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RICHTMANN
P U B L I S H I N G

Research Article

Information Technology Governance in the Tunisian Banking Industry: An Exploratory Study

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Abstract

Information Technology (IT) has become the foundation for supporting and sustaining businesses. IT strategic importance has prompted many organizations to extend Governance to IT and place it high on their agendas. Banks are among those organizations that heavily use IT to enhance their service delivery capabilities. Besides, globalization, competition, and compliance requirements pushed banks to consider IT Governance as part of their overall corporate governance strategy. Past studies have shown that IT Governance in the financial industry is more mature than in other sectors. However, there is little information about IT Governance in economically developing nations. This article conducted a Delphi study to evaluate the Perceived Efficiency and Ease of Implementation of IT Governance practices in the Tunisian banking industry. The results show that compared with Process and Relational Mechanisms, Structural Practices are perceived to be more effective and easier to implement. This research helps to understand better the current state of IT Governance Implementation in less developed countries.

Keywords: IT Governance, Structures, Processes, Banking Industry, Relational Mechanisms

1. Introduction

IT is changing the world of business. After starting as a day-to-day operations support tool, they become an essential part of business processes within organizations. The widespread use of

technology within the organization makes IT Governance the most crucial focus of executives. Indeed, many executives seek higher business performance by implementing an effective IT Governance framework to support and achieve company strategies and KPIs (IT Governance Institute 2003). This is particularly true in the case of uncertain environments, which characterizes today's business atmosphere (Siregar and Harahap 2021). In this way of thinking, past research has focused on identifying the best practices (Structures, Processes, and Relationship Mechanisms) that organizations can use to implement IT Governance (De Haes and Van Grembergen 2008). Other studies evaluated IT Governance performance within the organization (Ali and Green 2012; Ferguson et al. 2013; Heindrickson and Santos 2014). De Haes and Van Grembergen (2008) acknowledged that IT Governance best practices might differ in different industries. They argue that, mainly for developed countries, organizations in the financial industry have a more mature and broader IT Governance framework than other industries (De Haes and Van Grembergen 2008). This being said, very little is known about the implementation of IT Governance in economically developing nations (Spremić et al. 2013; Jhon 2012; Al Qassimi and Rusu 2015; Degefu 2016; Asongu et al. 2020; Lee 2020; Alansari and Al-Sartawi 2021). This article explores the current state of IT Governance in the Tunisian banking sector to fill this gap. This research aims to provide more insights into the current status of IT Governance in the Tunisian banking industry.

To address this goal, we ask the following key questions:
- – What are the IT Governance practices used in the Tunisian banking industry?
- – Are these practices perceived as being effective?
- – Are these practices perceived as being easy to implement?
- – What is the basic set of IT Governance practices in the Tunisian banking industry?

To answer the above questions, we first review the existing literature on IT Governance implementation. Second, we describe the research methodology adopted for this study. The results are then presented along with research contributions. Finally, we conclude this article by presenting its limitations and proposing directions for future research.

2. Literature Review

2.1 IT Governance

IT Governance is widely recognized as a fundamental part of Corporate Governance (Weill and Ross 2004a, IT Governance Institute 2003, 2008). It consists of the organizational processes, structures, and leadership that ensures that IT helps to achieve its strategic objectives (IT Governance Institute 2003, Van Grembergen 2007). More precisely, IT Governance is designed to encourage desirable IT-related behaviors within an organization by specifying a framework of accountabilities and rights (Weill and Ross 2004b).

IT Governance was initially driven by compliance initiatives such as Sarbanes-Oxley in the United States and Basel II in the European Union. Later it evolved to become more closely related to acquiring IT business value (Weill and Ross 2004a; Xue, Liang, and Boulton 2008; Bradley et al. 2012; Ilmudeen 2021; Salehi 2021; Jabbar 2021). The IT Governance Institute (2008) states that to get the best value out of IT investments, a company needs leaders with the right skills, distinct processes with clear responsibilities and accountability; suitable structures; and practical tools and indicators. Therefore, this means that an effective corporate IT Governance method is needed.

Previous research has shown that IT Governance is more and more relevant, especially in the current global uncertain business environment (Siregar and Harahap 2021). IT Governance can be implemented using a combination of different relational Structures, Processes, and Relational Mechanisms (Peterson and Ramon 2000; Peterson 2004; De Haes and Van Grembergen 2008). Structures consist of formal or structural instruments that enable horizontal contact between the company's functions and IT management to facilitate decision-making (Peterson 2004). IT

Governance Processes refer to the institutionalization and formalization of IT monitoring procedures or strategic IT decisions (Peterson 2004; 2004) (e.g., IT Balanced Scorecard). Finally, Relational Mechanisms refer to the active cooperation and participation between executives, IT management, and corporate management (Peterson 2004).

2.2 IT Governance Implementation

The implementation of IT Governance in organizations was covered by normative and descriptive studies. Normative studies (IT Governance Institute 2005, Dahlberg and Kivijarvi 2006; Fink and Ploder 2008) provided framework conditions, methods, or guidelines for effective IT governance implementation. These studies also looked at compliance with recognized best practices and standards (such as COBIT, ITIL, ISO17799: 2000, AS8015) to enable effective IT Governance. For instance, the COBIT framework (Control Objectives for Information and Related Technologies) considers implementation as part of a structured approach to IT Governance provides managers, users, and auditors, with key performance indicators that can be used to ensure successful implementation of IT Governance (IT Governance Institute, 2005).

Descriptive studies, on the other hand, illustrate how organizations implement an IT Governance framework (Van Grembergen, Saull, and De Haes 2003; Weill and Ross 2004b; Bhattacharjya and Chang 2007; De Haes and Van Grembergen 2009; Gruttner, Pinheiro, and Itaborahy 2010; De Haes et al. 2011). These studies have demonstrated that IT Governance is habitually implemented based on a mix of Processes, Structures, and Relational Mechanisms (Peterson 2004; Van Grembergen, De Haes, and Guldentops 2004; Weill and Ross 2004a). These IT Governance Organizational Structures include establishing organizational departments and defining official roles responsible for the IT decision-making process so that the IT management function and the organization's business can communicate horizontally (Peterson 2004; De Haes and Van Grembergen 2008). These structures (IT strategy committees, Presence of IT people at the board level, IT steering committees) comprise actors from different levels in the organization: business managers, IT managers, and corporate executives (Peterson 2004; Weill and Ross 2004a). IT Governance Processes are the institutionalization and formalization of IT strategic decision-making and IT monitoring procedures (system performance measurement, IT balanced scorecard, IT strategic planning, COBIT, ITIL) (Peterson 2004; De Haes and Van Grembergen 2008). Processes are implemented to allow consistency of day-to-day activities with existing long-range policies and give the evaluation needed to guide decisions (Van Grembergen, De Haes, and Guldentops 2004; Peterson 2004; Weill and Ross 2004a). Lastly, Relational Mechanisms refer to the collaborative relationship and active participation among IT management people, business management people, and corporate executives involved in IT Governance (Peterson 2004; De Haes and Van Grembergen 2008). Building Relational Mechanisms, such as job rotation, locating business people and IT people together, as well as trainings, are usually essential to create a better fit between business needs and IT strategy (Callahan and Keyes 2004; Van Grembergen, De Haes, and Guldentops 2004; Bhattacharjya and Chang 2007), as well as stakeholder management (Mutakyahwa and Marnewick 2021)

Past research has shown that to maximize IT value, IT Governance implementation by itself is not sufficient. De Haes and Van Grembergen (2009) argued that the implementation measures need to be mature enough to generate value for the organization. An organization must continuously question IT Governance mechanisms' effectiveness and revise them in an active design process to promote its objectives and performance goals (Weill and Ross 2004a).

2.3 IT Governance in the Banking Industry

Banks of the 21st century are dependent on IT for almost all of their activities. They use IT-enabled payment systems, internet-based access, and innovative service delivery modes to expand their services and cope with the fast-increasing customer needs (Lemus, Pino, and Velthius 2010). In

addition to benefits such as IT use and dependency, those systems pose new challenges and concerns related to banking industry risk, information security, and Governance associated with supporting collective ownership of banking information and compliance (De Abreu Faria, Maçada, and Kumar 2013; Khuram, Kamran, and Ahmer 2015; Mushtaque, Ahsan, and Umer 2014; Lacković 2013). IT Governance has evolved as a topic of great interest for the banking industry in this context of Governance challenges. This being said, little is known about IT Governance Implementation in economically developing nations, and even less in their financial industry (Degefu 2016; Spremić, Bajgorić, and Turulja 2013; Jhon 2012). This research aims to add more insights and fill this gap by exploring IT Governance status in the banking industry of Tunisia.

3. Methods

3.1 Delphi Design

This study is exploratory. We chose the Delphi research methodology due to the lack of research in the field of IT Governance implementation, especially for organizations evolving in economically developing nations. The research process started with identifying an exhaustive list of IT Governance practices organizations can use to implement IT Governance. After conducting extensive literature research, we decided to use the list of 33 IT Governance Practices by De Haes and Van Grembergen (2008) as the starting point and basis for our Delphi research. These authors have already validated the 33 IT Governance Practices in the Belgian financial industry.

3.2 Sampling

Our research used the Delphi method to obtain opinions on Tunisian banks' IT Governance practices. The Delphi method provides a structured process for soliciting opinions from experts on specific topics and for group interaction without the need for face-to-face meetings (Taylor-Powell 2002). As recommended in previous studies, ten to fifteen individuals are considered sufficient for a Delphi study (Taylor-Powell 2002). We asked a total of 18 participants, including consultants, senior IT, and senior business people who have worked in banks and are familiar with IT Governance practices in the Tunisian banking industry. Eleven experts agreed to participate in the study for a response rate of 61%. The experts had different professional profiles (see Table 1). This group of experts continued to be involved during the whole duration of the study.

Table 1: Experts Panel Composition

Participant Position	Organizations
Senior IT Project Manager	Bank A
Head of Internal Audit Department	Bank A
Director of Information Systems Security	Bank A
Director of Information Systems Security	Bank B
Chief Finance Officer	Bank C
Director of Organization and Information Systems	Bank C
Head of Internal Audit Department	Bank D
Head of Internal Audit Department	Bank E
Director of Network Systems and IT Operations	Bank F
Senior IT Consultant	Bank G
Director of Information Systems Security	Bank H

3.3 Data Collection

Experts were asked to fill out questionnaires in three rounds during the Delphi research. In the first Delphi round, participants presented with the 33 IT Governance Practices and were asked to provide feedback. This first round aimed at validating De Haes and Van Grembergen's (2008) list in the Tunisian banking industry. Participants had the opportunity to delete, change, or add practices based on their knowledge and experience. During the second round, a Likert scale was used, and participants were asked to rate Perceived Ease of Implementation (5 = very easy, 0 = not easy) and the Perceived Effectiveness (5 = very effective, 0 = not effective) for each of the selected IT Governance practice. Based on their previous assessment and experience, respondents were also asked to choose and rate the ten most important IT Governance practices for the Tunisian banking industry, where the least important one scores ten and the most important practice scores 1. The aim here is to identify the 10 IT Governance practices that constitute the minimum baseline for IT Governance in the Tunisian banking industry. In the final and third round, the experts were asked to make a last reassessment of their ranking of the two attributes (Perceived Ease of Implementation and Perceived Effectiveness) out of round 2, considering the group average score in the final round. This last round aimed at achieving greater consensus.

The degree of consensus among participants was measured using Krippendorff's alpha estimate with a 95% confidence interval. This allowed us to gauge the judges' inter-rate reliability to validate our results and estimate the consensus level (Hayes and Krippendorff 2007)**.**

4. Results

4.1 Round 1 – Validating the List of 33 IT Governance Practices

As noted above, the Delphi study used De Haes and Van Grembergen's (2008) list of 33 IT Governance practices. In the first round, respondents were asked to review the list of IT Governance practices based on their experiences and opinions. Participants suggested some changes to the original list, taking into account the Tunisian banking industry. The data collected from the first survey were analyzed to provide an up-to-date list of IT Governance practices (see Table 2).

Table 2: List of validated IT Governance Practices

	Code	IT Governance Practice
IT Governance Structures	S.1	IT Strategy Committee at Level of Board of Directors
	S.2	Board-level IT Audit Committee
	S.3	CIO being part of Corporate Executive Committee
	S.4	Steering Committee for IT
	S.5	CIO Reporting To CEO
	S.6	Inclusion of Governance Tasks in Responsibilities
	S.7	Security/ Compliance/ Risk Officer
	S.8	IT Project Steering Committee
	S.9	IT Security Steering Committee
IT Governance Processes	P.1	Strategic IS Planning
	P.2	Performance Assessment of IT
	P.3	Portfolio Management
	P.4	Charge Back Arrangements
	P.6	IT Governance Framework (COBIT)
	P.7	IT Governance Assurance and Self-Assessment
	P.8	Project Governance
	P.9	Control and Reporting on IT budget
	P.10	Benefits Management and Reporting
	P.11	Risk Maps
	P.12	COSO/ ERM

	Code	**IT Governance Practice**
	R.1	Job Rotation
	R.2	Co-Location
	R.3	Cross-Training
IT Governance Relational Mechanisms	R.4	Knowledge Management Relative to IT Governance
	R.5	Business/ IT Account Management
	R.6	Nonformal Meetings Between Business and IT Senior Management
	R.7	Regular Organization-Wide Communication Regarding IT
	R.8	Awareness Campaigns on IT Governance

Respondents suggested removing the below practices from the original list:
– IT expertise at the level of board of directors,
– IT Governance function/officer,
– Architecture steering committee,
– Service level agreements,
– IT Leadership.

According to the respondents, IT staff are not very welcome on the board of directors of the Tunisian banking industry. They argued that shareholders would feel more secure with board members with a financial background and extensive banking experience than IT skills. The respondents suggested eliminating "IT Governance function/officer" from the list, arguing that the CIO is usually in charge of such a position, making this structure redundant. They also consider the "Architecture steering committee" non-convenient because IT architecture's overall management is usually outsourced.

Furthermore, the respondents suggested modifying the structure "CIO reporting to CEO and/or COO" to "CIO reporting to CEO." They considered that CIOs should report directly to the CEO for Governance issues. Regarding IT Governance Processes, the respondents asked for adding "risk maps" to the list. Respondents believe that risk management support is an essential topic for the banking industry and should be treated as a Governance matter. Meanwhile, "Service level agreements" was taken off the list as the respondents considered an operational management procedure. Finally, the Relational Mechanism "IT Leadership" was removed from the list, emphasizing the complex power structure between IT staff and business people in the Tunisian banking industry.

4.2 Rounds 2 and 3 – Evaluating IT Governance Practices

These two Delphi rounds aim to assess the Perceived Ease of Implementation and Perceived Effectiveness and identify a minimum set of IT Governance practices in the banking industry. The results revealed that some IT Governance practices are easier to implement or more effective than others. The following six IT Governance practices were found to be perceived as the most effective for the Tunisian banking industry:
– CIO reporting to CEO,
– Inclusion of Governance Tasks in Responsibilities,
– Steering Committee for IT,
– Nonformal Meetings Between Business and IT Senior Management,
– Control and Reporting on IT budget and Performance Assessment of IT.

The respondents stressed that these practices are also perceived as relatively easy to implement (see Figure 1).
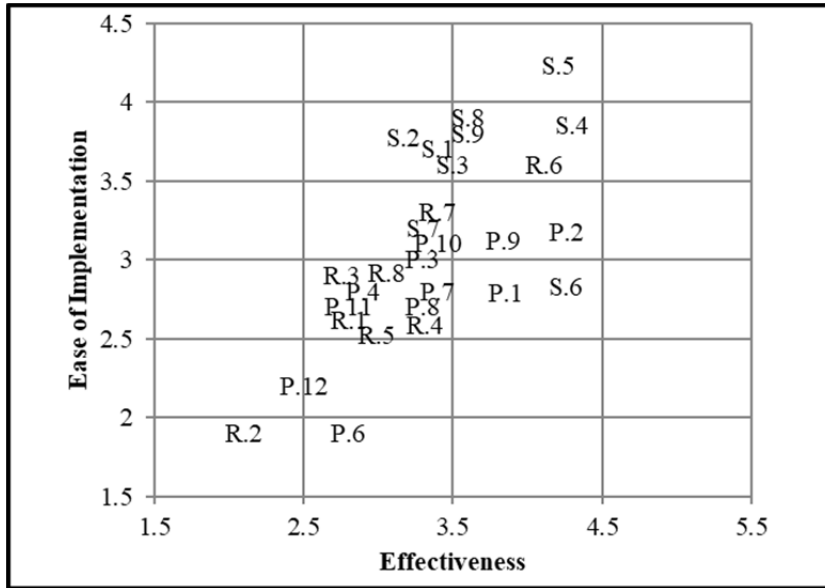
Figure 1: Average Score of Perceived Effectiveness and Ease of Implementation

Following the third Delphi round, the interpretation of the results was performed. Interestingly, the IT Governance relational mechanism "co-location" of business people and IT was rated the lowest by our experts. This can be explained by the relatively conflicting relationship between IT staff and the banks' management. According to the experts, management people still view IT people as support staff and should not have decisional power over the Governance of banking activities. Another thought-provoking result is that the experts considered the IT Governance framework COBIT ineffective and difficult to implement. Although, recent research found that organizations can benefit from implementing COBIT. However, it is still more challenging to implement, which may explain our experts' lowest rating given to such a framework. Nevertheless, some of the individual practices, which are integral parts of COBIT, received a good rating in our study (3.5 on average). For instance, the steering committee for IT obtained a good score in both Perceived Effectiveness and Perceived Ease of Implementation (4 on average). In general, COBIT provides good practices for managing the IT process (IT-Governance-Institute, 2005). However, it is still complex and challenging to implement in several organizations (Pereira and Ferreira 2015).

Another interesting finding is that respondents were unanimous about the importance of considering IT Governance under the executive level and board of directors, which is in line with the literature (IT Governance Institute 2003). Thus, "IT strategy committee at the level of board of directors," "Board Level IT audit committee," " CIO being part of Corporate Executive Committee," " Steering Committee for IT," and "CIO reporting to CEO" got all high scores for both criteria.

Figure 2 and Figure 3 represent the average score of Perceived Effectiveness and Perceived Ease of Implementation for each IT Governance practice. Experts believe that the structure is the most effective and easiest to implement compared with Processes and Relational Mechanisms. Regarding Perceived Ease of Implementation, the implementation of relational mechanisms was perceived as easier to achieve than the implementation of Processes, and their informal character and low investment can explain the informality.
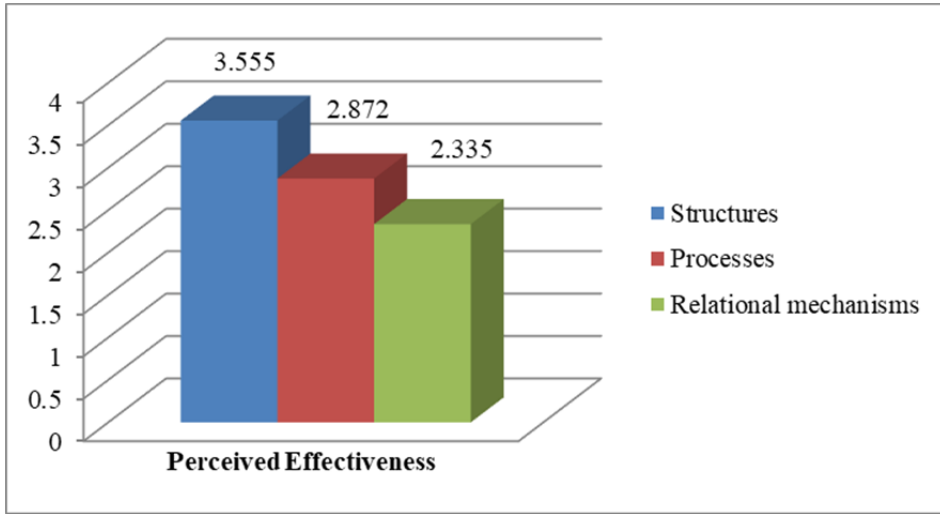
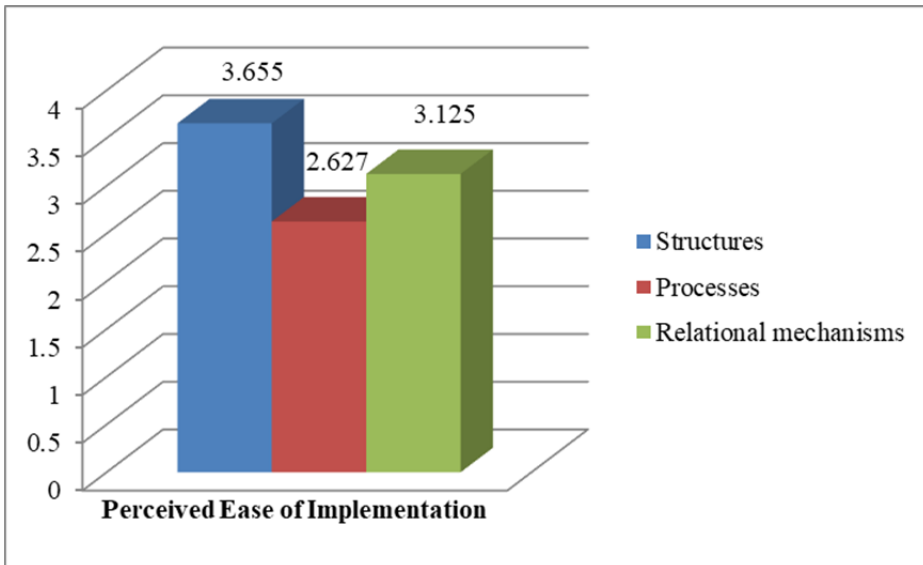**Figure 2:** Average Perceived Effectiveness for IT Governance Practices

Figure 3: Average Perceived Ease of Implementation for IT Governance Practices

Finally, the Delphi study provided a list of IT Governance practices, which can be regarded as the minimum set of practices for implementing IT Governance in the Tunisian banking industry. Respondents were asked to propose ten minimum baseline for IT Governance practices, taking into account the attributes of Perceived Ease of Implementation and Perceived Effectiveness and their professional experience in the banking industry. Table 3 shows the results of this exercise.

Table 3: Minimum Baseline of IT Governance Practices in the Tunisian Banking industry

	Code	IT Governance Practice
IT Governance Structures	S.1	IT Strategy Committee at Level of Board of Directors
	S.2	Board Level IT Audit Committee
	S.3	CIO being part of Corporate Executive Committee
	S.4	Steering Committee for IT
	S.5	CIO Reporting To CEO
	S.6	Inclusion of Governance Tasks in Responsibilities
IT Governance Processes	P.1	Strategic IS Planning
	P.2	Performance Assessment of IT
	P.9	Control and Reporting on IT Budget
IT Governance Relational Mechanisms	R.6	Nonformal Meetings Between Business and IT Senior Management

Figure 4 shows the perceptual map of these minimum baseline practices provided by the experts. Consequently, practices in the circle should be considered essential IT Governance practices in Tunisian banks as a preliminary step towards a broad IT Governance framework.
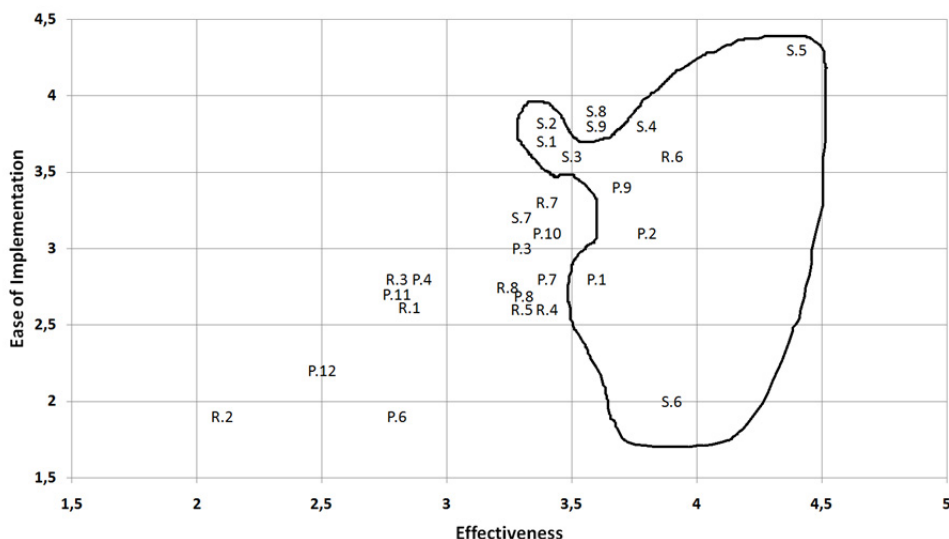

Figure 4: Minimum Baseline of IT Governance Practices for The Tunisian Banking Industry

5. Discussion

This paper aimed at understanding the current status of IT Governance in the Tunisian banking industry. By consulting a group of 11 experts, we validated a list of 10 IT Governance Practices that participating experts considered the minimum baseline for any Tunisian Bank that wants to establish an IT Governance strategy. The main focus of our experts was on IT Governance Structures, where six practices were identified, three practices were identified for IT Governance Processes, and finally, only one practice was identified for IT Governance Relational Mechanisms.

IT Governance Structures were found to have the highest Perceived Effectiveness and Perceived Ease of Implementation. For instance, CIO having a direct reporting line to CEO as a Governance Structure is perceived to be highly effective. This might be explained by the fact that a close

awareness of IT matters at the executive level can improve the added value that IT can bring to the business. In addition, the high Perceived Effectiveness score can be explained by the fact that Structures were identified by past research to create effective IT service delivery in bureaucratic developing countries (Pepinsky et al., 2017). Regarding the Perceived Ease of Implementation, this can be explained by the fact that our experts are used to IT Governance Structures given their personal experience in IT Governance deployment.

Similarly, IT Governance Processes scored relatively high in terms of Perceived Effectiveness. This can also be explained by the fact that it is easier to measure IT Governance processes' effectiveness as they rely on recognized best practices and standards. However, IT Governance Processes had the lowest Perceived Ease of Implementation. This can be explained as depicted by the experts by the little experience and maturity in IT Governance framework implementation that the Tunisian banking sector is still experiencing. For instance, implementing a framework like Cobit needs critical requirements to succeed (De Haes et al., 2020) that the Tunisian banking sector does not have.

On the other hand, Relational Mechanisms scored the lowest in terms of Perceived Effectiveness. This can be explained by the fact that trust is usually lower in developing countries, and thus our experts perceived building relationships between IT Governance stakeholders in the Tunisian banking sector as less effective. Relational Mechanisms were found essential to build trust between stakeholders in developing countries (Carnaúba et al. 2020). In addition, social attitudes such as trust were one of the main determinants of economic development (Algan and Cahuc 2007). In a study by Knack and Keefer (1997), the most trustful countries were the Scandinavian ones, where almost 70% of the population trusted each other, and Mediterranean countries, like France, Portugal, and Greece, had only 20% of people trusting each other. The lowest score was with people in African and Arabic countries, where less than 10% of the population trusted each other. Knack and Keefer demonstrated a significant cross-country correlation between country levels of trust and country income per capita. Based on Knack and Keefer (1997), we can assume that Tunisia has a low population score trusting each other. Therefore, given that Relational Mechanisms are a way of building trust between stakeholders (Carnaúba et al., 2020), and given that trust is assumed to be lower in Tunisian society, it is not a surprise to see Relational Mechanisms being perceived as less effective in the Tunisian banking sector.

In contrast, Relational Mechanisms scored higher in Perceived Ease of Implementation. Relational Mechanisms are not excluded as an IT Governance practice, they are perceived as easy to implement, but it lacks effectiveness in executing banks' IT Governance Strategy.

6. Conclusion

In this study, we aimed at investigating the current status of IT Governance in the Tunisian banking industry. The study used the Delphi methodology. A group of 11 experts evaluated the Perceived Ease of Implementation and the Perceived Effectiveness of an initial list of IT Governance Processes, Structures, and Relational Mechanisms based on the work of (De Haes and Van Grembergen 2008). Respondents were asked to propose a minimum baseline for IT Governance practices that any Tunisian bank should implement based on their professional experience. Overall, this study validated 28 practices that Tunisian banks used to implement IT Governance. In this list, structural practices were considered more effective and easier to implement than IT Governance processes and relational mechanisms. In addition, the respondents also highlighted 10 IT Governance practices that should be implemented as the minimum baseline for the Tunisian banking industry to promote IT Governance. For practitioners, the findings of our paper suggest that the first steps in implementing IT Governance in a financial institution should be by setting up these ten key minimum baseline IT governance practices.

7. Limitation

While this research presents the above contributions, it also presents some limitations. First, the number of Delphi experts could be considered as low. However, reaching very busy experts in the banking industry proved to be a difficult task. Second, the sample of banks presented differences in sizes and years of existence. While most banks in our sample were well-established ones, with several decades of existence, some banks like "Bank C" were founded about only a decade ago. Its size was significantly smaller than the average Tunisian bank. This could have influenced the study results as IT Governance is expected to be more mature in well-established large-size institutions. Third, while we can extrapolate the results of this paper to other developing economies in North Africa, our study findings cannot be generalized to the rest of Africa or other developing economies in different parts of the world. Each country and economy has its specificities and regulations, and more studies are needed in different countries before generalizing the findings.

Future research can study other Tunisian sectors of activities to validate the present study's findings. More studies could be conducted in other parts of the world to validate the results and generalize them. Additional research could also address the impact of environmental characteristics such as the organization's size or the level of IT sophistication on the IT Governance framework. Finally, other research may measure the impact of the IT Governance framework on business performance.

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