. For that, chapter 5.2 describes the research conclusions. In section 5.3 is described the study contributions. Next, chapter 5.4 the practical implications and policy recommendations are presented for finally, include the study limitations and future research.

5.2 Research conclusions

The goal of this study is to determine what are the determinant factors that influence the intention to use the Institutional IT governance framework. Once studied and applied the theory on the proposed model and finished the data analysis process, this study concludes that for obtaining a good data sample, it is vital to get the commitment of the people involved on the information collection process. The information acquired through questionnaire is the primary information source being necessary the participation of as many people as possible.

This study found that the knowledge expressed as usefulness or usability enabler is determinant at the moment of consider the use of the IT governance framework. On the institution case of study, respondents do not enjoy a high level of knowledge related to the IT governance framework. This lack of understanding also represents a “behind of” factor needed to consider in further researches.

Non-academic studies found that, from the point of view of workload, the reduction of facilitating conditions that one organization provides to its employees could be motivated by the high staff turnover. This study concludes that in decision-making environments, the increase in workload motivated by the staff turnover is not a significant element since, in these types of environments, tasks developed are directly related with the consecution of institutional objectives.

In order to get a quality product it is necessary to work with quality materials. People rely on products based on quality materials. This study found that in the Ecuadorian context, the IT governance frameworks must be composed of reliable and recognized standards, characteristics that provide the level of trust necessary to encourage the use of the governance framework.

Finally, this study concludes that because of the lack of information related with the analysis of acceptance applied on governance frameworks, it is important to develop more studies related, thus to contribute with new findings to the acceptance theory and further researches.

5.3 Study contributions

For this research, a modified UTAUT model was presented in which is described according to the environment in which the research was developed, the most appropriate variables for determining the intention to use the IT governance framework.

The proposed model could be considered as an input tool for the operation and use and embed new approaches stages of the IT governance implementation lifecycle. This lifecycle provided by ISACA is used by academic researchers related to IT governance, creating a link between the professional and academic use.

According to IT governance experts, “one factor relatively unexplored by academic research is that of organizational culture” (Van Grembergen & De Haes, 2018). From the IT point of view, Organizational culture is a set of valuable activities for ensuring that IT support the organizational success. For example: delivering a set of appropriate systems or services for the organizational usage (CALDER, 2008). As a contribution, this study considers constructors and moderators related to organizational culture.

The use of acceptance models are mostly used to determine the intention to adopt the technology, and they are not commonly applied to frameworks (Ahmad. et al., 2012). The contribution of this study is to provide an analysis of the acceptance factors applied to the intention to use a framework; specifically an IT governance framework.

This study is the first study of this class performed in Ecuador and, until the date of presentation of this document, is one of the few studies developed that

considers acceptance models applied on IT governance frameworks.

Finally, the results of this study determine that the knowledge has a significant meaning in concepts such as effort experience and experience for the use. Another factor to consider is the significance of trust in technology from the point of view of the elements that make up the IT governance framework. This kind of trust is a little difficult to get because IT governance frameworks are a kind of intangible asset and needs a different treatment compared with tangible technology. The results could be considered as inputs for the development of policies related to continuous learning or interchange. As a result, the improvement of the IT governance frameworks could be achieved.

5.4 Practical implications

This study attempts to determine what are the determinant factors that influence the intention to use the IT governance framework in Ecuadorian public institutions with the aim of developing the appropriate set of policies, regulations, and procedures for ensuring that the IT infrastructure supports the organizational objectives.

The study found that the Effort Expectancy is a determinant factor that influences the intention to use the IT governance framework. The effects of the experience moderator also are meaningful because it activates the perceived usefulness as a determinant factor for adopting the framework.

Effort expectancy and experience are concepts that behind them is implicated in the concept of knowledge. In fact, knowledge is not only related

to governance frameworks, knowledge also is present in our daily activities.

The knowledge is an abstract concept that is acquiring organizational importance as a primary resource for achieving the organizational goals and the long-awaited competitive advantage.

Because of the knowledge importance, is needed to establish organizational Knowledge Management Systems (KMS) that supports the “creation, transfer and application of knowledge” (Alavi & Leidner, 2001).

The knowledge-based perspective explains that all tangible results depend on a combination of knowledge sources applied through multiple organizational entities or procedures. For achieving a better IT governance framework acceptance through the employment of knowledge management systems theories is needed to employ a variety of resources provided by KMS such as policies, routines, procedures, manuals or training programs.

Considering this fact, Ecuadorian governmental institutions must intensify their policies related to knowledge acquisition and application from different fields of action.

There are many organizations that have achieved success in conceiving their own policies and norms based on the knowledge management.

This is the case of British Petroleum, that is considered one of the most experienced companies in knowledge management. One of its premises is to incorporate the knowledge on all work routines, in special, in those routines that require a high level of decision making. In the same way, Microsoft has implemented its knowledge management based on a competences model. The more knowledge you have, you are more competent to develop determined job.

Organizational positions require a high level of competences that means, high level of knowledge (Akhavan & Zahedi, 2014).

Government entities should include in their managers hiring policies, the requirement to have a high level of knowledge related to the management of IT governance frameworks. With this, the expectation of effort is being reduced, and the use of the governance framework is encouraged.

In the same way, the model proposed by Microsoft contemplates the need for improving the educative resources applied to continuous learning process to perfect the competences. The improvement of competences implies providing an environment in which the intention of using the IT governance framework is encouraged due to the reduction of effort, product of the knowledge generated. From the perspective of the staff that is currently working, it is necessary to create intensive training policies to increase the level of understanding of the IT governance framework concept, reducing the intellectual effort at the time of applying the governance framework and increasing the intention to use it. In the same way, once the knowledge is sown, it is necessary to cultivate it until it yields fruits. In this case, the best way to keep knowledge dormant is to refresh it. The human talent units of the government institutions must create policies of continuous training on issues related to IT governance, reinforcing the concept that the use of the governance framework does not require effort, encouraging their use.

Apple, Repsol, Ernest & Young and Xerox, consider the knowledge sharing as part of its knowledge management strategies. As a result, the organization has experimented a significant incomes raising (Halawi, McCarthy, & Aronson,

2017). Benefits not only could be reflected in the shape of incomes. Benefits also are reflected in the increasing of the use the technology available. In this case, the increasing of the acceptance of IT governance frameworks; for that, strategies such as interchange programs could be defined and implemented.

Locally, inter-institutional cooperation policies should be created to foster the temporary exchange of human talent (commission of services) with the objective that officials acquire experience in other local environments where e-government frameworks are at higher levels, and so on. Based on the experience earned, replicate the best and most appropriate practices in the institutions themselves.

As part of the knowledge sharing, the cooperation with private institutions is critical. Due to the competitive environment in which the activities of private companies are developed, they must find the best IT mechanisms and make them evolve rapidly. In this sense, it is recommended to create policies so that personnel belonging to public institutions make frequent and prolonged visits to private institutions where it has been demonstrated that IT governance mechanisms successfully support the achievement of organizational objectives.

Another way to encourage learning and knowledge sharing related to IT governance frameworks is by creating certification programs sponsored by government entities in order to specialize knowledge. Specialists can also be replicators of knowledge to members of the operational level, so, as part of Human Talent policies, the dissemination of knowledge in areas unrelated to decision-making processes should be considered.

A factor associated with knowledge is the experience defined as the

enabling element of knowledge. In this study, the experience is crucial because it not only reduces the expectation of effort in the intention to use the governance framework but also activates its perception of utility. In this regard, it is recommended that Ecuadorian government institutions seek mechanisms of international cooperation so that workers involved in decision-making processes acquire theoretical and practical experience in countries where there is a high level of maturity of the governance processes or in where the mechanisms of electronic government are evolved.

The academy is also part of the chain of knowledge transfer providing an adecuated environment for the acceptance of IT governance frameworks. The academy is the cradle of knowledge. By tradition, Academia utilizes knowledge transfer mechanisms for enabling the skills that will be used in practical environments. Ecuadorian public institutions should strive to reach agreements with universities so that, based on specialized programs, increase the knowledge of IT governance frameworks, thereby supporting the influential factors when using IT governance frameworks.

The acquisition of knowledge and experience through sharing will allow a better acceptance of the previously established governance frameworks, thus also achieving an evolution in the related aspects such as the case of electronic government.

On the other hand, this study determined that the confidence generated by the standards involved in the IT governance framework is a determining factor in the intensification of its use.

This confidence is increased with the presentation of success stories in

public or private institutions worldwide. To do this, the IESS IT office must include among its policies programs for the exchange of experiences with institutions that maintain agreements through the development of forums, symposiums, videoconferences, etc. thus, strengthen trust in the foundations of governance frameworks. Another way for increasing the trust in the IT governance framework is providing enough resources for investing in the incorporation of trustworthy international standards that will contribute to the better acceptance of the IT governance framework.

The Institutional board of Directors have an important role supporting the knowledge management. The top management commitment must include the development of the intangible knowledge through the development of tangible factors such as the improvement of infrastructure that supports the knowledge acquisition and sharing, creating the legal and administrative norms and frameworks that supports the knowledge management. With that, contributes to better acceptance of the IT governance framework previously developed.

Although this study determined that staff turnover is not an influential factor in intensifying the use of the governance framework, it is necessary to establish retention policies for personnel trained and experienced in matters related to IT governance. This fact supports the significant factors for the use of the framework.

As part of its knowledge strategies, Hewlett Packard implemented a reward system in which people with high knowledge level and ready for sharing it, receive incentives from the organization. With this strategy, Hewlett Packard prevents the brain drain, increases the quality of the general knowledge and

finally, increases the desire of staff to participate in knowledge sharing processes (Halawi et al., 2017).

Considering this success history, the Social Security Institute should develop policies to combat the brain drain through the creation of incentive programs such as salary improvements, specialized training, improvement of the work environment, the inclusion of benefits for the family among others.

As an additional measure, the IT offices in Ecuadorian government institutions must establish policies to control achievement of objectives in which the processes to be followed are described in order to achieve a better level of maturity of the technological processes. It is necessary to keep constant control of the activities that are carried out in the IT offices. The objective is to provide support for the evolution of the IT office and therefore the development of the organization to which it belongs.

5.5 Study limitations

Generally, in academic researches, the process of answering the research questions implies the generation of more questions that must be considered in further studies. During the process solving the research question could generate new issues that are material for further researches (Price & Murnan, 2004).

For the current research, it is important to mention that the acceptance models are broadly used for determining the acceptance of technologies, but their application on frameworks is an area relatively unexplored. This lack of researches limits the number of results for comparing with the current study.

In the same way, the lack of studies related to acceptance applied on

governance frameworks does not provide practical implications or action plans that allows improving the acceptance of IT governance frameworks.

This study collected data from a specific group that is composed of IT Directors, administrators, and managers that belongs to a unique institution. For further researches it is recommended to expand the scope and include multiple governmental institutions with the aim of getting a better understanding of the national reality. In the same way, it is recommended to apply this kind of studies with samples composed by organizations with different maturity levels. It is for determining if the same factors that affect low-level maturity organizations are the same for mid and high maturity level organizations.

Although this study did not find significance in the application of staff turnover as moderator, for further researches it is recommended to profound this fact. One way is specifying the staff turnover according to the development of skills of the people involved.

Another limitation is that this study was applied over a group of respondents that works in an environment where the application of the IT governance is mandatory. For further researches is recommended to expand the respondent's scope to those respondents that in some way, are involved in the IT governance framework, and its use is not mandatory.

Finally, according to findings and some suggestions given by theory, for further studies are recommended to analyze the direct effect of effort experience over the perceived usefulness. It is because both concepts are related to knowledge.

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Acronyms

TAM	Technology Acceptance Model
UTAUT	Unified Theory of Acceptance and Use of Technology
SEM	Structural Equation Modelling
EGDI	E-government development index
IESS	Ecuadorian Social Security Institute
SWOT	Strength, Weakness, Opportunities, Threats
ISACA	Information Systems Audit and Control Association
EFA	Exploratory Factor Analysis
CFA	Confirmatory Factor Analysis
COBIT	Control Objectives for Information and Related Technology
ISO	International Standardization Organization
IEC	International Electrotechnical Commission
ITIL	Information Technology Infrastructure Library
PMBok	Project Management Body of Knowledge
TOGAF	Technology architecture of the Open Group
CMM	Capability Maturity Model
CSF	Critical Success Factors
TRA	Theory of Reasoned Action
TPB	Theory of Planned Behavior
MM	Motivational Model
MPCU	Model of PC Utilization
DOI	Diffusion of Innovation Theory
SCT	Social Cognitive Theory
PU	Perceived Usefulness
BI	Behavioral Intention to Use
ST	Staff Turnover
EU	Experience for the Use
TT	Trust in Technology
T	Trust

Appendix A – Survey Instrument

(English Version)

PARTICIPATION REQUEST FOR RESEARCH PROJECT ACCEPTANCE OF IT GOVERNANCE FRAMEWORK IN ECUADORIAN PUBLIC INSTITUTIONS

Appreciated professional.

My name is Jorge Nájera, Computer Science Engineer and member of the National IT Office of the Ecuadorian Social Security Institute. Nowadays I am coursing studies to get my Master's degree in the International IT Policy Program that is part of the Seoul National University in the Republic of Korea. As part of my research related to the Acceptance of IT governance framework in Ecuadorian Public Institutions; Case of study: Ecuadorian Social Security Institute, Currently, I am in the process of collecting data that will allow continuing my research. Will be an honor have your invaluable participation.

In the following survey, you will be requested for answering a set of questions, with the objective of determining the main factors that influence the acceptance of the IT governance framework.

The study's final results will be beneficial for the IT policy developers and the IT governance managers in order to maximize the benefits and reduce the hindrance of the current IT governance system. In the same way, the results get of the research, will be used as input for future related works.

To complete this questionnaire will take around 20 minutes. The participation on it is entirely voluntary.

The answers will be treated in an entirely confidential and anonymous way. Your identity never will be indexed with your responses.

If you have any questions or concerns related to this questionnaire or the procedures involved, kindly I request to contact me through the use of e-mail to next addresses: jnajera@nsu.ac.kr or jnajera@interactive.net.ec

I hope to have your invaluable professional criteria through the filling of the following questionnaire.

Sincerely

Jorge H. Nájera Gómez.

Master Candidate.

International IT Policy Program.

Technology Management, Economics and Policy Program (TEMPEP).

Seoul National University, Republic of Korea.

PART I: DEMOGRAPHIC DETAILS

Q1. What is your age?

- 20 or less, 21 – 30, 31 – 40, 41 – 50, 51 – 60, Over 61

Q2. What is your gender?

- Male, Female, LGTB.

Q3. What is your academic education level?

- School, High school, Technician, Bachelor's degree,
 Post-graduate degree, Certificate or similar, None.

Q4. What is your employment situation?

- Contracted staff, Provisional Appointment, Fixed Appointment.

Q5. What is your salary in USD?

- 1000 or less, between 1000 and 1500, Over 1500

Q6. How many years are you working for the institution?

- Less than 5 years, between 5 and 10 years, between 10 and 15 years,
 between 15 and 20 years, more than 20 years

Q7. How many years are you working in the information technology field?

- Less than 2 years, between 2 and 6 years, between 7 and 10 years,
 between 10 and 15 years, more than 15 years

Part II. KNOWLEDGE

Q8. How do you describe your general computer knowledge?

- Very poor, Poor, Moderate, Good, Very good.

Q9. Are you familiar with IT governance framework concepts like COBIT, ITIL, ISO, BSC or PMBOK?. Please check.

- COBIT, ITIL, ISO, BSC, PMBOK, None.

Q10. How do you describe your IT governance framework knowledge (COBIT, ITIL, ISO, BSC or PMBOK)?

- Very poor, Poor, Moderate, Good, Very good.

Q11. Do you have any certification(s) such as ITIL, COBIT, BSC, PMP, CISA, CISPP, etc.?

- COBIT, ITIL, BSC, PMP, CISA, CISPP, None, Other

If you responded “other”, please specify.

Part III. ORGANIZATIONAL DETAILS

Q12. In which province is located your workplace?

Q13. In which city is located your workplace?

Q14. According to your criteria: The Board of directors of the institution...

- Generally promotes the improvement of the organization's technology capabilities.
 Are neutral related to the improvement of the organization's technology capabilities.
 Opposes the improvement of the organization's technology capabilities.
 Other – Not sure.

Q15. What is your IT annual budget (USD)?

Less than 10.000, between 10.000 and 20.000, between 20.000 and 50.000, between 50.000 and 100.000, between 100.000 and 500.000 more than 500.000.

Part IV. IT GOVERNANCE DETAILS

IT governance is a formal framework that provides a structure for organizations to ensure that IT investments support business objectives.

Q16. What of these elements exists in your workplace?

	None	In progress	Established	Not sure
IT policies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IT Standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IT Procedures	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

On a scale from 1 to 5, being 1 completely disagree and 5 completely agree, Please answer next statements related to:

Perceived usefulness: is the degree to which a person believes that using a particular system would enhance his/her job performance

		Disagree → Agree				
		1	2	3	4	5
Q17	IT governance framework improves my performance at the moment of executing the tasks assigned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q18	Using IT governance framework increases my productivity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q19	Using IT governance framework enhances my work effectiveness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Effort expectancy: A belief that the use of a particular technology will be easy and effortless.

		Disagree → Agree				
		1	2	3	4	5
Q20	I find IT governance framework is easy to understand and follow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q21	Using IT governance framework does not require a lot of my mental effort	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facilitating conditions: An organizational and technical infrastructure supporting the use of acquired systems in their contexts.

		Disagree → Agree				
		1	2	3	4	5
Q22	Follow IT governance framework facilities me to interact with different ICT areas such as ICT National Direction or administrative and operative nationwide ICT areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q23	IT governance framework facilitates me to understand the structure, components, and procedures of ICT national Direction and ICT offices of nationwide operational and administrative units	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q24	IT governance framework is appropriated for developing your job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Subjective norms: The perceived social pressure to perform or not perform a particular behavior

		Disagree → Agree				
		1	2	3	4	5
Q25	The Board of Directors supports the use of the IT governance framework	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q26	In general, the Institution supports the use of the IT governance framework	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Trust: to believe that someone or some technology is good and honest and will not harm you, or that something is safe and reliable

		Disagree → Agree				
		1	2	3	4	5
Q27	I believe that institutional managers are trustworthy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q28	I believe that institutional managers' actions help to improve the IT governance framework	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q29	I have confidence in the standards used for developing the IT governance framework	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q30	I felt that the information returned by the IT governance framework is reliable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q31	I believe that IT governance framework is effective at what they are designed to do	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Experience for the use: is the experience that we generate and accumulate from the interaction we have with technology

		Disagree → Agree				
		1	2	3	4	5
Q32	Using IT governance frameworks becomes natural to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q33	I believe that the experience in using IT governance framework is useful for developing my job tasks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q34	I believe that the experience in using IT governance framework reduces the effort developing my job tasks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Staff turnover: the rate at which employees leave a company and are replaced by new employees

		Disagree → Agree				
		1	2	3	4	5
Q35	I believe that the high turnover of managers affects the use of IT governance frameworks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q36	I believe that the high turnover of technicians affects the use of IT governance frameworks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Behavioral Intention: Individual intention to use a particular technology that directly affects actual usage

		Disagree \longrightarrow Agree				
		1	2	3	4	5
Q37	I intend to use the IT governance framework in the next 12 months	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q38	I predict to use the IT governance framework in the next 12 months	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q39	I will use the IT governance framework in the next 12 months	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thank you in advance for your cooperation with this research project.

Appendix B – Survey Instrument

(Spanish Version)

SOLICITUD DE PARTICIPACIÓN EN EL PROYECTO DE INVESTIGACIÓN ACEPTACIÓN DEL MARCO DE REFERENCIA DE GOBERNANZA DE TI EN INSTITUCIONES PÚBLICAS ECUATORIANAS

Apreciado profesional.

Mi nombre es Jorge Nájera, Ingeniero en Informática y Ciencias de la Computación de la Dirección Nacional de Tecnología de la Información del Instituto Ecuatoriano de Seguridad Social. Actualmente me encuentro cursando estudios de Maestría en el Programa Interdisciplinario de Políticas de IT en la Universidad Nacional de Seúl en la República de Corea del Sur y soy candidato al título de Magíster en Ingeniería e Innovación.

Me encuentro en el proceso de recolección de datos para aplicarlos en mi proyecto de investigación titulado: “Aceptación del marco de referencia de gobernanza de IT en Instituciones Públicas Ecuatorianas. Caso de estudio: Instituto Ecuatoriano de Seguridad Social” y sería un honor el contar con su valiosa participación.

En el siguiente cuestionario, se le pedirá responder a un conjunto de preguntas, las que tienen como objetivo determinar los principales factores que influyen en la aceptación del marco de referencia de gobernanza de TI.

Los resultados del estudio serán de gran utilidad para los creadores de políticas de TI y para los encargados de temas inherentes con gobernanza de TI, ya que con ellos se podrá maximizar los beneficios y reducir los obstáculos que afectan al sistema de gobernanza de TI, convirtiéndose en un insumo para futuros trabajos relacionados.

Contestar este cuestionario le tomará aproximadamente 20 minutos. La participación en el mismo es completamente voluntaria.

Las respuestas dadas serán tratadas de una manera absolutamente confidencial y anónima, por lo que su identidad en ningún momento estará relacionada con sus respuestas.

Si tiene preguntas o inquietudes relacionadas con el cuestionario o los procedimientos involucrados en el mismo, muy gentilmente solicito ponerse en contacto conmigo mediante el envío de correos electrónicos a las direcciones: jnajera@snu.ac.kr o jnajera@interactive.net.ec

Espero contar con su invaluable criterio profesional mediante el diligenciamiento del siguiente cuestionario.

Sinceramente,

Jorge H. Nájera Gómez.

Candidato al título de Master.

International IT Policy Program.

Technology Management, Economics and Policy Program (TEMPEP).

Universidad Nacional de Seúl, República de Corea.

PARTE I: DETALLES DEMOGRÁFICOS

Q1. ¿Cuál es su edad?

20 o menor, 21 – 30, 31 – 40, 41 – 50, 51 – 60, 61 o mayor

Q2. ¿Cuál es su género?

Masculino, Femenino, LGTB.

Q3. ¿Cuál es su nivel académico de estudios?

Escuela, Colegio, Técnico, Universidad, Postgrado,
 Certificado o similar, Ninguno.

Q4. ¿Cuál es su situación laboral?

Personal de contrato, Nombramiento Provisional, Nombramiento Permanente.

Q5. ¿Cuál es su salario (en USD)?

Menor a 1000, Entre 1000 y 1500, Mayor a 1500

Q6. ¿Cuántos años lleva trabajando para la institución?

Menos de 5 años, entre 5 y 10 años, entre 10 y 15 años, entre 15 y 20 años, más de 20 años

Q7. ¿Cuántos años lleva trabajando en el campo de tecnologías de información?

menos de 2 años, entre 2 y 6 años, entre 7 y 10 años,
 entre 10 y 15 años, más de 15 años

Parte II. CONOCIMIENTO

Q8. ¿Cómo describe su conocimiento general relacionado con computación?

Muy malo, Malo, Moderado, Bueno, Muy bueno.

Q9. ¿Está usted familiarizado con conceptos de marcos de referencia de gobernanza de TI como: COBIT, ITIL, ISO, BSC o PMBOK? Por favor marque.

COBIT, ITIL, ISO, BSC, PMBOK, Ninguno.

Q10. ¿Cómo describe su conocimiento relacionado con los marcos de referencia de gobernanza de TI (COBIT, ITIL, ISO, BSC o PMBOK)?

Muy malo, Malo, Moderado, Bueno, Muy bueno.

Q11. ¿Posee alguna(s) de la(s) siguiente(s) certificación(es) de la industria tales como: ITIL, COBIT, BSC, PMP, CISA, CISPP, etc.?

COBIT, ITIL, BSC, PMP, CISA, CISPP, Ninguna,
 Otra

Si respondió “otra”, por favor, especifique. _____.

Parte III. DETALLES ORGANIZACIONALES

Q12. ¿En qué provincia está localizado su lugar de trabajo?

Q13. ¿En qué ciudad está localizado su lugar de trabajo?

Q14. Según su criterio, el Consejo Directivo de la institución...

- Generalmente promueve el mejoramiento de las capacidades tecnológicas de la organización.
- Es neutral con el mejoramiento de las capacidades tecnológicas de la organización.
- Se opone con el mejoramiento de las capacidades tecnológicas de la organización.
- Otros – No estoy seguro.

Q15. ¿Cuál es el presupuesto anual destinado a TI en la unidad organizacional a la que usted pertenece (USD)?

- Menor a 10.000, entre 10.000 y 20.000, entre 20.000 y 50.000,
- entre 50.000 y 100.000, Entre 100.000 y 500.000 Mayor a 500.000

Parte IV. DETALLES RELACIONADOS CON GOBERNANZA DE TI

Según el IT Governance Institute (ITGI), la gobernanza de TI es la que asegura que la información y las tecnologías relacionadas apoyen y habiliten la estrategia de la empresa para alcanzar sus metas. Esto incluye también la gobernanza funcional de la TI, es decir, garantiza que las capacidades de TI se entreguen de una manera eficiente.

Q16. ¿Cuál de estos elementos existen en su lugar de trabajo?

	Ninguno	En progreso	Establecido	No estoy seguro
Políticas de TI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Estándares de TI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Procedimientos de TI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

En una escala de 1 a 5, siendo 1 completamente en desacuerdo y 5 completamente de acuerdo, por favor responda los siguientes enunciados relacionados con:

Utilidad percibida: es el grado en el cual una persona cree que utilizando un marco de referencia lo destacará a él o a su rendimiento en el trabajo.

		Desacuerdo → Acuerdo				
		1	2	3	4	5
Q17	El marco de referencia de gobernanza de TI, mejora mi rendimiento al momento de ejecutar las tareas asignadas.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Q18	Usar el marco de referencia de gobernanza de TI, incrementa mi productividad.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q19	Usar el marco de referencia de gobernanza de TI, aumenta mi efectividad laboral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Expectativa de esfuerzo: identifica el grado de facilidad asociado al uso del marco de referencia

		Desacuerdo → Acuerdo				
		1	2	3	4	5
Q20	Encuentro que el marco de referencia de gobernanza de TI es fácil de seguir y entender	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q21	Usar el marco de referencia de gobernanza de TI no requiere de mi mayor esfuerzo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Condiciones facilitadoras: es el grado en que una persona considera que dispone de infraestructura técnica y organizativa de apoyo para el uso de las TICs

		Desacuerdo → Acuerdo				
		1	2	3	4	5
Q22	Seguir con lo establecido en el marco de referencia de gobernanza de TI me facilita interactuar con diferentes áreas de tecnología tales como la Dirección Nacional de Tecnología o las oficinas de Tecnología de las unidades administrativas y operativas a nivel nacional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q23	El marco de referencia de gobernanza de TI me facilita entender la estructura, componentes y procedimientos de la Dirección Nacional de Tecnología y de las oficinas de tecnología de las unidades administrativas y operativas a nivel nacional	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q24	El marco de referencia de gobernanza de TI es apropiado para el desarrollo de su trabajo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Norma subjetiva: es un razonamiento normativo que pone de manifiesto la presión social percibida por la persona que va a realizar la conducta hacia la ejecución o no de dicha conducta

		Desacuerdo → Acuerdo				
		1	2	3	4	5
Q25	El Consejo Directivo apoya el uso del marco de referencia de gobernanza de TI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q26	En general, la Institución apoya el uso del marco de referencia de gobernanza de TI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Confianza: entiéndase como la certeza que percibe un individuo de que las expectativas que posee sobre el comportamiento de la otra parte o sobre la tecnología serán satisfechas.

		Desacuerdo → Acuerdo				
		1	2	3	4	5
Q27	Yo creo que los Directores institucionales son confiables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q28	Yo creo que las acciones de los Directores ayudan al mejoramiento del marco de referencia de gobernanza de TI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q29	Yo tengo confianza en los estándares utilizados en el desarrollo del marco de referencia de gobernanza de TI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q30	Yo siento que la descripción de los procesos de gobierno y administración proporcionada por el marco de referencia de gobernanza de TI es confiable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q31	Yo creo que la tecnología utilizada por la Dirección Nacional de Tecnología y oficinas de tecnología de las unidades administrativas y operativas a nivel nacional, es la más apropiada para proveer servicios de tecnología	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q32	Yo creo que el marco de referencia de gobernanza de TI es tan efectivo como para lo que fue diseñado.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Experiencia de uso: es la experiencia que generamos y acumulamos a partir de la interacción que tenemos con la tecnología.

		Desacuerdo → Acuerdo				
		1	2	3	4	5
Q33	Yo manejo el marco de referencia de gobernanza de TI de una manera natural	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q34	Yo creo que mi experiencia en el uso del marco de trabajo de referencia de TI es útil para el desarrollo de mis tareas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q35	Yo creo que mi experiencia en el uso del marco de referencia de gobernanza de TI reduce el esfuerzo en el desarrollo de mis tareas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Rotación de personal: el total de trabajadores que se retiran e incorporan, en relación al total de empleados de una organización en un determinado período de tiempo.

		Desacuerdo → Acuerdo				
		1	2	3	4	5
Q36	Yo creo que la alta rotación de los Directores, afecta al uso del marco de referencia de gobernanza de TI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q37	Yo creo que la alta rotación del personal informático, afecta al uso del marco de referencia de gobernanza de TI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Intensión de uso: Intensión individual de usar una tecnología en particular que directamente afecta a su uso real

		Desacuerdo → Acuerdo				
		1	2	3	4	5
Q38	Yo tengo la intención de usar el marco de referencia de gobernanza de TI en los próximos 12 meses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q39	Yo predigo que usaré el marco de referencia de gobernanza de TI en los próximos 12 meses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q40	Yo usaré el marco de referencia de gobernanza de TI en los próximos 12 meses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Abstract (Korean)

에콰도르 공공기관의 IT 거버넌스 프레임워크 수용:

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공공기관 및 민간 기관에서의 정보시스템, 특히 IT 거버넌스 모델 적용은 최근 몇 년간 그들의 성공에 필수적인 요소로 여겨졌다. IT 거버넌스 모델의 올바른 구현은 IT 투자가 제도적 목표 달성을 지원한다는 것을 보장하기 때문이다.

또한 IT 거버넌스는 ICT 관련 부서에 적용될 정책의 개발 및 적용을 위해 참조할 수 있는 프레임 워크를 제공하며 이를 통해 시민들에게 다양한 메커니즘으로 제공되는 효율적이며 투명하고, 관료화 되지 않은 서비스 전달에 반영 될 수 있다.

또한 IT 거버넌스 프레임워크는 전자정부의 목표를 달성하고 디지털 격차(Digital Divide)를 줄이는 데에 필요하다. 현재 글로벌 전자정부 상태에 관한 보고서에 따르면 에콰도르는 중간 정도의 수준을 유지하고 있다. 이 수준은 에콰도르 정부가 주도적으로 수행하는 투자 및 계획에 따른 결과가 아니라 국가 전자정부 계획을 통해 사회를 구성하는 다양한 개인들 간의 상호작용 개발 메커니즘 및 도구로서 기술을 활용하려고 시도한 것이다.

본 연구는 에콰도르 사회 보장 기관(Ecuadorian Social Security Institute)을 연구 대상으로 삼았다. 에콰도르 사회 보장 기관은 에콰도르 국가 내에서 가장 중요한 전자정부 서비스 제공 업체이기 때문이다. 이들의 업적 혹은 실패는 에콰도르 국가 전체의 전자정부 지수에 큰 영향을 미친다.

다양한 연구들이 새로운 정보 시스템의 구현 혹은 기술의 핵심 성공 요인을 식별할 때에 기술 수용 모델(TAM) 혹은 기술 수용 및 사용 통합

이론(UTAUT)을 활용하였다. 이전 연구 결과에 따르면 이러한 모형들이 정보 시스템의 성공적인 구현에 필요한 핵심 요소를 결정하는데에 유용하였으며 이를 통해 본 연구 또한 이러한 방법론을 활용하게 되었다.

따라서 본 연구는 TAM과 UTAUT를 활용한 수정된 수용 모델을 개발 및 적용하였다. 데이터는 에콰도르 사회보장 기관에서 IT 리더십 및 관리를 담당하는 부서에서 설문조사를 통해 수집되었으며 약 200건의 데이터가 활용되었다. 수집된 데이터를 통해 구조 방정식 모델링(SEM)을 활용하여 정량 분석이 실시되었다.

본 연구 결과를 통해 IT 거버넌스 프레임워크의 수용을 향상시키는 수용 요소의 영향 정도를 결정할 수 있으며, 이를 위한 정책 및 규제의 개발을 가능하게 하는 유의미한 함의를 도출하였다.

키워드: IT 거버넌스, IT 거버넌스 수용, 기술 수용 및 사용 통합 이론, 공공기관 내 IT 거버넌스, 에콰도르

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