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**UNIVERSIDAD DE VALLADOLID**

**ESCUELA DE INGENIERIAS INDUSTRIALES**

**Grado en Ingeniería en Organización Industrial**

**EL IMPACTO DE LA CULTURA EN EL GOBIERNO DE LAS TI:  
REVISIÓN BIBLIOGRÁFICA**

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**TFG REALIZADO EN PROGRAMA DE INTERCAMBIO**

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**TÍTULO: Culture's Impact on IT Governance: Literature Review**

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## RESUMEN

Las tecnologías de la información (TI) se han convertido en nuevo paradigma para las organizaciones cambiando la forma de tomar sus decisiones y comunicarse con sus clientes. Una de las mayores preocupaciones de las empresas es el concepto del gobierno de las TI que, a pesar de ser considerado como una estrategia más, en los últimos años se ha convertido en una parte necesaria de la estructura de la empresa. Este paper estudia el impacto de la cultura en el gobierno de las TI a través de una revisión bibliográfica que incluye el estudio de modelos en diversos países con diferentes culturas. Los resultados están clasificados como la forma en que la cultura, a través de sus diferentes niveles (nacional, organizacional y ambas), afecta los elementos del gobierno de las TI: estructuras, procesos y mecanismos relacionales.

**Keywords:** gobierno de las TI, cultura nacional, cultura organizacional, mecanismos de integración, alineamiento de las TI con la estrategia del negocio

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# TECHNISCHE UNIVERSITÄT DRESDEN

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Professur für Wirtschaftsinformatik,  
insb. Informationssysteme in Industrie und Handel

## *Culture's Impact on IT Governance: Literature Review*

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zur Erlangung des akademischen Grades

“Industrial Engineering”

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## List of abbreviations

APO	Align, Plan and Organize
ASS	Assertiveness
BAI	Build, Acquire and Implement
BIA / BITA	Business and IT Alignment
BIS	Bank for International Settlements
BITA-OCIV	BITA Organizational Culture Integrated View
BSC	Balanced Score Card
CEO	Chief Executive Officer
CIO	Chief Information Officer
COBIT	Control Objectives for Information and related Technology
DSS	Deliver, Service and Support
EDM	Evaluate, Direct and Monitor
FO	Future Orientation
GC	In-Group Collectivism
GE	Gender Egalitarianism
GLOBE	Global Leadership and Organizational Behaviour Effectiveness
HO	Humane Orientation
IBM	International Business Machines
IDV	Individualism versus Collectivism
In. C	Institutional Collectivism
ISACA	Information Systems and Audit Control Association
IT	Information Technology
ITE	IT Effectiveness
ITG	Information Technology Governance
IVR	Indulgence vs Restraint
LAM	Luftman Alignment Maturity Model
LTO	Long-Term vs Short-Term Orientation
MAS	Masculinity versus Femininity
MEA	Monitor, Evaluate and Assess
OC	Organizational Culture

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OCAI	Organizational Culture Assessment Instrument
PD	Power Distance
PDI	Power Distance Index
PO	Performance Orientation
QoS	Quality of Service
RBV	Resource-Based View
SAM	Strategic Alignment Model
SAMM	Strategic Alignment Maturity Model
SIMNET	Society for Information Management
SISP	Strategic Information Systems Planning
SLA	Service Level Agreement
UA	Uncertainty Avoidance
UAI	Uncertainty Avoidance Index

# 1. Introduction

Information Technology (IT) has become a new paradigm for organizations changing the way they make decisions and communicate with their customers. The concept, which is acquiring increasingly more relevance, appeared in 1993 trying to find a relationship between the organization's strategic and business objectives and IT management within an organization. IT governance (ITG) has often been identified as a strategy, rather than an integral part of the organization's structure in facilitating the exploitation of information-based competitive advantage to obtain benefits (Ali et al., 2009). In this context, ITG has ceased to be a separate function and it has converted into a critical part.

Globalization has obligated companies to respond to the changing environment in order to be able to compete in business and to achieve the competitive advantage which differentiates from their competitors (Schein, 2010). Thus, managers have been propelled to focus on IT, making significant investments in IT resources. However, this does not involve gaining value. Managers control IT investment to minimize strategic risk, but successful organizations have an effective alignment of IT and business (BITA).

According to a study made in 2017 by Simnet (Society for Information Management), the second organizations' most important IT management issue was the alignment of IT and/or with the business (BITA) with 37,3%. Security/cybersecurity/privacy (41,9%) was situated in the first position. However, in 2016, BITA was the first issue for organizations. Both years, in the list of IT leaders' most important concerns, BITA was found in the fourth position, after security, the credibility of IT and IT talent/skill shortage/retention.

The dependence of organizations on IT for their business has grown in the last decades making managers to study the relevant factors that may have an influence on IT. Therefore, researchers have studied different factors that contribute to the success of IT governance. According to Peterson (2004), ITG includes a lot of complex firm-specific coordination and social activities; which is inimitable, untradeable, timely dependent, and socially complex, thus can be seen as distinctive capabilities. IT oversees the support of the business operations, regarding providing the right information, at the right time and to the right person (Satidularn et al., 2011). But according to Peterson (2004), not only these distinctive capabilities but also social intervention determines the performance of ITG. Not knowing the influence of culture on ITG could be a risk in terms of bad consequences rather than planned objectives.

According to Leider & Kayworth (2006), the outcomes from IT use are different between countries because of the interaction between national and IT. The influence of culture to business and IT alignment has propelled the researchers to make various studies because culture cannot be separated from human factors as the factor of business actors and users of IT (Senja & Pharmasetiawan, 2017). In fact, Cameron and Quinn (2011) indicated that the most successful companies had a strong and distinctive culture.

The field of ITG has been studied by many authors because of the many research opportunities, however, the influence of culture on ITG is still scarce in the literature. Thus, this paper focuses on:

- *RQ1: How is national culture's impact on ITG?*
- *RQ2: How is the relationship between both organizational culture and national culture and ITG?*

This paper aims to answer these research questions through a literature review of the relationships between culture (organizational, national and both levels) and IT governance studying various cases presented in different countries. Chapter 2 indicates the theoretical background explaining the concept of IT governance and the concept of culture. Chapter 3 deals with the review methodology including searching for and analyzing the literature, whereas chapter 4 shows the literature findings. Finally, chapter 5 shows the conclusions and limitations of the study.

## 2. Theoretical background

This chapter begins with the concept of IT governance including various definitions, the objectives, various ITG models, the focus areas and the elements of ITG. The second part deals with the concept of culture including the definition and the levels of culture, focusing on national and organizational culture.

### 2.1. IT Governance

#### 2.1.1. Concept of IT Governance

Researchers have presented various definitions of IT governance based on their investigations and best practices:

- *“IT governance is the responsibility of the board of directors and executive management. It is an integral part of enterprise governance and consists of the leadership and organizational structures and processes that ensure that the organization’s IT sustains and extends the organization’s strategies and objectives”* (IT Governance Institute, 2003).
- *“IT governance is the organizational capacity exercised by the board, executive management and IT management to control the formulation and implementation of IT strategy and in this way ensure the fusion of business and IT”* (W. Van Grembergen, 2003).
- *“IT governance: Specifying the decision rights and accountability framework to encourage desirable behaviour in the use of IT”* (Weill & Ross, 2004).
- *“IT governance is the selection and use of relationships such as strategic alliances or joint ventures to obtain key IT competencies. This is analogous to business governance, which involves make vs buy choices in business strategy. Such choices cover a complex array of interfirm relationships, such as strategic alliances, joint ventures, marketing exchange, and technology licensing”* (J. N. Luftman, 1996).
- *“IT governance is mainly about the IT decision-making: the preparation for, making and implementation of decision regarding goals, processes, people, and technology on a tactical and strategic level”* (Simonsson, Johnson, & D, 2005).

Despite the differences in some respects, these definitions share the relationship between business and IT. Van Grembergen (2003) indicated that IT management should be involved in IT governance processes. There is not a clear distinction between the concept of governance and the concept of management in the literature, as illustrated in Figure 1. IT management is responsible

for present IT internal operations (business) whereas IT governance includes internal and external operations (customers) having a wider time dimension.

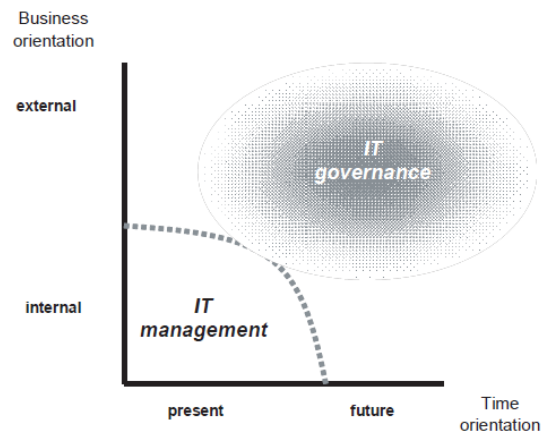


Figure 1. IT management versus IT governance  
(Van Grembergen, 2001)

Sohal and Fitzpatrick (2002) supported Van Grembergen (2001) with their definitions of IT governance and IT management. Governance is the “*creation of a setting in which others can manage effectively*” and is related to administration: coordinating or planning; whereas management is “*about the making of operating decisions*” and is related to the performance of functional work: manufacturing or sales. Shaw et al. (2013) indicated that with a higher level of IT management, an organization will obtain a higher level of IT governance making it more competitive. In this way, the increasing use of IT has become fundamental to the economic development of organizations. IT governance takes care of the enterprise tangible resources (inventory, budget, etc) and intangible resources (knowledge, reputation, patents, etc), thus knowing the potential of IT is the key to success and differentiate with the competitors. Two major publications showed the importance of governance, whose management can extend to IT to investigate the enterprise’s reliance on IT:

- *The Report of the Committee on the Financial Aspects of Corporate Governance*, Governance & Cadbury (1992).
- The Bank for International Settlements (BIS), in *Enhancing Corporate Governance in Banking Organisations* (1999).

### IT Governance vs Corporate Governance

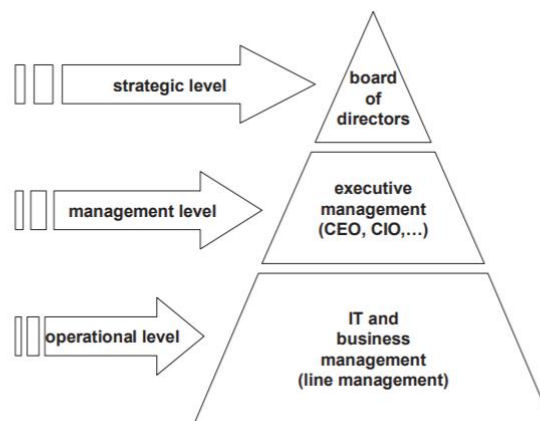
In this section, as well as in the previous part, there are differences between the concepts of corporate governance and IT governance. According to the definition of the IT Governance Institute (2003), IT governance is an integral part of the enterprise governance whereas corporate or enterprise governance is “*the system through which the organization is controlled, monitored and organized*” (Wim Van Grembergen & Haes, 2009).

Business enterprises depend on information systems, therefore consequently corporate governance should be related to IT governance. This relation is more evident translating corporate governance questions into IT governance questions, as illustrated in Table 1.

<i>Corporate governance</i>	<i>IT governance</i>
How do suppliers of finance get managers to return some of the profits to them?	How do the board and executive management get their CIO and IT organization to return some business value to them?
How do suppliers of finance make sure that managers do not steal the capital they supply or invest it in bad projects?	How do the board and executive management make sure that their CIO and IT organizations do not steal the capital they supply or invest it in bad projects?
How do suppliers of finance control managers?	How do the board and executive management control their CIO and IT organization?

*Table 1. Corporate governance vs IT governance (Wim Van Grembergen & Haes, 2009) adapted from Shleifer & Vishny (1997)*

Van Grembergen (2001) exposed that both governances should not be considered as different disciplines and should be part of an overall governance structure which allows the organization to achieve a competitive advantage. Moreover, this structure needs a common language and a shared commitment to success (IT Governance Institute, 2003). Van Grembergen's definition (2003) points ITG is located at different levels in the organization: strategic, management and operational (see Figure 2) and all of them need to be involved in the ITG process understanding their roles within the structure.



*Figure 2. Three layers of IT governance responsibility (W. Van Grembergen, 2003)*

## 2.1.2. Objectives of IT Governance

According to Alkhalidi et al. (2017), the main objective of ITG is to manage the operations, ensuring performance and benefits are maximized, and achieving the advantage of IT investment opportunities. Previously, the IT Governance Institute (2003) defined the following objectives of IT governance:



- Alignment of IT with the organization and realization of the promised benefits.
- Use of IT to enable the enterprise by exploiting opportunities and maximizing benefits.
- Responsible use of IT resources.
- Appropriate management of IT-related risks.

### 2.1.3. Focus areas of IT Governance

*“Fundamentally, IT governance is concerned about two things: IT’s delivery of value to the business and mitigation of IT risks. The first is driven by strategic alignment of IT with the business. The second is driven by embedding accountability into the enterprise. Both need to be supported by adequate resources and measured to ensure that the results are obtained.”* (IT Governance Institute, 2003). Market analysts have revealed that top issues for IT management have moved from the technology to the management related areas, and these issues are assigned to IT governance areas. The five focus areas for IT governance, driven by stakeholder value, are: value delivery, risk management, resource measurement, performance measurement and strategic alignment (IT Governance Institute, 2003).

- Value delivery. This area consists in optimizing the costs and checking the value of the IT. The elements of this area, such as competitive advantage, customer satisfaction or profitability, are complicated to measure, however, managers must control the costs and the return of the investment for the effective IT value delivery.
- Risk management. Not only financial risk, but risk management is also a fundamental part that the board should supervise. Every risk needs to be analyzed because the knowledge of risk will influence strategic decisions for the better.
- Resource management. It is the set of factors or actives that has an organization to carry on his competitive strategy. Resource management is the area of optimizing knowledge and IT infrastructure.
- Performance measurement, which includes tracking project delivery and monitoring IT services.
- Strategic alignment. This area of IT governance focuses on aligning with business and collaborative solutions.

Hardy (2003) summarised what are the key committee responsibilities for these areas, and how the committee can achieve positive results, as illustrated in Figure 3.

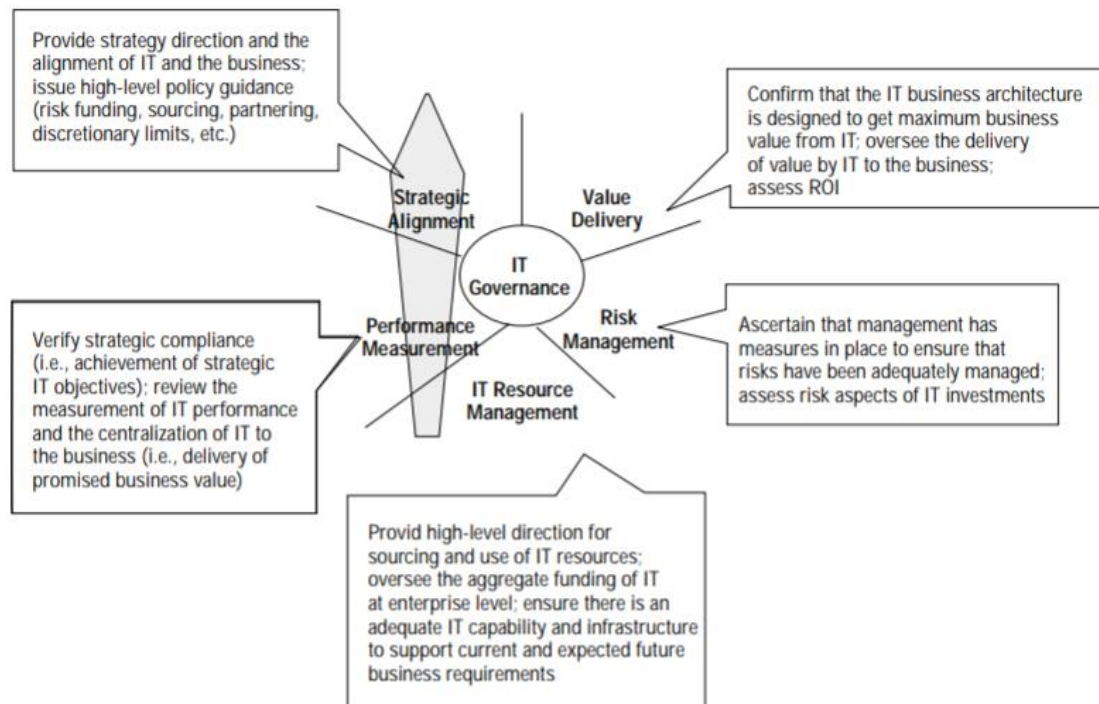


Figure 3. Responsibilities of the focus areas of IT governance (Hardy, 2003)

## Strategic alignment

One of the main problems of organizations is the concept of strategic or business and IT alignment (BITA), which IT Governance Institute (2003) defined as “*the harmony between enterprise’s investment in IT and its strategic objectives and the capabilities necessary to deliver business value*”. For IT governance, alignment involves integration between IT operations and the current enterprise operations. Isal et al. (2016) supported that indicating that “*a flexible IT infrastructure is still important in fostering alignment between IT and business strategy*”.

The link of IT with business is basic for the creation of value of the organization. In a future success perspective, organizations search for mature strategic alignment process in order to achieve their goals. Many companies with huge IT investment do not achieve their competitive advantage because of the absence of alignment between business and IT (Riandari & Pharmasetiawan, 2017). Henderson & Venkatraman (1993) were the first to indicate this interrelationship with the Strategic Alignment Model (SAM). The model proposes that the strategic alignment consists of two building blocks: “*strategic fit*” and “*functional integration*” (see Figure 4). Strategic fit divided IT strategy in the external domain (how is the situation of the organization in the IT marketplace) and the internal domain (how the IT resources should be managed). Instead, functional integration is composed of strategic (the link between business and IT strategy) and operational (the link between organizational and IT infrastructure).

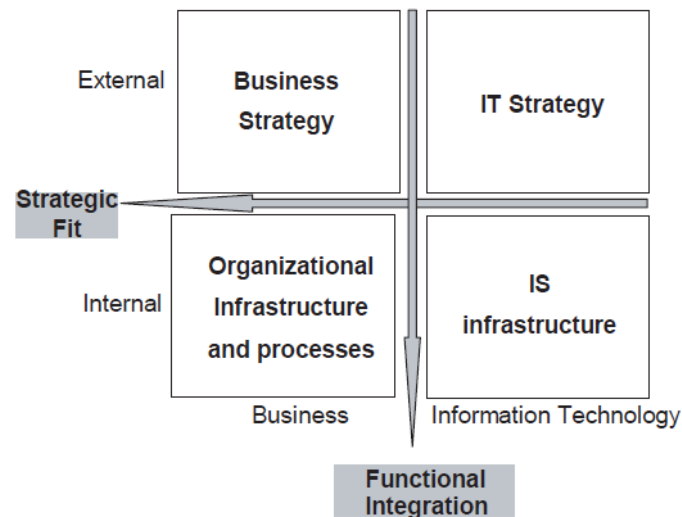


Figure 4. Strategic alignment model (Henderson & Venkatraman, 1993)

Many authors have supported this model and used for their research in the literature. Smaczny (2001) and Silvius et al. (2013) studied the fusion between business and IT whereas Grembergen et al. (2007) focused on linking business goals to IT goals. Luftman (2000) enlarged this idea of strategic alignment developing a maturity model, Strategic Alignment Maturity Model (SAMM), where six criteria describe the maturity of the alignment of business and IT (see Table 2).

<i>BIA maturity variable</i>	<i>Description</i>
Communication	How well does the technical and business staff understand each other? Do they connect easily and frequently? Does the company communicate effectively with consultants, vendors and partners? Does it disseminate organizational learning internally?
Value measurement	How well does the company measure its own performance and the value of its projects? After projects are completed, do they evaluate what went right and what went wrong? Do they improve the internal processes so that the next project will be better?
Governance	Do the projects that are undertaken flow from an understanding of the business strategy? Do they support that strategy? Does the organization have transparency and accountability for the outcomes of IT projects?
Partnership	To what extent have business and IT departments forged true partnerships based on mutual trust and sharing risks and rewards?
Scope and Architecture	To what extent has technology evolved to become more than just business support? How has it helped the business to grow, compete and profit?
Skills	Does the staff have the skills needed to be effective? How well does the technical staff understand business drivers and speak the language of the business? How well does the business staff understand relevant technology concepts?

Table 2. BITA maturity variables (A. J. G. Silvius, Haes, & Grembergen, 2009) adapted from J. Luftman (2000)

### 2.1.4. IT Governance Models

Wim Van Grembergen & Haes (2009) indicated that the effectiveness of ITG depends on how the IT function is organized and where the IT decision-making authority is located within the organization. Sambamurthy and Zmud (1999) studied the differences between organizations and the selected model of IT governance. They indicated three arrangements of ITG during the seventies to nineties: centralized, decentralized and federal.

- Centralized IT governance. The central corporate governance oversees the decision rights for governing the IT functions in all the organization.
- Decentralized IT governance. The independent business units have the capacity and the authority for making decisions for their relevant IT activities.
- Federal IT governance. The authority is shared by the corporate governance and the business units depending on the tasks. Being a hybrid between centralized and decentralized IT governance, this design tries to achieve the best of both models (see Figure 5).

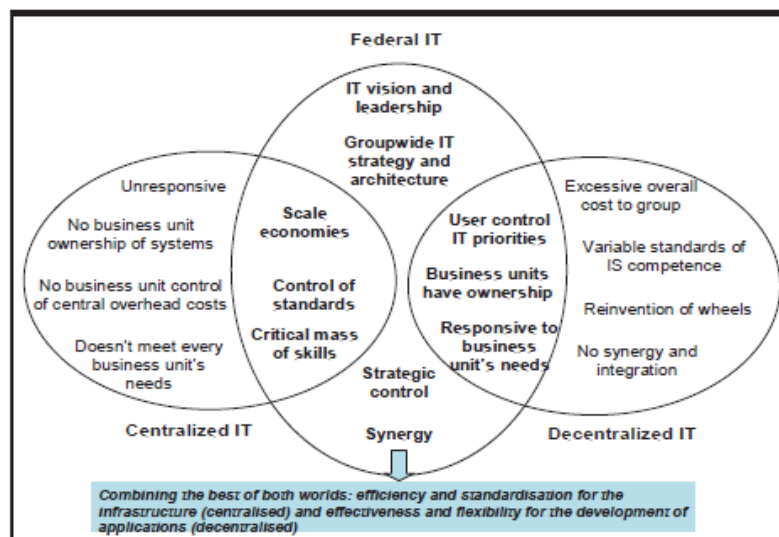


Figure 5. The federal IT governance: “The best of both worlds” (Wim Van Grembergen & Haes, 2009)

In the literature, authors have created more ITG models besides the traditional centralized, decentralized and federal models. Weill & Ross (2004) studied the way organizations make their decisions in five key interrelated IT domains: IT principles, IT infrastructure, IT architecture, business applications needs, and IT investments and prioritization. They defined six IT styles establishing who has decision rights within the organization. Urbach et al. (2013) created a model that explains how IT governance should be designed in order to be successful and what the organizational impact of successful IT governance will be analyzing success determinants of IT governance. The model describes how the various observed constructs are interrelated and how they contribute to or result from successful IT governance (see Figure 6).

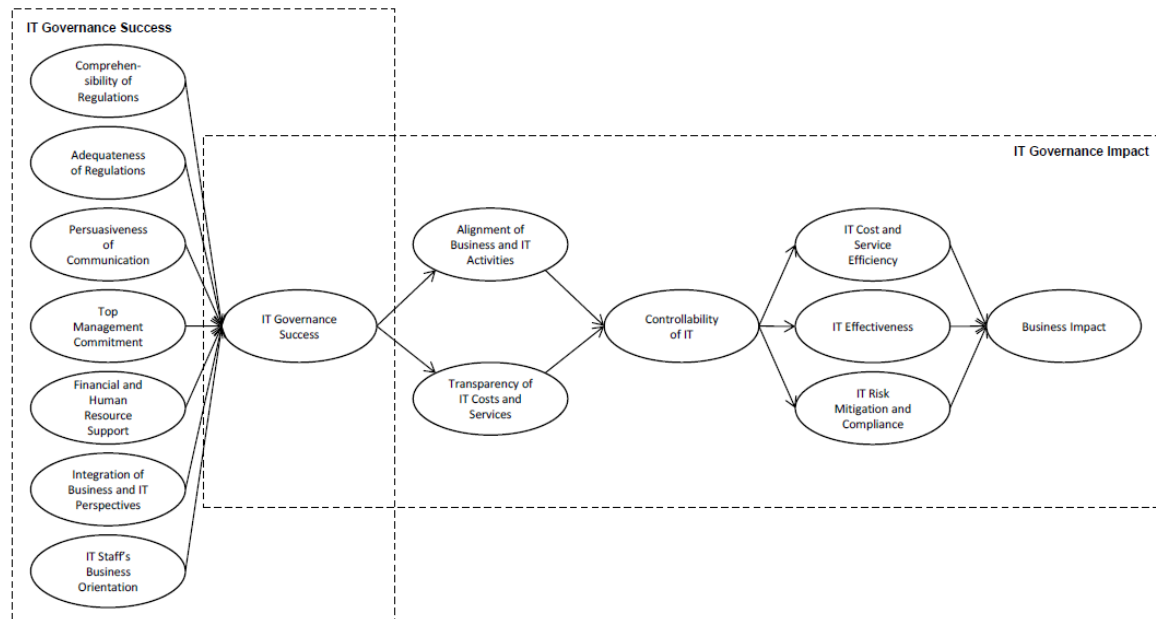


Figure 6. Model of IT Governance Success and Impact (Urbach et al., 2013)

### 2.1.5. Elements of IT Governance

Van Grembergen (2001) defined IT governance as the integration of strategies and tactics, suggesting that can be developed through a combination of specific structures, processes, and mechanisms. In his next research with Haes (2008) created a framework based on three components of IT governance: structures, processes and relational mechanisms (Figure 7) and defined IT governance as “an integral part of enterprise governance and addresses the definition and implementation of processes, structures, and relational mechanisms in the organization that enable both business and IT people to execute their responsibilities in support of business/IT alignment”. Moreover, the elements of ITG need to be interrelated and cannot be understood separately.

In the literature, ITG capabilities, integration or coordination mechanisms are the terms used to include these components. According to Peterson (2004), Table 3 defines the three types of ITG capabilities.

Capability	Description	Key mechanism
<b>Structural</b> ITG capability (SC)	Structural capability takes the shape of formal positions and (integrator) roles, and/or formal groups and (management) team arrangements	Formal position and role; committees and councils
<b>Process</b> ITG capability (PC)	This capability is the formalization and institutionalization of strategic IT decision-making or IT monitoring procedures	Strategic decision-making and monitoring
<b>Relational</b> ITG capability (RC)	The key to relational capability is the voluntary and collaborative behavior of different stakeholders to clarify differences and solve problems in order to find interactive solutions	Business-IT pattern Shared learning

Table 3. ITG capabilities Zhong et al. (2012b) adapted from Peterson (2004)

Satidularn et al. (2011) summarized the ITG mechanisms following the classification introduced by Van Grembergen (2001) in terms of structures, processes, and relational mechanisms (see Key: \*Key person for IT decision input / Key IT decision maker

Table 4).

<i>Structures</i>	Corporate-level ITG committee (CITGC); business unit-level ITG committees (BUITGC); clearly defined roles and responsibilities of top management; IT principles (CITGC/CITGC)*; IT architecture (corporate IT/CITGC)*; IT infrastructure (corporate IT/CITGC)*; business application needs (business unit/BUITGC + CITGC)*; IT investment (business unit + corporate IT/CITGC + Executive Committee + Board of Directors)*
<i>Processes</i>	IT master plan; IT portfolio management; online IT budgeting system; online risk management system; online internal control system; IT performance variances analysis; flexible IT policy by business units; IT general controls; IT application controls; ISO/IEC27001; IT project management; Capability Maturity Model Integration; service level agreements; ITG auditing
<i>Relational Mechanisms</i>	Intranet; internal memos; newsletters; top management announcements; annual HR development programs; e-learning system; ITG workshop/training programs; annual meeting of administrators, programmers, and analysts; meeting of ITG committees; leading by example

Key: \*Key person for IT decision input / Key IT decision maker

Table 4. Implementation of ITG mechanisms (Satidularn et al., 2011)

## IT Governance Structures

The structure of Grembergen & Haes (2008) consists of:

1. Roles and responsibilities, indicated in more detail in Appendix E of IT Governance Institute (2003) covering the five focus areas for IT governance: value delivery, risk management, resource measurement, performance measurement, and strategic alignment. It is important for a successful IT governance that the roles and responsibilities be defined without ambiguities (W. van Grembergen & Haes, 2008).
2. IT organization structure, explained through the three main models of IT governance: centralized, decentralized and federal (Sambamurthy & Zmud, 1999).
3. Chief Information Officer (CIO) on Board, who needs to be aligned with the Chief Executive Officer (CEO) and be accepted in the executive board at the top-level management.
4. IT strategy committee and IT steering committee. According to the definition of the IT Governance Institute, IT governance is an integral part of enterprise governance. The control of the tasks is executed through an IT strategy committee composed of board and non-board members and the implementation of the IT strategy is the responsibility of executive management assisted by one or more steering committees (Wim Van Grembergen & Haes, 2009). Table 1 of Appendix F of the IT Governance Institute (2003) shows a comparison of the typical responsibilities of both committees.

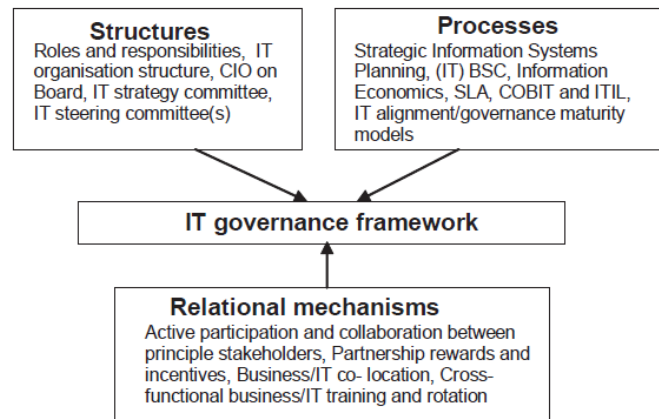


Figure 7. Components of IT governance (W. van Grembergen & Haes, 2008)

## IT Governance Processes

As it was mentioned in the section of the focus areas of IT governance, alignment involves the integration between IT operations or processes and the current enterprise operations. There are some tools used for processes:

- Strategic Information Systems Planning (SISP), defined as “*the process of deciding the objectives for organizational computing and identifying potential computer applications which the organization should implement*” by Lederer and Sethi (1988). SISP has four components: aligning IT with business goals, exploiting IT for competitive advantage, directing efficient and effective management of IT resources, and developing technology policies and architectures (Earl,1993).
- Balanced Score Card (BSC). According to the IT Governance Institute (2003), IT BSC is one of the most effective tools to achieve IT and business alignment. The objectives are: “*to establish a vehicle for management reporting to the board, to foster consensus among key stakeholders about IT’s strategic aims, to demonstrate the effectiveness and added value of IT and to communicate about IT’s performance, risks and capabilities*”.
- Information Economics and Portfolio Management, a method to prioritize and select projects.
- Service Level Agreement (SLA), defined as “*a written contract between a service provider of a service and the customer of the service*” (Wim Van Grembergen & Haes, 2009).
- Control Objectives for Information and related Technology (COBIT), defined by the Information Systems Audit and Control Association (ISACA) as “*an IT governance framework and supporting toolset that allows managers to bridge the gap between control requirements, technical issues, and business risks. COBIT enables clear policy development and good practice for IT control throughout organizations.*”

*COBIT emphasizes regulatory compliance, helps organizations to increase the value attained from IT, enables alignment and simplifies implementation of the enterprises' IT governance and control framework". ISACA suggested that an organization should implement both governance and management processes, thus there are governance and management key areas, as illustrated by Prinz (2015) in Figure 8.*

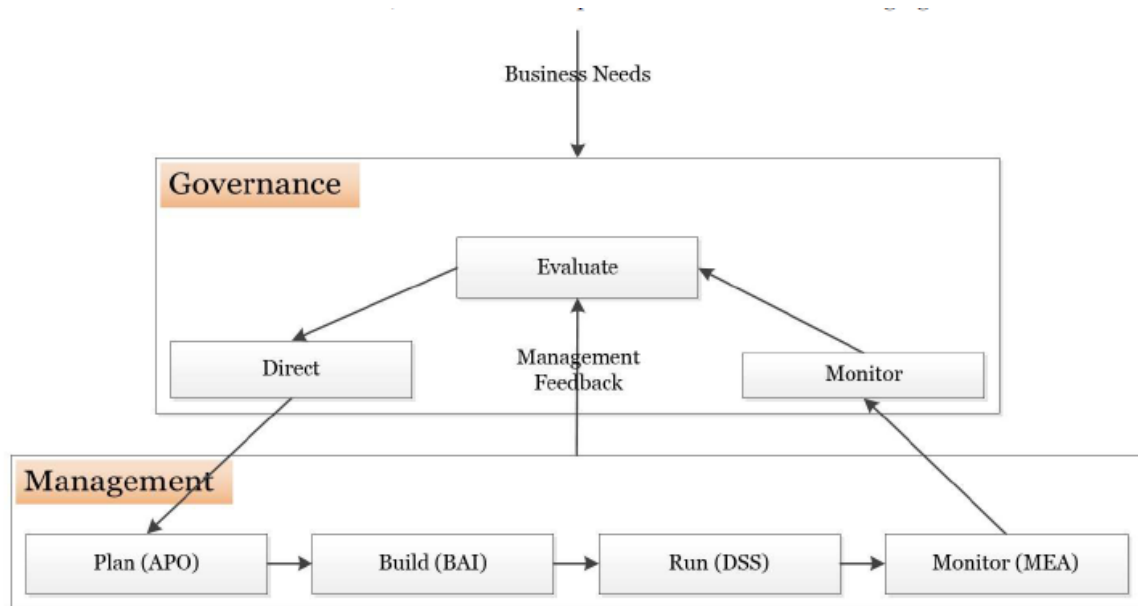


Figure 8. COBIT 5 Governance and Management Key Areas (Prinz, 2015)

COBIT 5 includes a total of 37 processes organized into five domains and divided into two key areas:

- **Governance:** formed by one domain: Evaluate, Direct, and Monitor (EDM), contains the processes that define the evaluation, direction and monitoring specific to the area of governance.
- **Management:** formed by four domains:
  - Align, Plan and Organize (APO).
  - Build, Acquire and Implement (BAI).
  - Deliver, Service and Support (DSS).
  - Monitor, Evaluate and Assess (MEA).

### IT Governance Relational Mechanisms

Relational mechanisms are responsible for the coordination between business and IT departments including the two-way communication and collaboration. According to Luftman (2002), an organization could have all ITG structures and processes but not work out because business and IT are not working together. Organizations need to facilitate the sharing and the management of knowledge by using mechanisms in order to success (Wim Van Grembergen & Haes, 2009).

In this context, Reich & Benbasat (2000) developed the concept of “*social capital*” which describes the relationships between the employees in different departments that make organizations work effectively. These authors investigated the impact of “*shared domain*



*knowledge*”, which is defined as the actual amount of IT experience among the business executives and the actual amount of business experience among the IT executives.

### **2.1.6. IT Governance and culture**

The influence of different factors in the IT governance framework has been studied by many authors in the literature. For instance, Weill & Ross (2004) explained the impact of major factors including strategic and performance goals, organizational structure, experience with governance, size and diversity, and the industrial or regional differences.

Pereira and Mira da Silva (2012) studied also the factors that could have an influence on ITG implementation. In their study, they extracted nine determinant factors, being the most relevant culture, structure, industry, and maturity of the organization. They stated that these factors should be included by organizations in order to implement ITG successfully.

Satidularn et al. (2011) analyzed how an organization in Thailand implemented IT governance and the factors that impacted on the effectiveness of it, including organizational culture, ITG standards, and laws and regulations.

Grembergen & Haes (2008) investigated that IT governance is influenced by a unique combination of factors, internal and external to the enterprise. In their research, they focused on the relationship of cultural influences within the alignment between IT and business. Leidner and Keyworth (2006) explained that culture in all levels could influence people and organizations having a significant role in sharing information, communication, and experience.

According to Senja & Pharmasetiawan (2017), the influence of the culture such as national or organizational culture to business and IT alignment, has propelled the researchers to make various studies because culture cannot be separated from human factors as the factor of business actors and users of IT. In fact, the impact of culture (organizational and national) in management involves changes in IT governance implementation in organizations (Hofstede, 1985).

Globalization has allowed people to be more conscious of the differences in culture than ever before (Oliver, G., 2011). Although of these differences, organizations are increasingly focusing on the effect of culture on them. Managers of globally working companies are trying to achieve higher innovation and to be more flexible in order to respond to the changes in business (Schein, 2010). Schein studied some companies where culture was the relevant factor. Cameron and Quinn (2011) supported this idea in their research indicating that most successful companies have a strong and distinctive culture.

## 2.2. Culture

### 2.2.1. Concept of culture

In contrast with the concept of IT governance, which is gaining popularity in the last decades, there are numerous definitions of culture because it has been changing throughout history. At present some of them are:

- “*Set of ways of life and customs, knowledge and degree of artistic, scientific, industrial development, in an era, social group, etc.*” (Real Academia Española).
- “*The arts and other manifestations of human intellectual achievement regarded collectively*” (Oxford Dictionary).
- “*The ideas, customs, and social behaviour of a particular people or society*” (Oxford Dictionary).

Hofstede, an important culture researcher, is the most relevant author when culture is linked with IT topics. In addition, his conceptualization of culture is one of the most used in cultural investigations. In most Western languages the term culture is related to “*civilization*” and its consequences, such as education, art or literature. However, Hofstede declares that this is not the correct way to define culture but as a mental software which has more relationship with sociology and anthropology. In his research, culture was defined as “*the collective programming of the mind that distinguishes the members of one group or category of people from others*” (Hofstede, Hofstede, & Minkov, 2010).

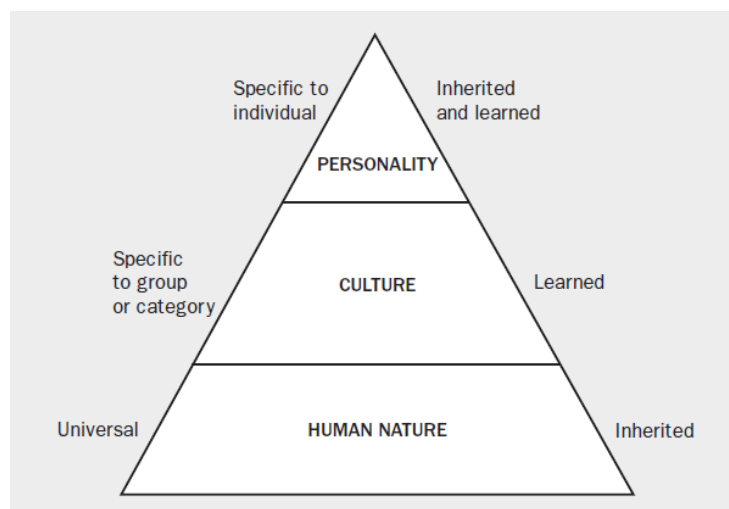


Figure 9. Three levels of uniqueness in mental programming (Hofstede et al., 2010)

Hofstede et al. (2010) indicated that culture is not innate but learned and showed the differences between *personality*, *culture* and *human nature*, as illustrated in Figure 9. *Human nature* is the universal level that, inherited within the genes, all human beings have in common: feel fear, anger, love, etc, however, how one expresses these feelings is modified by *culture*. In contrast, the *personality* is unique for each human being, but it is based on the genes and partly learned. Hofstede (2010) defined *learned* as “*modified by the influence of collective programming (culture) as well as by unique personal experiences*”.

Despite many definitions of culture, according to Hofstede (2010), all of them share five main concepts, illustrated in Figure 10 as the skins of an onion with the most superficial (symbols) and the deepest manifestations of culture (values). These concepts are:

1. **Symbols:** “*words, gestures or pictures that can recognise by those who share the same culture*”.
2. **Heroes:** “*people, real or imaginary, whose behaviour serves as models in a culture*”.
3. **Rituals:** “*collective activities that are technically superfluous to reach ends but, within a culture, are considered socially essential*”.
4. **Practices.** This term encompasses rituals, heroes and symbols. Although they are visible to an outside observer, the cultural meaning of the practices is invisible and interpreted only by the insiders.
5. **Values:** “*broad tendencies to prefer certain states of affairs over others. Values are feelings with an added arrow indicating a plus and a minus side*”. They deal with concepts as good vs evil, moral vs immoral, or rational vs irrational.

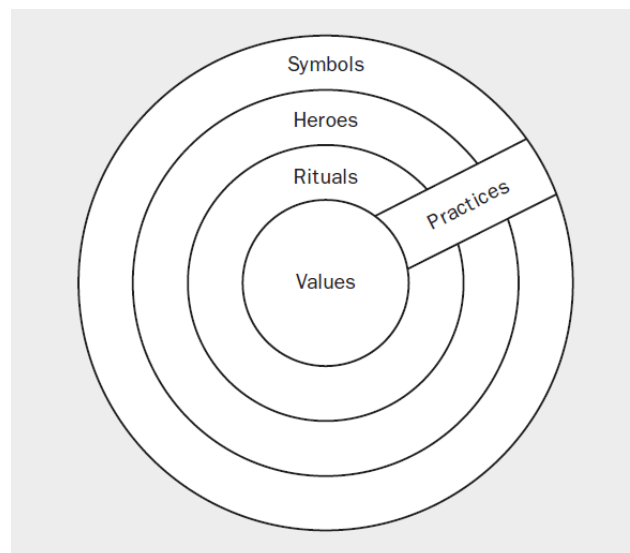


Figure 10. Manifestations of Culture at Different Levels of Depth (Hofstede et al., 2010)

### 2.2.2. Levels of cultures

Hofstede (2010) indicated that a group or category of people has a common mental program that shapes its culture. Everyone is part of different groups at the same time, thus there are also various layers of mental programming corresponding to different levels of culture:

- A national level, according to the country.
- A regional and/or ethnic and/or religious level.
- A gender level, according to the person if was born as a girl or as a boy.
- A generation level, separating grandparents from parents from children.
- A social class level, according to the educational opportunities and occupations.
- An organizational, departmental and/or corporate level, according to the position of an employee in an organization.

#### National culture

As it was mentioned, there are many definitions of the culture because of the changes that took place in the world throughout the history of civilization. One of these changes was the invention of nations in the mid-twentieth century. At present, the Oxford Dictionary defines a *nation* as “*a large body of people united by common descent, history, culture, or language, inhabiting a particular country or territory*”.

Hofstede (2010) explained that nations should not be compared with societies. Societies are developed forms of social organization and, therefore, the concept of a common culture applies to them and not to nations. Although of this, he said that: “*many nations do form historically developed wholes even if they consist of clearly different groups and even if they contain less integrated minorities*”. In fact, Hofstede explained that the reason for the research of national culture was practical and the purpose was to show the cultural factors separating or uniting nations in order to promote cooperation among them. In addition, national culture is not going to change within the next century unless a dramatic crisis (Hofstede, G. 2001).

Hofstede also indicated the three kinds of differences between nations: *identity, values, and institutions*, all of them encompassed by history (see Figure 11). *Identity* tries to answer the question of which group does a person belong to. Although it is not the central part of national culture, it is represented in the practices of Figure 10 and it is related to the language or religion. The identity or identities could be different depending on the culture, for instance, a person could be “a woman” or “an American citizen”. Instead, *values* belong to the “*invisible software of the minds*” and were defined in the above section. The last source, *institutions*, includes the rules, laws, and organizations dealing with family life, business or government.

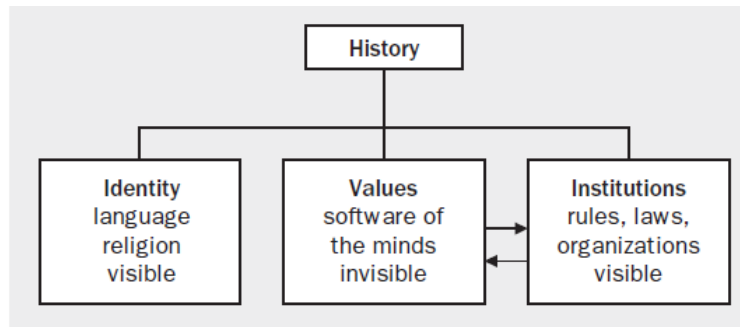


Figure 11. Sources of Differences Between Countries and Groups (Hofstede et al., 2010)

### Dimensions of national culture

In 1980, Hofstede made research studying the values of people in more than fifty countries around the world. The interviewed were employees in a multinational corporation: International Business Machines (IBM) and the results were similar in all respects except nationality. In the IBM research, various common problems were shown, but with solutions differing from country to country, in the following areas (Hofstede et al., 2010):

- *“Social inequality, including the relationship with authority.*
- *The relationship between the individual and the group.*
- *Concepts of masculinity and femininity: the social and emotional implications of having been born as a boy or a girl.*
- *Ways of dealing with uncertainty and ambiguity, which turned out to be related to the control of aggression and the expression of emotions”.*

Based on the national culture differences research made by IBM, in 1980 Hofstede published *Culture’s Consequences* and established a fundamental shift in how culture would be viewed (Bird & Fang, 2009). Hofstede’s impact was at least fourfold:

- 1) *“He successfully narrowed the concept of culture down into simple and measurable components by adopting nation-state/national culture as the basic unit of analysis.*
- 2) *He established cultural values as a central force in shaping managerial behaviour.*
- 3) *He helped sharpen our awareness of cultural differences.*
- 4) *His notion of cultural value frameworks was adopted by others involved in large scale studies”.*

The areas presented in the IBM study defined the dimensions of Hofstede’s four-dimensional model of differences among national cultures. The definition of a *dimension* is an “*aspect of a culture that can be measured relative to other cultures*” (Hofstede et al., 2010). The four dimensions are:

- *Power Distance Index (PDI) can be defined as “the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally. Institutions are the basic elements of society, such as the family, the school, and the community; organizations are the places where people work”.*

A high score of this index implies a large power distance whereas a low score represents a small power distance.

- *Individualism versus Collectivism (IDV)*. “Individualism stands for a preference for a loosely knit social framework in society in which individuals are supposed to take care of themselves and their immediate families only”. The definition of collectivism is: “which stands for a preference for a tightly knit social framework in which individuals can expect their relatives, clan, or other in-group to look after them, in exchange for unquestioning loyalty”. A high score on this dimension means individualism distance whereas a low score represents collectivism.
- *Masculinity versus Femininity (MAS)*. As the above dimension, it is explained through two definitions: “Masculinity stands for a preference for achievement, heroism, assertiveness, and material success”. “Femininity stands for a preference for relationships, modesty, caring for the weak, and the quality of life”. In masculine society, even the women prefer assertiveness (at least in men), whereas, in feminine society, even the men prefer modesty (Hofstede, 1985). A high score on this dimension stands for masculinity whereas a low score represents femininity.
- *Uncertainty Avoidance Index (UAI)*, that is “the degree to which the members of a society feel uncomfortable with uncertainty and ambiguity, which leads them to support beliefs promising certainty and to maintain institutions protecting conformity”. A high score of this index implies a strong uncertainty avoidance whereas a low score represents a weak uncertainty avoidance.

In 1991, Hofstede extended his model adding *Long-Term versus Short-Term Orientation (LTO)* as a fifth universal dimension:

- *Long-Term versus Short-Term Orientation*. “Long-term orientation stands for the fostering of virtues oriented toward future rewards; in particular, perseverance and thrift. Its opposite pole, short-term orientation, stands for the fostering of virtues related to the past and present—in particular, respect for tradition, preservation of “face,” and fulfilling social obligations”.

In 2008, Hofstede added two dimensions that were *Indulgence versus Restraint (IVR)* and *Monumentalism versus Self-Effacement*. However, in 2013 *Monumentalism versus Self-Effacement* was eliminated because was closely related to the dimension of *Short-Term Orientation*. Finally, the total dimensions of culture that exist are six.

The research in *Culture’s Consequences* supposed a new paradigm in the study of culture developing new theories and other classifications of national cultures (Hofstede et al., 2010). For instance, Misho Minkov extracted three new dimensions: *Exclusionism versus Universalism*, *Indulgence versus Restraint*, and *Monumentalism versus Flex Humility*.

Another large-scale application of the dimensional paradigm is the GLOBE (Global Leadership and Organizational Behaviour Effectiveness) project, conceived by U.S. management scholar Robert J. House in 1991. GLOBE focused on other aspects of national and organizational cultures and expanded the five Hofstede dimensions to nine (see Table 5) specifying more directly some of them. For instance, he divided *Individualism vs Collectivism* into two subcategories: *In-Group Collectivism* and *Institutional Collectivism*.

<i>Dimension</i>	<i>Definition</i>
<i>Power Distance (PD)</i>	The degree to which members of a collective expect power to be distributed equally.
<i>Uncertainty Avoidance (UA)</i>	The extent to which a society, organization, or group relies on social norms, rules, and procedures to alleviate unpredictability of future events.
<i>Humane Orientation (HO)</i>	The degree to which a collective encourages and rewards individuals for their cooperation.
<i>Institutional Collectivism (In. C)</i>	The degree to which individuals are integrated into groups within society.
<i>In-Group Collectivism (GC)</i>	The degree to which individuals have strong ties to their small immediate groups.
<i>Assertiveness (ASS)</i>	The degree to which individuals are assertive, dominant and demanding in their relationships.
<i>Gender Egalitarianism (GE)</i>	The degree to which a collective minimizes gender inequality.
<i>Future Orientation (FO)</i>	The extent to which a collective encourages and rewards future-oriented behaviours (delaying gratification, planning and investing in the future, etc.)
<i>Performance Orientation (PO)</i>	The degree to which a collective encourages and rewards group members for performance improvement and excellence.

Table 5. GLOBE's cultural dimensions (House et al., 2001)

## Organizational culture

In the literature, many authors have presented their definitions of the concept of organizational culture. Ngwenyama & Nielsen (2003) defined organizational culture as “*how organizations do things*” whereas Charles W. L. Hill and Gareth R. Jones (2001) said: “*organizational culture is however viewed as a subset of national culture as organizations operate within a given national context with employees from the same national culture*”.

Hofstede focused on national culture, but he studied in a smaller scope organizational culture as well. Hofstede (2010) indicated that organizational cultures are a phenomenon by themselves, with differences in many respects from national cultures. According to him (Hofstede, 2005), national cultural values are acquired during childhood whereas the organizational cultural values when the professional life starts. He declared that *an organization is a social system of a different nature from that of a nation, if only because the organization's members usually did not grow up in it. On the contrary, they had a certain influence in their decision to join it, are involved in it only during working hours, and will one day leave it*”. This is the main difference between both

cultures, the organization's members did not grow up in it. However, they decided to join it, are involved during working hours and they will one day leave it (Hofstede et al., 2010).

In addition, Hofstede (2010) determined that there is a relationship between organizational and national culture. In his study, he indicated that the degree to which national culture has an influence on organizational varies under different circumstances, being between 7 % and 23 %.

According to Cameron & Quinn (2011), organizational culture is one of the most critical factors for organizational success in an increasingly competitive and IT global environment. In previous research of Cameron & Quinn (2006), they proposed a model, the Organizational Culture Assessment Instrument (OCAI), to understand national and organizational culture and their components (see Figure 12). In the model, there are two dimensions that categorized the indicators of organization in four quadrants, being each one a type of organization with a distinct set of organizational effectiveness attributes.

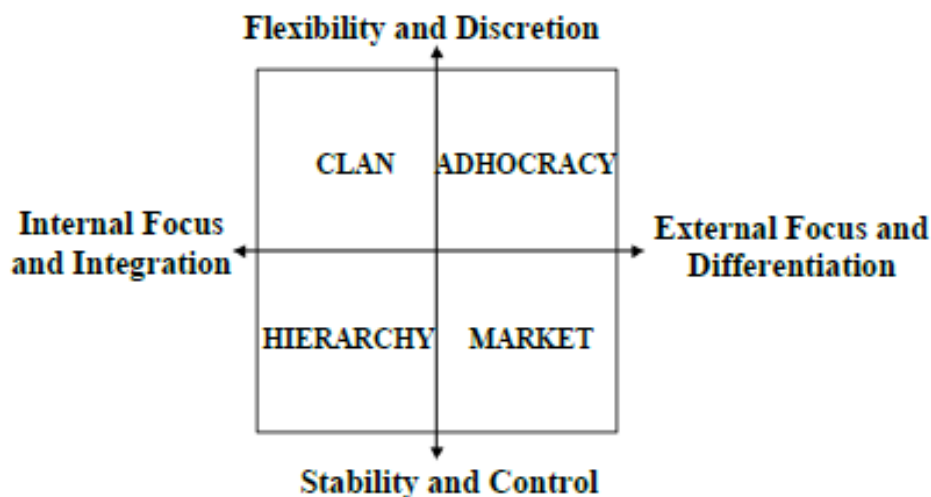


Figure 12. Organizational Culture Profiles (Cameron & Quinn, 2006)

Several authors have criticized Hofstede's model because of the stereotype of nations, thus, El-Mekawy et al. (2016) highlighted when talking about Hofstede's model that "*the focus of OCAI on specific profiles provides detailed understanding of a specific cultural context of an organization*". The main characteristics of the criteria definitions the SAM model of Luftman are described in Table 6.



<i>Culture</i>	<i>Main characteristics</i>
<i>Clan culture</i>	Committed and satisfied employees produce effectiveness. Norms and behaviours thus emphasise open communication, collaboration, and participation. The organisation is internally focused on its people, creating a friendly environment that is flexible and empowering.
<i>Adhocracy culture</i>	Innovation and new ideas lead to effectiveness by creating new markets, customers, and opportunities. Norms and behaviours emphasise creativity, risk-taking, and entrepreneurship. The organisation is externally focused on its environment and encourages agility and individual discretion.
<i>Market culture</i>	Striving for goals and market success are the drivers of organisational effectiveness. Norms and behaviours thus emphasise focusing on results, attaining or exceeding goals, and productivity. The organization is externally focused on customers and the market, and pursues the kind of stability that supports goal achievement.
<i>Hierarchy culture</i>	Formalised structures and processes increase efficiency and consistency, and therefore effectiveness. Norms and behaviours thus emphasise control, reliability, and the following of rules or procedures. The organisation is internally focused on its operations, seeking a high degree of integration and predictability.

Table 6. Criteria Definitions of Strategic Alignment Maturity (SAM) model of Lufiman (2000)

### 3. Review methodology

In this chapter, the literature review follows the steps defined by Creswell (2011) consisting in identify the keywords, locate the literature in the databases, evaluate and select the literature for review, organize the literature and write the literature review. The keywords used were *IT governance, business alignment, culture, national culture, organizational culture* and different combinations of them. The purpose of the research is to find the interrelation between culture and IT governance, however, as it was mentioned in the theoretical background, explaining culture could be a difficult task, as well as the process of searching for its definition.

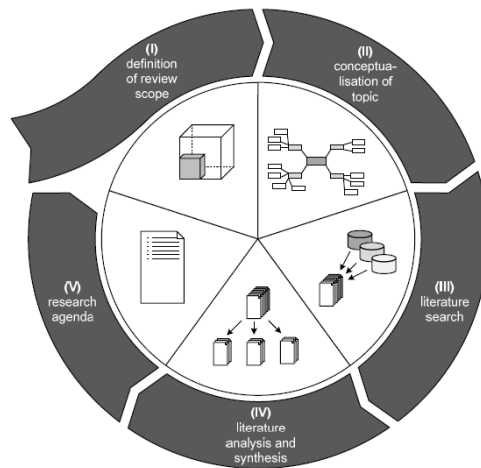


Figure 13. Framework for literature reviewing (Jan vom Brocke, Alexander Simons, Bjoern Niehaves, 2009)

#### 3.1. Searching for the literature

This part contains the research questions and the search process. Jan vom Brocke et al. (2009) proposed a framework for conducting IS literature reviews, with particular focus on the process of searching the literature. The framework is displayed in Figure 13 as a circular process with five phases:

- Definition of review scope.
- Conceptualization of the topic.
- Literature search.
- Literature analysis and synthesis.
- Research agenda.

##### 3.1.1. Research questions

A major challenge in reviewing the literature lies in defining an appropriate scope and flavor of the review, phase I (Jan vom Brocke, Alexander Simons, Bjoern Niehaves, 2009). In order to define the scope, asking the research questions could be useful to determinate possible objectives. They must be clearly defined in order to be evaluated in the research.

As it was mentioned in the introduction, this paper focuses on:

*RQ1: How is national culture's impact on ITG?*

*RQ2: How is the relationship between both organizational culture and national culture and ITG?*

According to Bhattacharjee (2012), a well-conducted literature review should reveal whether the research questions have been answered already or if better suitable research questions are available. Bhattacharjee indicated that a well-conducted literature review has three purposes:

- “to survey the current state of knowledge in the area of inquiry,
- to identify key authors, articles, theories, and findings in that area, and
- to identify gaps in knowledge in that research area”.

### 3.1.2. Search process

The search process, which is the phase III of the Jan vom Brocke's framework (2009), involves a database, keyword, backward, and forward search, as well as ongoing evaluation of sources, as illustrated Figure 14.

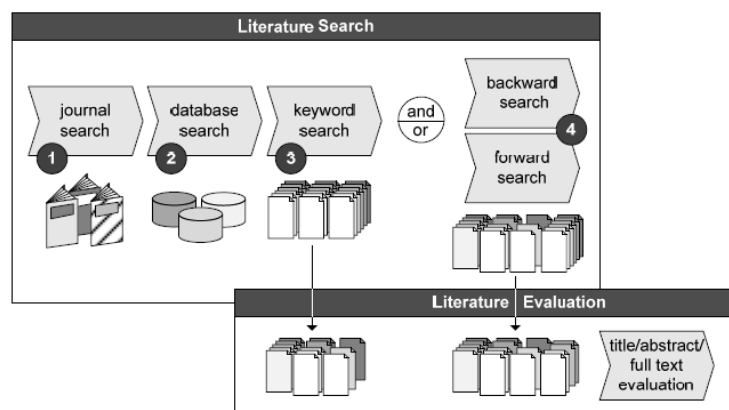


Figure 14. Literature search process (Jan vom Brocke, Alexander Simons, Bjoern Niehaves, 2009)

According to Webster and Watson (2002), a literature search includes the querying of scholarly databases using keywords and backward or forward searches on the basis of relevant articles. Backward search means reviewing the references of the articles yielded from the keyword search, whereas forward search refers to reviewing additional sources that have cited the article.

The research process of the keywords and the combinations consisted of a manual search of the papers published in English on online scholarly databases (see Table 7). Books, reviews, conference abstracts and publications that do not match one of the keywords were excluded.

The fact of excluding books, reviews and conference abstracts could be a risk in terms of important information lost, however, this pragmatic approach is enough to achieve the quality standards of the documented articles.

<i>Source</i>	<i>Search URL</i>
Business Source Complete und Academic Search Complete	<a href="http://search.ebscohost.com">http://search.ebscohost.com</a>
SpringerLink	<a href="https://link.springer.com/">https://link.springer.com/</a>
ScienceDirect	<a href="https://www.sciencedirect.com/">https://www.sciencedirect.com/</a>
IEEE Digital Library	<a href="https://ieeexplore.ieee.org">https://ieeexplore.ieee.org</a>
ACM Digital Library	<a href="https://dl.acm.org/">https://dl.acm.org/</a>
Web of Science (WoS)	<a href="https://webofknowledge.com">https://webofknowledge.com</a>
Google Scholar	<a href="https://scholar.google.com/">https://scholar.google.com/</a>

*Table 7. Literature sources*

## **3.2. Analyzing the literature**

Jan vom Brocke et al. (2009) proposed an evaluation of the articles' contents, analyzing their titles, abstracts or even full texts. The tool used to collect the data was Zotero, a software who organizes, cite and share research.

### **3.2.1. Search results**

After the data collection, the information must be analyzed in order to find conclusions regarding the questions asked. The duplicate and irrelevant papers were deleted, selecting a total of 86 papers for the reviewing process. Moreover, this process includes a backward and forward search (Webster & Watson, 2002), which resulted in 29 papers.

In order to make a classification with the relevancy of the articles, Creswell (2011) tackled this problem through the topic, problem and question, accessibility and site relevance. Using this criterion and considering those articles who investigated both concepts of IT governance and culture, 14 papers were selected for the literature. These remaining papers are not limited to any specific time period, geographical location and both theoretical and empirical studies are considered. They will be reviewed to determine the level of culture (national, organizational or both), IT governance focused area and key findings. Table 8 shows the literature findings chronologically indicating the title, theme, cultural level, and author.

<i>Title</i>	<i>Theme (s)</i>	<i>Culture level (s)</i>	<i>Author (s)</i>
<i>“Comparative Study of IT Investment Management Processes in U.S. and Portugal”</i>	IT investment management	National culture	Sherer (2007)
<i>“The role of a culture of compliance in Information Technology Governance”</i>	IT strategy committee, IT steering committee, culture of compliance	Organizational culture	Ali et al. (2009)
<i>“Exploration of cultural influences on Business and IT alignment”</i>	Business and IT alignment maturity	National culture	Silvius et al. (2009)
<i>“Exploring IT Governance in Theory and Practice in a Large Multi-National Organisation in Australia”</i>	Elements of ITG: structures, processes and relational mechanisms	Organizational culture	Willson & Pollard (2009)
<i>“Organizational Culture Impact on Business-IT Alignment: A Case Study of a Multinational Organization”</i>	Business and IT alignment maturity	Organizational and national culture	El-Mekawy & Rusu (2011)
<i>“Exploring ITG arrangements in practice: the case of a utility organisation in Thailand”</i>	ITG effectiveness	Organizational and national culture	Satidularn et al. (2011)
<i>“Does culture matter? Cultural influences and IT governance integration mechanism”</i>	ITG integration mechanisms	National culture	Zhong et al. (2012a)
<i>“IT Governance in China: Cultural fit and IT Governance capabilities”</i>	ITG capabilities	National culture	Zhong et al. (2012b)
<i>“The Influence of Organizational Culture on IT Governance: Perception of a Group of IT Managers from Latin American Companies”</i>	Elements of ITG: structures, processes and relational mechanisms	Organizational and national culture	Janssen et al. (2013)

Table 8. Literature findings

<i>Title</i>	<i>Theme (s)</i>	<i>Culture level (s)</i>	<i>Author (s)</i>
<i>“Investigation of the Impact of National Culture on IT-Governance: An Explorative Study Contrasting German and Japanese National Culture”</i>	COBIT framework	National culture	Prinz (2015)
<i>“Business-IT Alignment and Organisational Culture relationships: towards an integrated view”</i>	Business and IT alignment	Organizational culture	El-Mekawy et al. (2016)
<i>“The involvement of Organizational Culture in BITA at Attribute Level (case study for a Government Institution in Developing Country)”</i>	Business and IT alignment	Organizational culture	Kusrini et al. (2017)
<i>“Indonesian Culture Impact on Business-IT Alignment (A Case Study in Attorney General of Indonesia Office)”</i>	Business and IT alignment	Organizational and national culture	Riandari & Pharmasetiawan (2017)
<i>“Assessing the relationship among Alignment Business and Information Technology, Organization Culture, and Information Technology Effectiveness”</i>	ITG effectiveness	Organizational culture	Senja & Pharmasetiawan (2017)

Table 8. Literature findings (continued)

Webster & Watson (2002) indicated that IS literature reviews who has topic-related concepts can be studied as different units of analysis. According to this, a first classification has been established depending on the culture level: organizational, national or both levels (see Table 9).

<i>Culture level (s)</i>	<i>Author (s)</i>
<i>Organizational culture</i>	Ali et al. (2009), Willson & Pollard (2009), El-Mekawy et al. (2016), Kusrini et al. (2017), Senja & Pharmasetiawan (2017)
<i>Organizational and national culture</i>	El-Mekawy & Rusu (2011), Satidularn et al. (2011), Janssen et al. (2013), Riandari & Pharmasetiawan (2017)
<i>National culture</i>	Sherer (2007), Silvius et al. (2009), Zhong et al. (2012a), Zhong et al. (2012b), Prinz (2015)

Table 9. The literature of cultural influence on IT governance

## 4. Findings

In order to show the influence of different culture levels on ITG, a second classification has been created. Literature findings are categorized as the way culture has affected the elements of IT governance (see Table 10): structures, processes, and relational mechanisms, as introduced W. Van Grembergen & Hae (2008). Therefore, the chapter begins with the influence of national culture and continues with the role of organizational culture on ITG. The third part shows the literature findings regarding organizational and national culture influence.

<i>Elements of ITG</i>	<i>Culture level (s)</i>		
	<i>Organizational culture</i>	<i>National culture</i>	<i>Organizational and national culture</i>
<i>ITG Structures</i>	Janssen et al. (2013)	Zhong et al. (2012b)	Janssen et al. (2013)
<i>ITG Processes</i>	El-Mekawy et al. (2016), Kusrini et al. (2017), Senja & Pharmasetiawan (2017)	Sherer (2007), Silvius et al. (2009), Zhong et al. (2012b), Prinz (2015)	El-Mekawy & Rusu (2011), Satidularn et al. (2011), Janssen et al. (2013), Riandari & Pharmasetiawan (2017)
<i>ITG Relational Mechanisms</i>	Ali et al. (2009), Willson & Pollard (2009)	Zhong et al. (2012a), Zhong et al. (2012b),	Janssen et al. (2013)

Table 10. Distribution of papers with among the elements of ITG

### 4.1. National culture

#### 4.1.1. Influences on IT governance structures

Xijin Zhong et al. (2012b), following the research of Morris et al. (1999), linked the Hofstede's five dimensions (etic perspective) with relevant Chinese culture values (emic perspective). In the theoretical background, it was mentioned that Hofstede described the dimension *long-term versus short-term orientation (LTO)*. The reason to add new cultural dimensions to their model was the researchers of other cultures, like Chinese culture, very different in comparison with Western countries.

Zhong et al. (2012b) created a model (see Figure 15) where the concept of *cross-country transfer* was included. To explain it, they suggested that the effect of ITG capabilities can be differentiated by the cultural differences between the country where the model of ITG capabilities is developed and the country where it is deployed. In fact, they affirmed: "*firms that can configure their ITG capabilities to make the best of their national culture are expected to achieve superior IT performance*". Therefore, in the model, they incorporated the relevant elements of Chinese

culture and the ITG elements or capabilities: Structural ITG capability (SC), Process ITG capability (PC) Relational ITG capability (RC). The symbol “+” means positive influence on ITG performance and the symbol “-” means that ITG capabilities may be inhibited by the cultural environment. With this model, they demonstrated Chinese cultural characteristics moderated a firm’s performance of ITG capabilities.

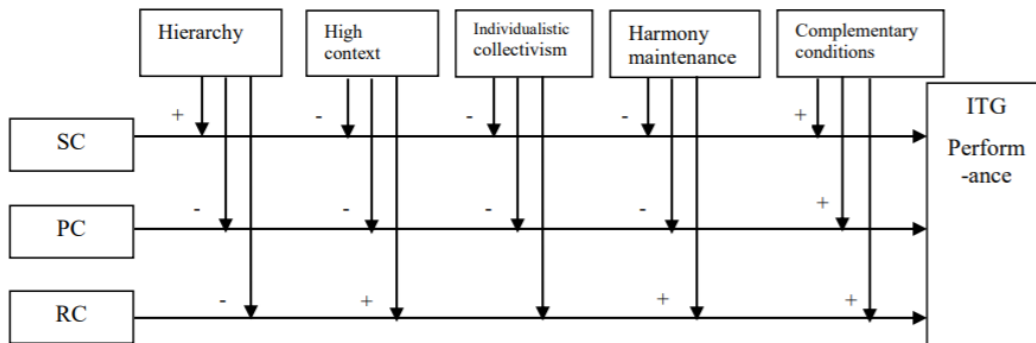


Figure 15. Analytical framework of cultural influences on ITG performance (Xijin Zhong et al., 2012b)

The first element analyzed by Zhong et al. (2012b) was *hierarchy*. In Chinese culture, the power of decision-making is highly centralized, and the key stakeholders are responsible for the steering committee. The main characteristics of the company’s structure are authority and hierarchy. According to Zhong et al. (2012b), hierarchy is linked to long *power distance* (“*the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally*”). In their research, they indicated that hierarchical structures facilitate vertical communication.

*High context communication*, the second relevant element, was related to *uncertainty avoidance*. In Western countries, workers are more disciplined whereas in China the working style is based on intuition and experiences.

Zhong et al. (2012b) included in his model the concept of “*individualistic collectivism*”, which is related to the Hofstede’s dimension *individualism vs collectivism*. Chinese culture is individualistic collectivism where stand out the community and the family. The term used to explain this phenomenon is individualistic collectivism or “*guanxi*” which explains that the communication and shared understanding are easier inside these small groups than outside them. For this reason, loyalty is an essential characteristic within a group and the primary basis for power is with the person rather than the position in the group. The concept of *guanxi* can be linked to both hierarchy and collectivism inhibiting structure capabilities.

The fourth element is *harmony maintenance*, linked to *long term orientation*. As it was mentioned, Chinese people are more likely to maintain the status quo and be passive to sudden change, thus Zhong et al. (2012b) proposed that “*Chinese harmony maintenance as a factor of their culture will inhibit structure*”.

Finally, Zhong et al. (2012b) proposed the dependency of a firm on their social reputation and integrating into the international business environment will complement structural capabilities but also process capabilities.



### 4.1.2. Influences on IT governance processes

In addition to the aspects related to structural and process mechanisms, Xijin Zhong et al. (2012b) indicated that only the appreciation of “*Confucian entrepreneurship*” will complement process capabilities. Modernization triggers the adoption of new management methodology and technologies creating a dependency on knowledgeable senior managers. Therefore, the concept of “*Confucian businessman*” means a well-educated and knowledgeable business leader. In a hierarchical culture, like Chinese, “*it is easier for management to initiate a campaign for IT-related processes while inhibiting communication and stakeholder participation*” (Xijin Zhong et al., 2012b).

Linking the relevant elements of Chinese culture and the ITG processes, Xijin Zhong et al. (2012b) suggested that environmental dynamism increased uncertainty in the transition of economy of China, thus more uncertainty implies less effective formalization and processes capabilities. The concepts of “*guanxi*” and harmony maintenance, explained before, inhibits ITG process as well as structures capabilities.

Silvius et al. (2009) studied how national culture influences the alignment of business and IT in organizations comparing BIA maturity scores of Belgium and Dutch financial institutions. Although these countries are neighbors, in the research, it is illustrated the differences between typical northern European and southern European cultures. They analyzed Hofstede’s dimensions influence on different variables of Luftman’s assessment model and discovered that countries with a higher *uncertainty avoidance index* focused on the governance of IT, resulting in a higher level of governance maturity. In their research, Silvius et al. (2009) proved that the influence of national cultures on BIA maturity is evident through the different dimensions of culture and that there are differences between countries. For instance, the country with a high score in *power distance* (Belgium) has a high score in IT governance maturity. One a more detailed level, the portfolio management process was higher in Belgium where the *power distance index* was higher than the Netherlands.

Prinz (2015) investigated which parts of the COBIT framework, and as consequence ITG, are influenced by national culture comparing German and Japanese national culture with the COBIT framework on a theoretical level (see Figure 8). In their study, they related Hofstede’s dimensions (*power distance, collectivism vs individualism, masculinity vs femininity and uncertainty avoidance*) with COBIT key areas representative for ITG, mentioned in theoretical background, developing a validated conceptual model. Considering the impact of national culture, they selected two derived concepts to describe each cultural dimension, resulting in Figure 16.

The final conceptual model, as illustrated the Figure 17, joins the national cultural concepts with the representative COBIT key areas for IT governance. The key areas direct, evaluate and monitor within the Governance key area form the Evaluate, Direct, and Monitor (EDM) category. With this model, Prinz (2015) identified national cultural concepts having an impact on ITG and revealed differences in ITG practices between cultures.

COBIT Key Areas \ Cultural Concepts	Worker Participation (PDL <sub>1</sub> )	Supervision (PDL <sub>2</sub> )	Feedback (IDV <sub>1</sub> )	Customer Treatment (IDV <sub>2</sub> )	Conflict Resolution (MAS <sub>1</sub> )	Rewards (MAS <sub>2</sub> )	Formalization (UAL <sub>1</sub> )	Rules (UAL <sub>2</sub> )
<b>Evaluate, Direct and Monitor (EDM)</b>	X	X	X			X		
<b>Align, Plan and Organise (APO)</b>	X	X	X	X	X	X	X	X
<b>Build, Acquire and Implement (BAI)</b>	X	X	X			X	X	X
<b>Deliver, Service and Support (DSS)</b>		X				X		
<b>Monitor, Evaluate and Assess (MEA)</b>		X						

Figure 16. Cultural Concepts vs COBIT Key Areas (Prinz, 2015)

According to Prinz, it can serve as a basis when dealing with an international workforce, especially in the field of ITG. In addition, it could be useful for organizations which have implemented or are planning to implement the COBIT framework in order to prioritize the areas should be focused on.

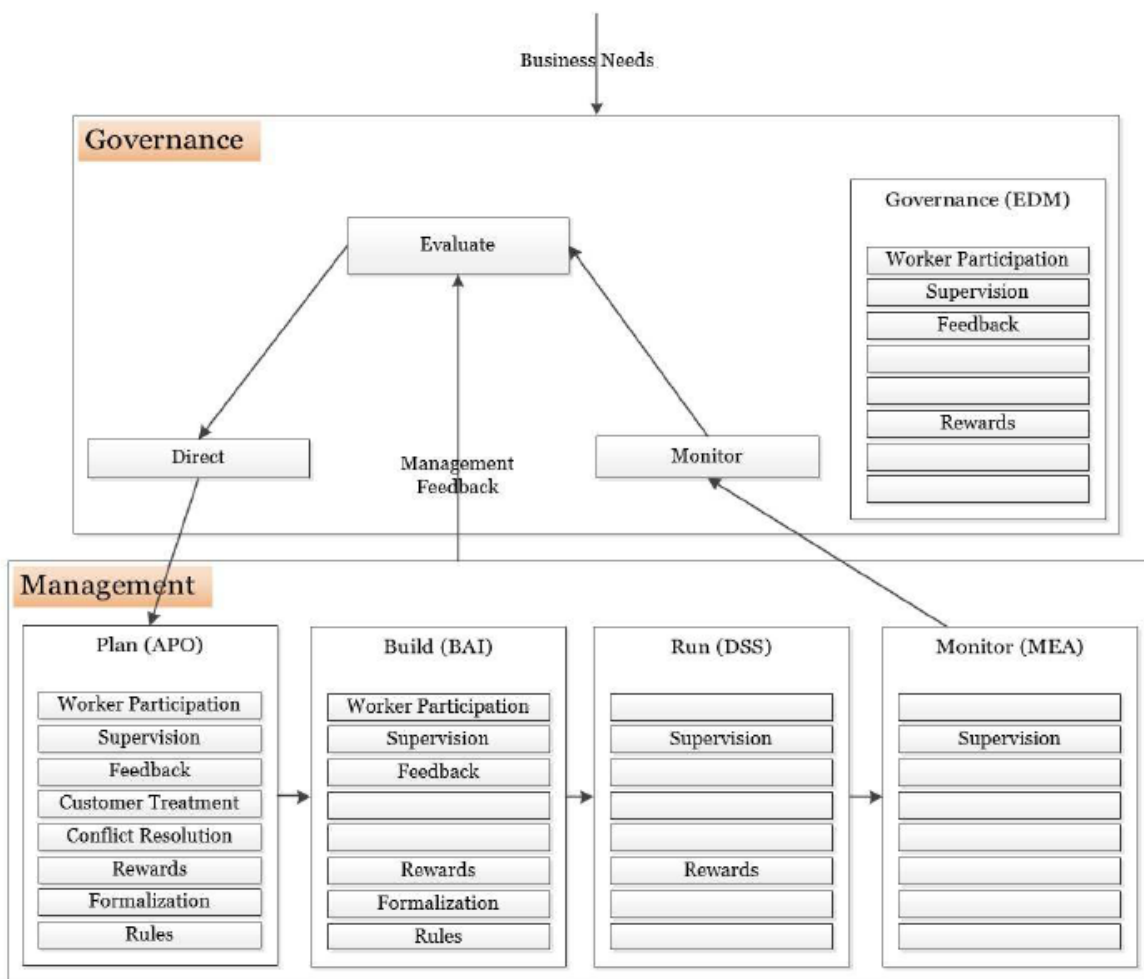


Figure 17. Final Conceptual Model of Prinz (2015)

Sherer (2007) studied the impact of national culture on ITG processes with another perspective. In their research, a framework was created for understanding IT investment management regarding who to involve in each stage and what processes to use. The framework includes five stages: *idea generation*, *business case generation*, *investment selection*, *project implementation*, and *value realization* (see Table 11).

With the results, they suggested that the country with higher *uncertainty avoidance* and *power distance* influenced the processes used during most of the investment management stages. In cultures with high *power distance*, it involves fewer business line employees in *idea generation*, fewer operational business managers *selection investments*, and more centrally managed *project implementation*. However, in cultures with high *uncertainty avoidance*, they expected fewer strategic project ideas generated and stronger *investment selection*. They also stated that strategic investments involved higher levels of *uncertainty avoidance*.

<i>IT Investment Stage</i>	<i>Description</i>	<i>People (who?)</i>	<i>Processes (how?)</i>
<b><i>Idea Generation</i></b>	Developing ideas for using IT in the business	Who initiates ideas? -Line employees -Management -IT -Business	How do ideas get communicated? Do we use top down or bottom up planning?
<b><i>Business Case Generation</i></b>	Determining the feasibility of these ideas to support the business	Who is involved? -Business managers - IT managers	How is the business case created? Do we require formal business cases, or do we use an informal political process?
<b><i>Investment Selection</i></b>	Selecting appropriate investments	Who makes the decision? -IT vs. business -Committee vs. individual If committee, who is included? At what level are decisions made?	What metrics are used? -Strategic alignment -Financial criteria -Balanced scorecard
<b><i>Project Implementation</i></b>	Effectively implementing the technology within time/budget constraints	Who is responsible for implementing project within time/budget constraints?	How is the project monitored?
<b><i>Achieving Benefits</i></b>	Making complementary investments to achieve maximum benefits from the technology	Who is responsible? - IT group - End users - Committee	What metrics are used? How is process monitored? Is responsibility assigned?

Table 11. Key management choices in IT investment (Sherer, 2007)

### 4.1.3. Influences on IT governance relational mechanisms

Peterson et al. (2002) proved that environmental dynamism increases uncertainty and Zhong et al. (2012b) indicated that this idea had as result in a positive impact on relational mechanisms. In Chinese culture, communication is based on the context and the content. This style makes communication with stakeholders more flexible and long-term even though stakeholders will not gain a reward for the individual investment.

However, relational mechanisms are also hindered by cultures like Chinese in terms of dialogue, communication, and participation of stakeholders, getting difficulties in decision-making (Xijin Zhong et al., 2012b). Communication could be difficult if the participants are not from the same group, thus *guanxi* can be an important resource to identify in a company. It is not easy to recognize those *guanxi* circles because committees and stakeholders are formed by people from different circles. For that reason, *individualistic collectivism* culture's impact on relational capabilities can be positive or negative and will depend on the complementary effect of *guanxi* circles. Instead, harmony maintenance and encouraging connection and shared goals among stakeholders have a positive influence on relational mechanisms (Xijin Zhong et al., 2012b).

Zhong et al. (2012a) made other research focusing on the paradigm of integrative coordination based on Peterson's research. Peterson (2001) created an integration mechanism paradigm that combined differentiated business and IT capabilities and was categorized into three levels: social, functional and structural (see Figure 18).

**Table 2. Reach of coordination mechanisms for IT governance.**


Mechanisms	Formal	Network	Layer
<b>Social coordination</b>	<u>Active participation</u> - Corporate Executive Management - Corporate IT Management - Business Division Management - Division IT Management	<u>Shared understanding</u> - Corporate Executive Management - Corporate IT Management - Business Division Management - Division IT Management	High complexity High reach
<b>Functional coordination</b>	<u>IT decision-making</u> - comprehensiveness of IT decision-making (systematic, exhaustive) - formalisation of IT decision-making (formal rules and standard procedures)	<u>Communication</u> - strategic dialogue (critical inquiry) - intensity (ad-hoc, regular) - direction (vertical, horizontal) - media (personal, written, electronic)	
<b>Structural coordination</b>	<u>Coordination structure</u> - direct supervision/hierarchy - liaison role - task force and teams - integrating role (full-time) - cross-functional units and committees (full-time)	<u>Infrastructure</u> - Co-location (physical working arrangements) - Communication infrastructures (IT networks) - Cross-functional rotation (job-rotation) - Cross-functional events (training)	

Figure 18. Reach of coordination mechanisms for IT governance Peterson (2001)

According to Zhong et al. (2012a), cultural factors need to be considered in ITG cross-country research and national culture should be regarded as a country-specific factor that is complementary to distinctive capabilities in IT governance. Therefore, the complementary of culture to ITG can be measured as culture fit. Newman & Nollen (1996) defined cultural fit as a “*type of complementary effect of national culture on the operation and managerial practices of a firm*”. Therefore, culture fit refers to the degree to which socio-cultural characteristics are congruent with ITG integration mechanisms, which may be of value for the performance of IT (X. Zhong et al., 2012a). They also stated that “*from the perspective of corporate governance and IT, individual dimensions of ITG integration mechanisms can be influenced by national culture*”.

Wernerfelt (1984) linked organizational resources to organizational performance by using the resource-based view (RBV), that consists in determining the resources to achieve a competitive advantage. X. Zhong et al. (2012a) conceptualized ITG as a set of organizational resources with high VRIO attributes: *value, rarity, inimitability, and organization*. Thus, they proposed the conceptual model (Figure 19) which shows the link between ITG integration and value creation.

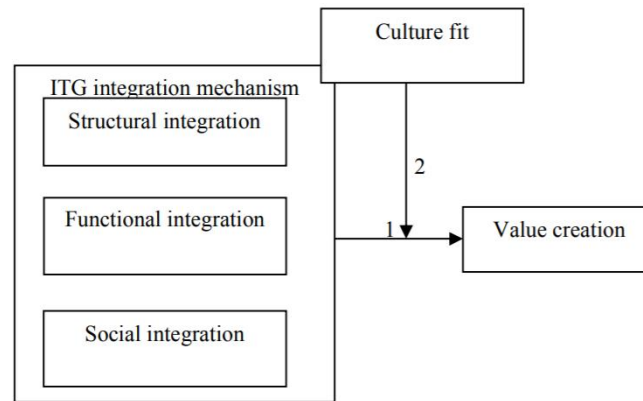


Figure 19. Conceptual framework of ITG value creation (Xijin Zhong et al., 2012a)

Despite ITG integration shapes the specific capabilities of an organization, the potential moderation of socio-cultural factors should be considered to predict the outcomes (X. Zhong et al., 2012a). In their research, they indicated that the fit between a firm's ITG integration mechanisms and national culture can be conceptualized as the complement between firm-specific capabilities and country-specific capability: "we would argue that the cultural differences between the country where ITG integration mechanisms are developed and the country where these mechanisms are deployed differentiate the effect of ITG methodologies". They concluded saying that "cultural dimensions present different degrees of congruence with each layer of coordination involved in ITG integration mechanisms, thus demonstrate different complementarity to the performance of these capabilities". In fact, countries with high scores in Hofstede's *power distance* index (PDI) dimension facilitate vertical communication to maintain the status quo and inhibit horizontal communication and participation. In contrast, cultures with low *uncertainty avoidance* index (UAI) have more difficulties in formalized methodologies and structural mechanisms.

## 4.2. Organizational culture

### 4.2.1. Influences on IT governance structures

Literature findings show there is a lack of study of the influence of organizational culture on ITG structures. The only authors included in this part of the literature review are Janssen et al. (2013). They studied IT governance in Latin American companies developing a model (see Figure 20) to evaluate the relationship between organizational culture and ITG elements. The results of their study demonstrated that there was a strong influence of organizational culture on IT governance, especially on ITG structures. However, the model proposed to indicate this relationship used Hofstede's national culture dimensions based on the elements of organizational culture. For this reason, the analysis of the model for the three elements of IT governance will be examined in the next section, organizational and national culture, where some mixed models will be analyzed as well.

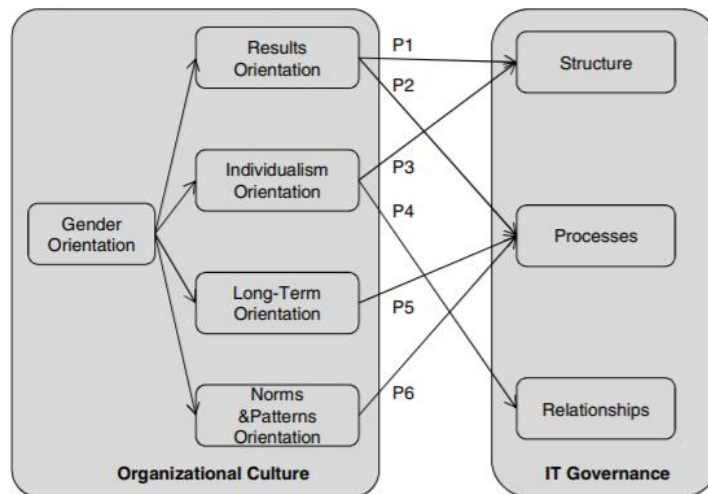


Figure 20. Theoretical model proposed – relationship between the factors of organizational culture and the pillars of IT Governance (Janssen et al., 2013)

### 4.2.2. Influences on IT governance processes

In contrast, in the literature of ITG, influences on processes is the topic most studied by researchers. El-Mekawy et al. (2016) analyzed the relationship between components of BITA and organizational culture towards the development of a BITA-Organizational Culture Integrated View (BITA-OCIV), which studied the most influencing criteria in BITA. BITA-OCIV is based on the Strategic Alignment Model (SAM) of Luftman and Organizational Culture Assessment Instrument (OCAI) of Cameron & Quinn (2011). As it was stated in theoretical background, SAM showed the maturity of BITA regarding which criteria represented the organization whereas OCAI classified the type of culture of the organization according to the four cultural profiles (*clan, adhocracy, hierarchy, and market*).

The research was made in three organizations with different characteristics: a large construction company active in various markets in Europe and America (organization A), a medium-sized

retail company in Sweden (organization B), and a large telecom and multinational organization in Sweden (organization C). The results are presented in Figure 21.

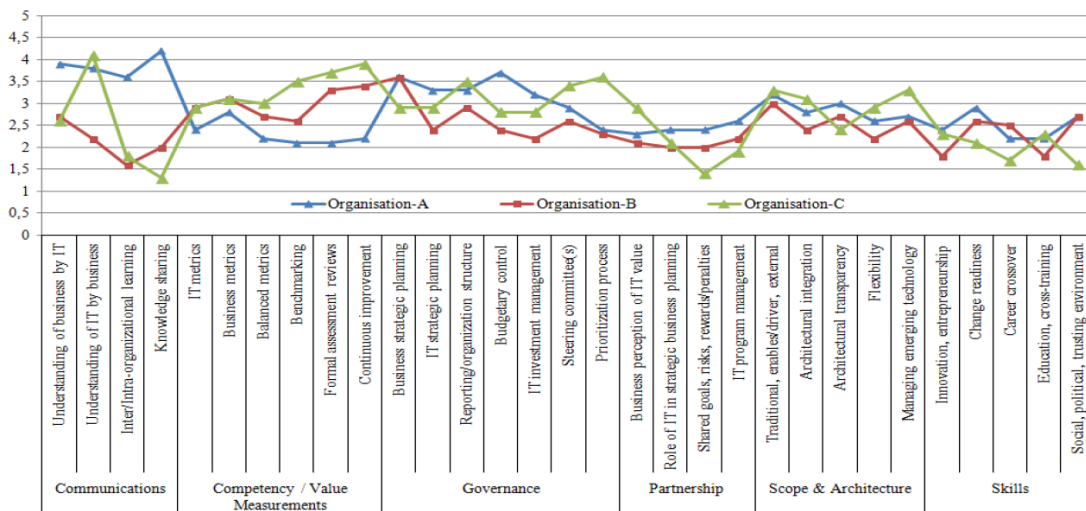


Figure 21. BITA maturity assessment in the three organizations (Mohamed El-Mekawy et al., 2016)

With these results and the values of organizational culture assessment in the three organizations, El-Mekawy et al. (2016) created a proposed conceptual BITA-OC integrated view in order to identify the correlations between BITA and OC components, as illustrated Figure 22. The grey colored ovals represent the high significant correlations validated in the research and the white ovals represent significant correlations that might be considered as a potential influence for the organization. *Hierarchy*, *market*, and *adhocracy* have three relevant correlations whereas *clan* has only one. This means that, for instance, with *adhocracy*, managers when targeting this culture should focus on *communications*, *partnership*, and *skills*, as well as a reflection on *scope and architecture*.

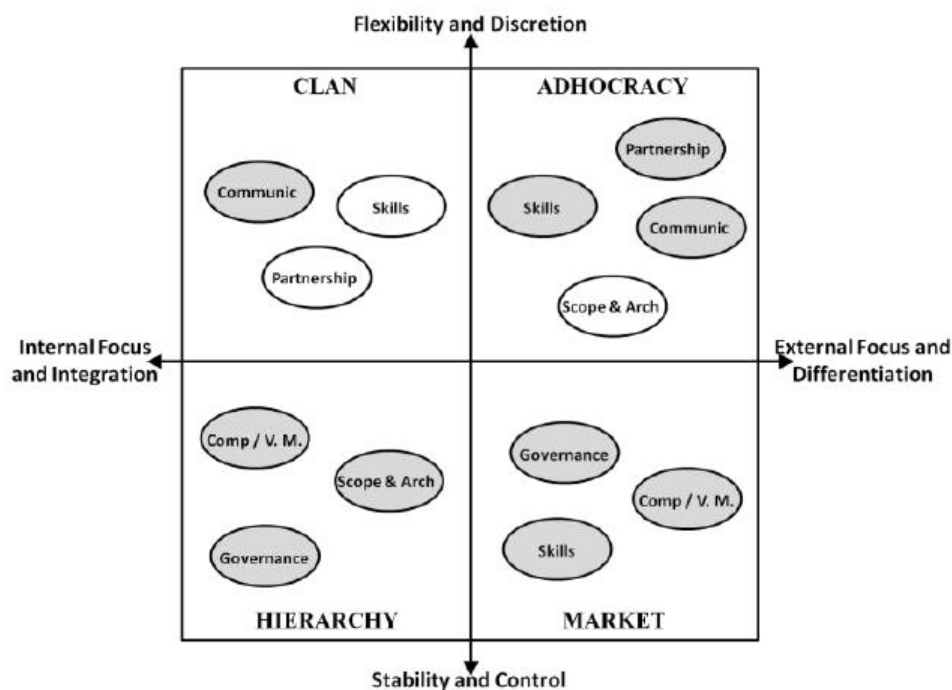


Figure 22. A Proposed BITA-Organizational Culture Integrated View (Mohamed El-Mekawy et al., 2016)

Kusrini et al. (2017) based their research on BITA Organizational Culture Integrated View (BITA-OCIV), developed by El-Mekawy et al. (2016). Kusrini et al. (2017) studied the effects of organizational culture to BITA for a government institution in Indonesia, a developing country. In developing countries, the use of IT to support the business is not the best because both IT and business are not conscious of the other's needs. Moreover, despite the existence of a good IT framework, organizational culture's effects have not been studied, thus not everyone in the organization accepts BITA.

Kusrini et al. (2017) analyzed the combination of SAM and OCAI to know what criteria could be a potential influence for each organizational culture type. They also stated that the results of the analysis cannot be used for the implementation of the alignment between IT and business strategy. They created Figure 23 to show the relationship between SAM's six criteria and OCAI's four quadrants (*clan*, *adhocracy*, *hierarchy*, and *market*). As the model of El-Mekawy, the grey colored ovals mean that there is a high correlation between those criteria and the corresponding quadrant. For instance, *clan* has three relevant correlations whereas *market* does not have any significant correlation. Kusrini et al. (2017) explained that the reason for this correlation could be different if the study was realized in a private company or in a government organization. In fact, according to Wilkin and Campbell (2010), the characteristics of private companies and government organizations are different. Kusrini et al. (2017) also showed that the results were different in countries with a different culture, thus confirming that organizational culture is influenced by national culture.

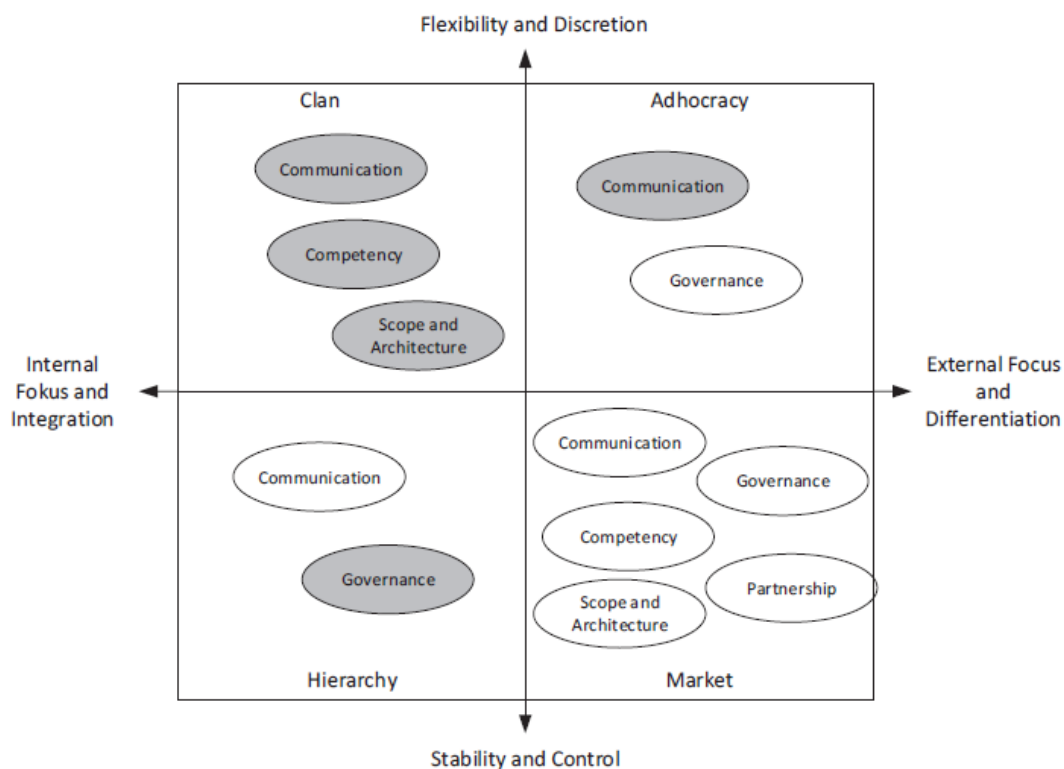


Figure 23. Criteria influenced to the Organization (Kusrini et al., 2017)



Senja & Pharmasetiawan (2017) studied the relationship between IT effectiveness (ITE), organizational culture (OC) and strategic alignment maturity model (SAMM). In their conceptual model (see Figure 24), Senja & Pharmasetiawan (2017) used LAM's six criteria to measure the alignment of IT business. With the last element, IT effectiveness, they used the definition according to Tallon et al. (2000) which indicated that “*the better the products and services produced in accordance with business needs will be the better IT effectiveness act as organization*”. Moreover, they employed 3 variables to measure ITE: IT quality of service (QoS), user satisfaction with IT, and helpfulness of IT staff to users.

The results of the research showed that organizational culture had a weak influence on IT effectiveness, in contrast with the effect of BITA maturity on IT effectiveness. In addition, they discovered that the influence of organizational culture on the components of strategic alignment was significant, therefore organizational culture could be helpful for strategic alignment maturity. Senja & Pharmasetiawan (2017) summarized this idea saying that: “*organizational culture relationship to the effectiveness of IT and BITA maturity to the effectiveness of IT can be mutually reinforcing, and it can also be mutually debilitating*”. At the end of the research, they highlighted that despite the results obtained could be different for each organization, the relationship between BITA and organizational culture was necessary to achieve the optimum ITE. A successful organization has implemented strategic alignment between business and IT, especially because the link between SAM's criteria and IT effectiveness is stronger than organizational culture to ITE.

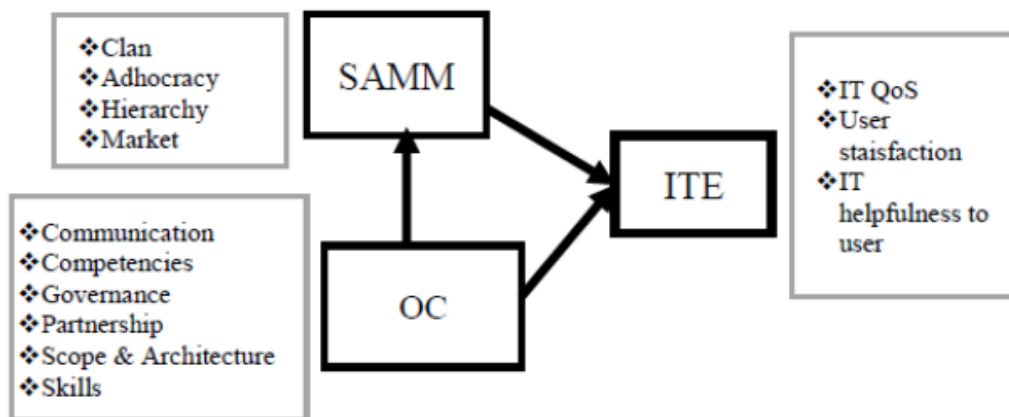


Figure 24. Extended Conceptual Model of Senja & Pharmasetiawan (2017)

### 4.2.3. Influences on IT governance relational mechanisms

Ali et al. (2009) made an investigation about the link between *the culture of compliance* and IT governance in Australia. Responses from a hundred members of ISACA (Information Systems and Audit Control Association), Ali et al. (2009) used this research model (see Figure 25) to study an ethic or cultural of compliance in IT within an organization. Their study focused on the roles of IT governance mechanisms and their impact on the effectiveness of ITG. Meyer (2004) defined

the concept of the culture of compliance as “*all the beliefs, values, attitudes, rituals and behaviour pattern that people in an organization share*”.

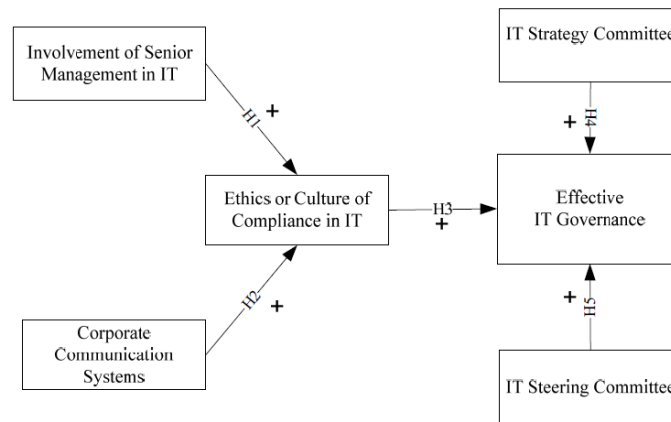


Figure 25. Research Model of Ali et al. (2009)

The results of the study of Ali et al. (2009) indicated that there are two factors that influence the culture of compliance: corporate communication systems and the involvement of senior management in IT. With the last factor, the term “*senior management*” means the CEO and the level of management below him, whereas “*corporate communication systems*” are the mechanisms to control and manage the information. Ali et al. (2009) concluded that the influence of IT strategy committee on the effectiveness of ITG was positive and significant, whereas the IT steering committee was negative and not significant (see Figure 26). In the theoretical background, it was mentioned that the control of the ITG’s tasks was executed through an IT strategy committee assisted by an IT steering committee.

Moreover, Ali et al. (2009) provided some initiatives managers might undertake to create a culture of compliance and communications mechanism in order to improve the culture of governance around IT throughout the organization.

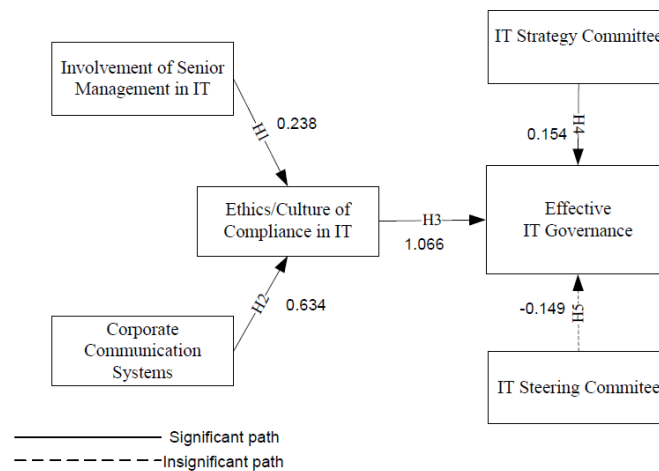


Figure 26. Path - Analysis of Ali et al. (2009)

Occasionally, there are differences between theory and practice in organizations. Willson & Pollard (2009) exposed this distinction between the practical nature of ITG and the theoretical view in a multi-national organization in Australia, where four themes were identified: *visionary leadership*, *organizational nature*, *governance mechanisms*, and *historical context*. The relationship between the themes is shown in Figure 27. They identified that IT governance is not limited only to structures, processes and mechanisms of ITG commonly referred to in the literature. There are other impacting factors (*visionary leadership*, *organizational nature*, and *historical context*) on ITG that had complex relationships between them.

In the studied company, Willson & Pollard (2009) determined that a strategic plan was not enough to achieve a good IT governance. In fact, it was necessary *visionary leadership*, including the importance of focus on the strategy, the senior management involvement and the contribution of key individuals (senior managers), which influences the previous categories.

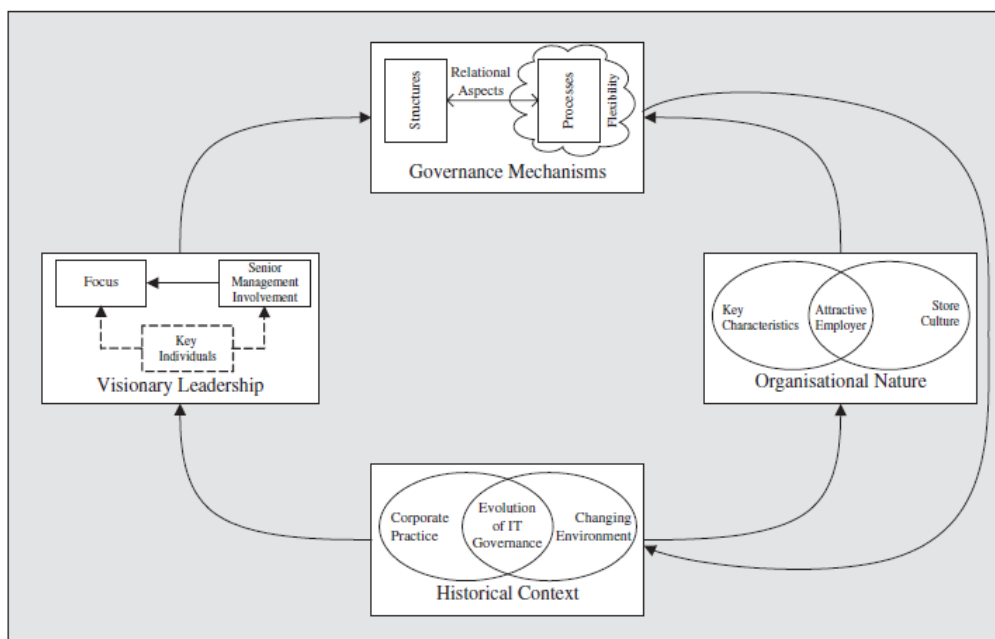


Figure 27. Relationship between the themes (Willson & Pollard, 2009)

Willson & Pollard (2009) also discovered that *historical context* had a clear influence on IT governance: “*IT governance needs to be appropriate for an organisation, taking into account its history, and the internal motivations that lead to the development of IT governance*”. Moreover, they highlighted the importance to recognize history as not a static position but a changing continuum. The last impacting factor, *organizational nature*, included three concepts: key characteristics of the organization, the store culture, and the attractive employer. The attractive employer can be defined as the loyalty exhibited by the participants of the study to the company and the perception of the company as a good employer.

### 4.3. National and organizational culture

National and organizational culture have been studied by researchers developing mixed models based on Hofstede's cultural dimensions and different organizational models.

#### 4.3.1. Influences on IT governance structures

The model presented by Janssen et al. (2013) and mentioned in the previous section used some of the main Hofstede's national culture dimensions: *individualism orientation*, *long-term orientation*, and *gender orientation*. In addition, two new dimensions were included in the model, defined by Hofstede as:

- *Results orientation*, which is “the degree to which the organization provides incentives, recognizes or rewards its members for efforts or results intended for quality, development, attaining goals, excellence and performance”.
- *Norms and patterns orientation*, which is “indicating respect for the existence of rules, beliefs and practices in the organization to avoid the occurrence of unfamiliar, new, or unknown situations, that may generate threats to the normal functioning of the organization”.

In his model, Janssen et al. (2013) explained that *gender orientation* is influencing the other four Hofstede's cultural dimensions due to the research of Dasgupta et al. (2011), which indicated *gender orientation* as a mediator of other factors of organizational culture. Dasgupta et al. (2011) proved that organizations with a high score on *masculinity* are more focused on results and with a greater degree of standardization.

The analysis of Janssen et al. (2013) was to find the relationship between these four cultural dimensions and the elements of ITG. This part of the section only analyzes the relationship between organizational culture and ITG structures. The link between both processes and relational mechanisms with organizational culture will be studied in the next sections. Therefore, in the part of ITG structures, Janssen et al. (2013) indicated that it is very important to develop a framework to achieve better results allowing the members to focus on the efforts and excellence. Moreover, this structure is an adequate environment for organizations to recognize the individual person as a unique being, with virtues and defects, but emphasizing or reinforcing her actions. For these reasons, Janssen et al. (2013) concluded that the dimensions of *results orientation* and *individualism orientation* got influences on the structure of ITG (see Figure 28).

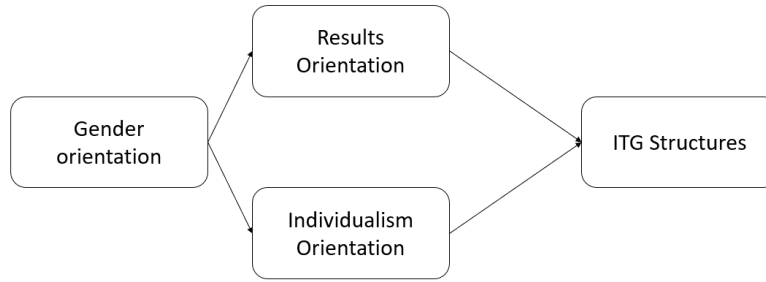


Figure 28. Relationship between the factors of organizational culture and ITG structures, adapted from Janssen et al. (2013)

In addition, in his research Janssen et al. (2013) showed that companies in market expansion, not owned by the state but focused on *collectivism*, tended to implement models of ITG with simple decision-making processes and structures. These companies had a culture based on results and had a good relationship between IT and business. In contrast, semi-state companies, which are mostly or fully owned by the state, had a *closed culture*. An organization with *closed culture* means slow and bureaucratic decision-making structures or complex structures with a lack of the participation of the business executives in the ITG model.

#### 4.3.2. Influences on IT governance processes

As well as ITG structures, Janssen et al. (2013) analyzed ITG processes in their theoretical model. The reason for including processes was the tendency of their findings in the literature to have simple and flexible organizational processes reflected in the decision-making processes of ITG. They indicated that the organizations with intense use of IT in business perceive organizational culture as a way for the success of the model of ITG, in contrast to other companies where the organizational culture may reduce the good results of ITG and their organizational implementation.

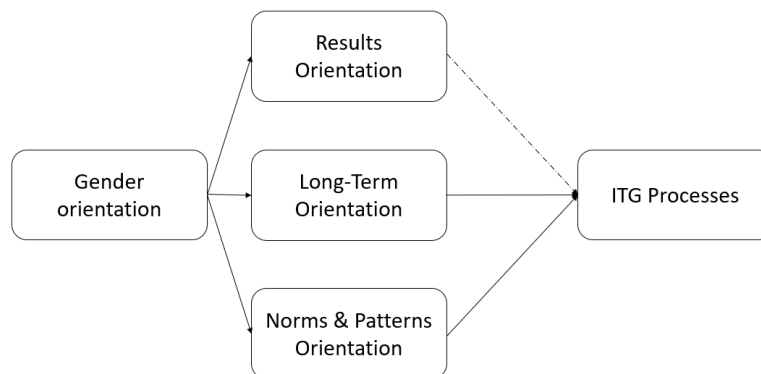


Figure 29. Relationship between the factors of organizational culture and ITG processes, adapted from Janssen et al. (2013)

*Long-term orientation* includes planning the future and continuous updating and personal preparation. For this reason, Janssen et al. (2013) related this factor to ITG processes. According to most of the parties interviewed in their study, there was not a direct influence on ITG processes but rather the organizational strategy. However, these parties coincided regarding the influence of *norms and patterns*. According to the definition, *orientation by norms and patterns* means indicating respect for the existence of rules, beliefs, and practices in the organization to avoid the occurrence of new or unknown situations. Thus, the element in charge of this is the ITG process, which includes the strategies and policies defined for IT.

Based on this, Janssen et al. (2013) found that the relationship of *orientation by norms and patterns* with ITG processes was very significant. When an organization has a culture oriented towards patterns and rules, more strict regulations and disciplined processes are required. However, in their research, they did not find any influence of *results orientation* on processes (see Figure 29), in contrast with the relevant influence on ITG structures.

In the literature, in addition to Hofstede's model, different authors have studied the influence of culture on ITG using other models like Global Leadership and Organizational Behaviour Effectiveness (GLOBE). GLOBE focused on other aspects of national and organizational cultures and expanded the five Hofstede dimensions to nine. Some of these authors were El-Mekawy & Rusu (2011) who made their research in the same federal multinational organization that operates in Egypt and Sweden. They proposed a model with two steps although only step 1 was examined. This step is to explore the impact of organizational culture considering that business and IT strategies had been implemented in different cultural contexts. Step 2 consisted in "*fixing the cultural context and making culture of both business and IT as variables*".

The concept of business alignment was explained in the theoretical background, however, El-Mekawy & Rusu (2011) indicated that the real concern for organizations today is not why alignment is important but how it can be achieved and matured. Despite business and IT alignment (BITA) was traditionally linked to executive levels and CIO's duties, nowadays, it involves more aspects at operational levels in order to achieve cohesive goals between IT and business.

El-Mekawy & Rusu (2011) analyzed the impact of organizational culture on BITA using the Luftman Alignment Maturity Model's (LAM) six criteria (see Table 2) and the GLOBE's cultural dimensions (see Table 5). The result is showed in Figure 30, being "+H" high positive impact "-H" for high negative impact, "+L" for low positive impact, "-L" for low negative impact and "--" for no clear impact. The symbol "±" means positive and negative impacts at the same time but in different conditions. The conclusions from their research were:

1. The study of BITA is an ongoing process.
2. The maturity of BITA should be linked with cultural dimensions when it is implemented in different contexts.
3. The difficulty of the study of organizational culture impact of maturity of BITA due to the complex relationships between cultural dimensions.

Cultural Dimensions	Com-pany	Cultural Dimensions								
		ASS	FO	PO	HO	GE	UA	PD	In. C	GC
Communications	A	- L	- L	- H	- H	- L	- H	- H	+ H	- L
	B	+ H	+ L	+ L	+ H	---	+ H	+ H	+ H	+ L
Competency/Value Measurements	A	+ L	+ L	- H	+ L	+ H	- H	+ H	± L	---
	B	---	- L	---	- L	---	+ H	- H	- H	---
Governance	A	- L	- H	- L	+ L	+ L	- H	± H	± L	---
	B	+ H	+ H	- L	+ L	---	+ H	+ H	+ H	---
Partnership	A	- L	- L	- H	+ L	- L	- H	- H	- H	---
	B	+ L	- L	+ L	+ H	+ L	- H	+ H	+ H	---
Scope and Architecture	A	+ L	+ L	+ H	+ H	- L	- H	- H	± L	---
	B	- L	- H	+ L	+ L	+ L	+ H	+ H	+ H	---
Skills	A	+ L	- L	+ H	+ H	- H	- H	± H	+ L	± H
	B	+ H	- H	- L	+ H	+ H	- H	+ H	+ H	- H

Figure 30. Organizational Culture Impact on BITA Maturity (M. El-Mekawy & Rusu, 2011)

Satidularn et al. (2011) indicated the importance to differentiate levels of culture, particularly the interplay between Thai national culture and the organizational culture of the Thai state-owned enterprise. Although both national and organizational culture can affect how ITG is implemented, their research showed there was no Thai national influence on the way the company developed its ITG structures and processes, but the the organizational culture was responsible. In fact, they discovered that minimal *power distance*, due to brotherhood relationships, allowed effective ITG communication between superiors and subordinates. However, this idea conflicts with Hofstede, who identified high *power distance* as a key attribute of Thai organizations. In addition, Satidularn et al. (2011) proved that communication strategies contributed to Thais' propensity to strong *uncertainty avoidance* (UAI) and *collectivism* (IDV). Despite the resistance to change of Thai culture, they found that Thai national culture impacted the strategy of the company to encourage its employees to follow ITG best practices. For this reason, understanding cultural impacts is crucial to ITG success. It is remarkable to mention that most of ITG frameworks were developed in Western countries and applied to non-Western countries such as Thailand.

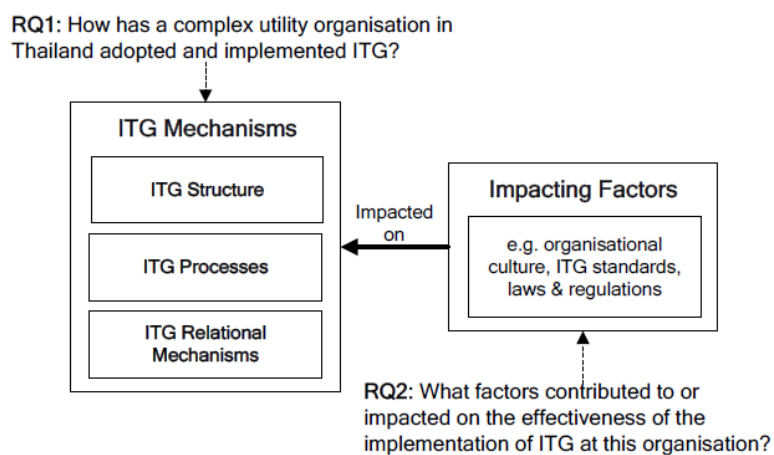


Figure 31. Research Conceptual Framework (Satidularn et al., 2011)

Riandari & Pharmasetiawan (2017) studied the direct effect of Indonesian Culture and Hofstede's National Culture to BITA maturity and the indirect effect of both cultures through organizational culture to BITA maturity. Therefore, the conceptual model (see Figure 32) analysed how the five clusters of Indonesian Main Values (*nationalism, excellence, independence, collectivism, and trust*) affect the six criteria of BITA maturity (*communication, value measurement, governance, partnership, scope and architecture, and skills*) and how was the influence of the six Hofstede's dimensions to BITA maturity. In the model, it was also included the relationship between the five clusters of Indonesian culture and the four quadrants of organizational culture (*hierarchy, market, clan, and adhocracy*), as well as the relationship between the six Hofstede's dimensions and the four quadrants of organizational culture.

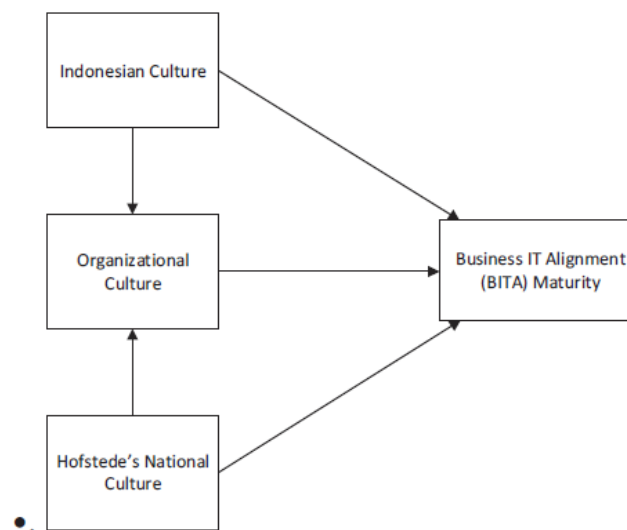


Figure 32. Conceptual Model of Riandari & Pharmasetiawan (2017)

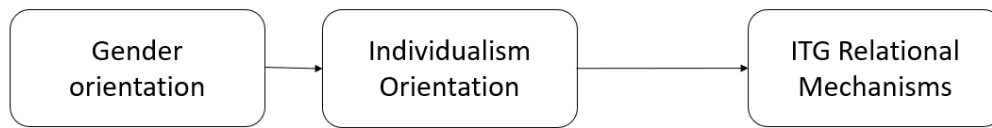
The results of their research showed that the maturity of BITA was more influenced by Indonesian culture than by the Hofstede's culture because the analysis was realized in Indonesia where people are in more concordance with Indonesian culture than Hofstede culture. Hofstede's research was made in the USA using the respondents from one multinational company. In addition, Riandari & Pharmasetiawan (2017) found that Indonesian culture and Hofstede's national culture did not have a direct effect on BITA maturity, but both affected indirectly BITA maturity through the organization culture. However, organizational culture has less influence on BITA maturity than Indonesian culture does. They concluded saying that to achieve the maximum BITA maturity, both positive and negative correlation between business and IT must be considered.

### 4.3.3. Influences on IT governance relational mechanisms

In the part of the influence on IT governance structures, it was mentioned that Janssen et al. (2013) considered the structure as an adequate environment for organizations to recognize the individual person. In this way, it is necessary the relationship with the relational capabilities to guarantee the process of ITG will be followed. According to this, Janssen et al. (2013) related *individualism orientation* to ITG relational mechanisms (see Figure 33). He found out that there is a strong influence of individualistic culture on the relationships of IT governance, and sometimes, a



negative influence on human relationships because of the inclination to people to give more importance to their own effort within a group.



*Figure 33. Relationship between the factors of organizational culture and ITG relational mechanisms, adapted from Janssen et al. (2013)*

## 5. Conclusions

This paper studies the topic of the relationships between culture (organizational, national and both levels) and IT governance with a literature review. By exploring the influences of culture, the purpose was to make a contextualization of IT governance with the study of models in different countries with different cultures.

### 5.1. Limitations

The research of this literature review has some limitations to consider in order to validate the results obtained correctly. In the review methodology, it was mentioned that papers were not limited to any specific time period or geographical location and both theoretical and empirical studies were considered. However, it is relevant to point out that the remaining papers were found between 2007 and 2017. In addition, despite non-native English-speaking countries were included in the review, such as Sweden and Indonesia, only papers in English on online scholarly databases were selected for the study. It is also remarkable to say that most of ITG frameworks were developed in Western countries and applied to non-Western countries (Satidularn et al., 2011).

Another limitation is the case of companies of the industrial segment, such as the study of organization A of El-Mekawy et al. (2016). In these companies, the use of IT is not considered by managers as a differential of business, creating difficulties in the knowing of ITG and its implementation (Simonsson et al., 2005).

Finally, Hofstede's national culture model has been criticized by some authors in the literature because of the stereotype of nations and the limitation of the study to a single multinational ignoring within country culture heterogeneity. Hofstede's model has also been criticized for simplicity because of the reduction of culture in a set of dimensions. However, Hofstede is the most relevant author when culture is linked with IT topics and his work has been validated for many researchers because of the clarity and resonance with managers. According to Kirkman et al. (2006), despite the date of the publication of Hofstede's model in 1980, the values and dimensions of Hofstede are still relevant.

### 5.2. Contributions to theory

This research of this paper is a theoretical contribution that includes the influence of culture on ITG elements and the relationship between both organizational and national and ITG.

*RQ1: How is national culture's impact on ITG has been identified.*

*RQ2: How is the relationship between both organizational culture and national and ITG has been identified with mixed models based on Hofstede dimensions and different organizational models.*

National and organizational culture influences on ITG processes is the topic most studied by researchers, whereas there is still a lack of study of the influence of culture, in both levels, on IT governance structures. Therefore, the culture's impact on ITG structures could be an avenue for further research. According to Prinz (2015): "*Current literature can be utilized as a guideline to predict behavior. Nevertheless, further research should be conducted to achieve a more consistent and precise outcome*".

Findings have demonstrated the relevant impact of culture on IT governance. However, in the literature, researchers have not studied how culture can influence IT governance. Aasi et al. (2014) made a literature review reaching the same conclusion: "*there is a lack of research on how the culture can influence IT governance and particularly on its structures and processes areas*". One reason could be the difficulty of the study of culture impact due to the complex relationships between cultural dimensions (M. El-Mekawy & Rusu, 2011)

This literature review share findings with the research of Aasi et al. (2014). Authors showed in Table 8, such as El-Mekawy et al. (2016) and Kusriani et al. (2017) and Riandari & Pharmasetiawan (2017), were not included in the research of Aasi et al. because of the date of publication. In comparison with their research, this paper explains the models developed by authors in the literature deeply. In addition, this literature review contains studies that are not based on Hofstede's model, such as Sherer (2007) and Prinz (2015). Sherer (2007) studied the impact of national culture on ITG processes creating a framework for understanding IT investment management. In contrast, Prinz (2015) investigated which parts of the COBIT framework, and as a consequence IT governance, are influenced by national culture.

### **5.3. Implications for practice**

Literature findings indicate implications for the practice of IT governance in organizations. Managers should know the differences between cultures to make their decisions and manage the use of IT resources efficiently. Therefore, this could be useful to organizations that plan to implement ITG. Moreover, with this analysis, organizations that have implemented ITG and want to improve their results can identify the relevant factors that have an influence on processes, structures, and relational mechanisms. According to Janssen et al. (2013), IT executives should understand the orientations that form the organizational cultures and adapt their ITG models with the formative factors of the organizational culture in order to obtain better results.

According to Hofstede (1993), the concept of management is different among nations. Martinsons and Davison (2007) indicated that national culture influences how people expect the degree of participation in a decision-making process. Decisions are made differently, thus it is necessary for managers to know these differences. Despite business and IT alignment was traditionally linked to executive levels and CIO's duties, nowadays, it involves more aspects at operational levels within the organizations in order to achieve cohesive goals between IT and business (M. El-Mekawy & Rusu, 2011). In fact, according to Zhong et al. (2012a), "*in an era of IT dominance and globalization, it is anticipated that the research on ITG culture interaction will be of benefit to the growing body of knowledge on IT value, strategic IT use, and corporate governance*".

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## **Eidesstattliche Erklärung**

Hiermit versichere ich, die vorliegende Arbeit mit dem Titel

*“Culture’s Impact on IT Governance: Literature Review”*

selbständig, ohne fremde Hilfe und ohne Benutzung anderer als der von mir angegebenen Quellen angefertigt zu haben. Alle aus fremden Quellen direkt oder indirekt übernommenen Gedanken sind als solche gekennzeichnet.

Die Arbeit wurde noch keiner Prüfungsbehörde in gleicher oder ähnlicher Form vorgelegt und wurde noch nicht veröffentlicht.

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