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Catalysts And Inhibitors For Implementing An Effective IT Governance In Public Sector

BELHAJ Aadil¹, ZAHI Jamal²

¹ *PhD in Economics, LM2CE, FEG, SETTAT, MOROCCO*

a.belhaj@uhp.ac.ma

² *Full Professor, LM2CE, FEG, SETTAT, MOROCCO*

zahi_ja@yahoo.fr

Abstract— Over the last two decades, Morocco has undertaken flagship and structuring projects aimed at the digitalization of its public administrations and organizations. This endeavor has assisted public organizations in adequately addressing the new requirements of their environment and keeping pace with the continuous evolutions of IT. Furthermore, it has enabled them to capitalize on the extensive possibilities for information analysis and processing among individuals and functions within the organization.

Moreover, the substantial costs incurred by public organizations due to the proliferation of IT investments have underscored the importance of implementing effective IT governance. This ensures alignment between IT strategy and the overall organizational strategy, as well as the creation of value from IT investments.

This paper aims to identify the enablers and inhibitors of successful IT governance implementation in Moroccan public sector organizations. To achieve this objective, we conducted a multiple case study involving in-depth analysis of six Moroccan public organizations. Data were collected from documentary sources related to each case and through semi-structured interviews with IT function managers.

The findings of this research enabled us to identify the facilitating practices and mechanisms (catalysts) that IT managers deem crucial for effective IT governance, as well as the barriers (inhibitors) that hinder its adoption.

Keywords— Catalysts, Inhibitors, IT Governance, Public Organizations, Barriers to IT Governance

Résumé — Le Maroc s’est lancé dans les deux dernières décennies dans des projets phares et structurants visant la digitalisation et la numérisation de ses administrations et organisations publiques. Cette volonté est apparue pour aider les organisations publiques à répondre convenablement aux nouvelles exigences de leurs environnements et à suivre les évolutions permanentes des TI. Aussi pour bénéficier des larges possibilités d’analyses et de traitements des informations entre les individus et les fonctions de l’organisation qui en offrent.

En outre, les coûts importants assumés par les organisations publiques suite à la prolifération des investissements TI a poussé ces organisations à percevoir l’importance de la mise en place d’une gouvernance des TI efficace afin d’assurer l’alignement entre la stratégie TI et la stratégie globale de l’organisation et afin d’assurer la création de valeur TI.

Dans ce sens, cet article tente à identifier les catalyseurs et les inhibiteurs d’une implémentation réussie de la gouvernance des TI dans les organisations du secteur public marocain.

Pour atteindre cet objectif, nous avons mené une étude de cas multiple où six organisations publiques marocaines ont été étudiées en profondeur. Nous avons collecté les données en se basant sur les sources documentaires liées à chaque cas et en réalisant des entretiens semi-directifs avec les responsables des fonctions TI.

Les résultats de cette recherche nous ont permis de repérer les pratiques facilitateurs (catalyseurs) que les responsables TI estiment prépondérants pour une bonne gouvernance des TI, ainsi que les obstacles (inhibiteurs) qui freinent l’adoption d’une gouvernance efficace.

Mots-clés — Catalyseurs, Inhibiteurs, Gouvernance des TI, Organisations publiques, Obstacles de gouvernance TI.

INTRODUCTION

In the last two decades, Morocco has embarked on flagship and structuring projects aimed at the digitalization of public administrations and organizations. This desire came from the fact that information technology (IT) has become not only a set of tools to support the activity of the organization, but also a driver of efficiency, growth and sustainability of organizations (Jonathan and Rusu, 2018).

These technologies and systems initially invaded private sector companies. Subsequently, public sector organizations in turn, in an effort to provide quality government services and benefits to citizens, have come to adopt them as an integral part of their daily operations (Ali and Green, 2006). Moreover, public organizations are obliged to accompany technological developments by approving the means and IT resources necessary for users, whether they be business or citizens (Benabdelhak, 2020). In this sense, particular attention must also be paid to organizations and public administrations in particular. Indeed, these organizations benefit from an increasingly important allocation of budgets reserved for IT investments.

Moreover, the proliferation of IT investments in both the private and public sectors has pushed organizations to realize the importance of IT governance (Belhaj and Zahi, 2022). Indeed, researchers have shown the significant challenge that IT governance has imposed on the leaders of public organizations who wish to maximize the value of their IT investments (Rusu and Viscusi, 2017).

On the other hand, the implementation of IT governance is not an obvious undertaking, especially in the public sector. Indeed, organizations in this sector are faced with perpetual structural changes in the way they operate and in their relationship with the economy of a country and its citizens. These changes, in turn lead to a reassessment of the relevance of governance mechanisms in the public sector (Howard and Seth-Purdie, 2005).

In this perspective, this article attempts to answer the following research question: What are the catalysts and inhibitors of IT governance implementation in Moroccan public sector organizations?

We start this article with a literature review dealing with the concept of IT governance, its mechanisms and the specificities of IT governance in the public sector context. After that, we present the methodology adopted, and then we present and discuss the results of the empirical study.

1. LITERATURE REVIEW

1.1. IT Governance

IT governance is a concept that appeared in the 1990s. It has become a major device for a set of organizations. A variety of definitions of IT governance have been proposed by academics and professionals (Webb et al., 2006). At present, there is no consensus on how to define IT governance accurately (Rouy and Ruiz, 2008). Indeed, providing a single, comprehensive definition that covers all its dimensions is proving difficult to advance (Brown and Grant, 2005).

The Information Technology Governance Institute (ITGI, 2001) has defined IT governance as the responsibility of the board of directors and senior management. It is an integral part of corporate governance, and consists of the organizational structures and processes that support and extend the strategies and objectives of the organization.

Van Grembergen and De Haes (2009) consider IT governance as « an integral part of corporate governance exercised by the board of directors and concerns the definition and implementation of processes, structures, and relational mechanisms in the organization that enable business and IT people to fulfill their responsibilities to support the alignment of IT with the business and to create business value from IT investments ».

Moreover, the multitude of definitions provided by researchers allows us to highlight a few elements of convergence. On the one hand, researchers have revealed that the objective behind the

implementation of an IT governance framework is to ensure the alignment of information technologies with the organization's global strategy, thus enabling the company to create value (Van Grembergen and De Haes, 2009; Bianchi et al., 2017; Bianchi et al., 2020). On the other hand, the definitions show that the implementation of IT governance is the responsibility of the board of directors and the general management. Moreover, IT governance must be done at the top management level, which is why groups with subsidiaries must organize it within their holding company (Georgel, 2005).

The implementation of IT governance is therefore simply a coherent and well-chosen system of processes, structures and relational mechanisms, aimed at sharing roles and responsibilities in IT decision-making.

In addition, the notion of IT value is fundamental. Indeed, the implementation of IT governance is considered to be a solution for enhancing the value of IT infrastructure investments and their contribution to the organization's performance. As for IT risk, its pure and simple elimination is an old and unattainable dream (Georgel, 2005). IT governance seeks to reduce risk, balance it, and bring it back to a controllable situation.

Many authors have attempted to answer the question of pragmatic implementation of IT governance (De Haes and Van Grembergen, 2004; Bhattacharjya and Chang, 2006; Bianchi et al., 2017; Bianchi et al., 2020). For these authors, IT governance can be deployed using a mix of processes, structures, and relational mechanisms.

1.2. Conceptual framework



Figure 1 : Adapted from De Haes & Van Grembergen (2004)

Implementing good IT governance, as several researchers have demonstrated, requires making a choice between a set of mechanisms (structures, processes and relational mechanisms). Structures explain how the IT function is organized within the organization. The processes aim to guarantee the consistency of daily behavior with the IT strategy. As long as relational mechanisms are of indisputable importance in the implementation of effective governance.

Furthermore, the objective behind the desire to exercise good IT governance focuses on the following five (5) dimensions:

- Ensure consistency and alignment between the IT strategy and the overall strategy of the organization.
- Ensure delivery of value. That is to say, to ensure that IT brings the expected benefits.
- Properly manage the risks related to the use of IT and information systems.
- Management and optimization of IT-related resources: HR, infrastructure, information, and applications.
- Follow-up and monitoring of the implementation of the IT strategy.

1.3. IT governance in public sector

Is IT governance the same for all organizations, regardless of the sector of activity? This question has been controversial in the IS scientific community. Indeed, researchers such as Campbell et al. (2009) and Sethibe et al. (2007) have shown that there are systemic differences between public and private sector organizations, suggesting that a one-size-fits-all approach to IT governance may not apply to all organizations.

On the legal side, legislative measures have been implemented in several countries to ensure greater accountability of organizations (Ridley and Liu, 2004). As well, organizations are increasingly adopting formal processes that specifically address the governance of important assets, including IT, given its indispensable and strategic nature for the modern organization.

In private companies, it is the board of directors and senior management that are responsible for establishing governance structures that ensure effective decision-making processes (Weill and Ross 2004). However, for public organizations there is a complex set of accountability relationships in place that span the electorate, the public service, the government, and parliament (Campbell et al. 2009).

Moreover, public sector organizations are facing continuous structural changes in the way they operate and in their relationship with the economy of a country and its citizens. These changes in turn lead to a reassessment of the relevance of governance mechanisms in the public sector (Howard and Seth-Purdie, 2005).

Implementing effective IT governance appears difficult in the public sector compared to the private sector. This complexity is due to the multiplicity of objectives in the public sector, most often intangible or conflicting, with programs involving many stakeholders whose interests may also be in competition (Dawes et al., 2004).

Moreover, and unlike private companies, public organizations have a complex organizational structure, with both administrative and political leadership (Winkler, 2013). For this reason, IT governance in public organizations needs to be framed with new public management practices, as well as with strategic IT management concepts to provide added value to citizens (Ismail, 2008).

We have noted that good IT governance frameworks, such as Cobit and ITIL, have been used in both the public and private sectors. Proponents of this idea see that the practices of new public management encourage public sector organizations to use private sector management methods and processes to move from a rigid and bureaucratic organization to an agile one.

2. METHODOLOGY

2.1. Choice of qualitative methodology

In this research, we have opted for a qualitative methodology. This choice is justified by the nature of the research question. Indeed, our objective is to identify and understand the various catalysts and inhibitors of implementing IT governance in the context of the Moroccan public sector.

Furthermore, our work is exploratory in nature, as the study of catalysts and inhibitors of formal governance implementation in public organizations has not been previously addressed in the Moroccan context.

In this regard, we have adopted a hybrid exploration approach in this research, combining theoretical exploration (which is conceptual and draws on the literature) and empirical exploration (which focuses on field data and observable facts), proceeding through iterations between theory and collected data.

2.2. Multiple Case Study

Qualitative research can be conducted in various ways, and one of these ways is through the use of case studies.

In this article, we opt for a multiple case study approach. Indeed, this approach allows for a deep understanding of the processes and outcomes derived from each case. It also enables a comprehensive

presentation and development of hypotheses (Miles and Huberman, 1994). Furthermore, the objective behind using a multiple case study method is to conduct a thorough comparative study of cases to draw conclusions through the analysis of similarities and contrasts.

These organizations are selected based on the following three criteria:

- Intentional and formal implementation of IT governance.
- Legal personality and financial and managerial autonomy of these public organizations.
- Each organization is managed by its own board of directors and senior management.

The qualitative study through multiple case studies will allow us to focus our attention on specific cases to understand the facilitating mechanisms and to highlight the barriers that hinder the effective implementation of IT governance.

2.3. Data collection and analysis methods

Our sample consists of six public organizations, and the data collection was based mainly on the documentary study and on semi-structured interviews with the actor most concerned by the problem and who is the head of the IT manager.

Finally, to process and analyze the data collected, we used a thematic content analysis.

Table 1 : Sample

Organization	Actor	Training	Duration
A	IT manager	Master in Computer Science	1h30m
B	IT asset administrator	Bachelor in Computer Engineering	40m
C	IT manager	PhD in computer science	02h03m
D	Responsible for the study and integration of systems	Software Engineer	55m
E	IT manager	Computer engineer	1h45m
F	IT manager	Master in IS management	01h15m

3. RESULTS AND DISCUSSION

The objective of this article is to identify the enablers of an eventual IT governance implementation as well as the inhibitors that may act as obstacles to this implementation.

For the organization to pragmatically implement effective IT governance, it must determine a better combination of mechanisms, mixing structures, processes and relational mechanisms (De Haes and Van Grembergen, 2004). However, determining the right mechanisms remains a complex task (Bianchi and Sousa, 2016). In addition, each organization needs to be fully aware of the mechanisms that work for it and that can contribute to effective IT governance. This means that what works for one organization may not necessarily work for another (De Haes and Van Grembergen, 2004).

The actors interviewed in this research identified eight catalytic mechanisms. These are mainly:

Catalyst 1: Determination of roles and responsibilities

It is a clear and unambiguous definition of the roles and responsibilities of all stakeholders involved. In other words, it is the role of the board of directors and senior management to communicate these roles and responsibilities and to ensure that the entire organization understands them (De Haes and Van Grembergen, 2004).

According to the same researchers, the CEO has the sole responsibility for executing the strategic plan and policies that have been established by the board of directors. In addition, the head of the IT function and the CEO must report regularly to the board, which is the independent overseer of the company's performance and compliance.

Catalyst 2 : Organization of the IT function

For an organization to succeed in implementing IT governance effectively, it must adopt a good structure for its IT function. Indeed, the structure defines the way and manner in which the IT function should be organized and who are the people responsible for IT decision-making within the organization.

The good determination of IT positions comes from the fact that the IT function has become a strategic function, whether it is in the achievement of the organization's strategic objectives or in the day-to-day support of the proper functioning of business services.

The IT manager of organization F says: «... Before, the IT function was seen as a purely technical function. Now it is becoming a strategic function ».

Catalyst 3: Strategic IS Planning

This process has a strong impact on the governance dimension “Alignment between IT strategy and business strategy”. This is the reason any organization involved in a governance approach has no choice and must imperatively develop and execute a strategic plan (Cigref, 2007).

Our sample consists of six organizations with financial and management autonomy. They implemented this first process in different ways. Organizations A and B and E have carried out a double IS planning. One so-called annual or short-term plan, and another long-term or three-year plan. While organizations C, D and F have chosen to work with the regional version of the IS strategic plan.

The IT manager of organization D declares: « the strategic orientation of the IT function of organization D must imperatively converge towards the general orientation of the organization ».

Catalyst 4 : Building an IT Balanced Scorecard

The IT Balanced scorecard is like a compass that allows the organization to find its way in the race to achieve its objectives. All the organizations in our sample, except for organization C, have adopted an IT dashboard containing all the indicators deemed essential for meticulous monitoring. The latter allows for a diagnosis to identify all shortcomings and anomalies in order to program corrective and palliative actions by the units concerned.

Catalyst 5: Ensure alignment between IT strategy and business strategy

To measure IT alignment and IT governance maturity, the organization can use maturity models. These are scoring methods that allow the organization to prioritize its level of maturity via the "Likert" scale, ranging from 0: not existing to 5: optimized (ITGI, 2007; De Haes and Van Grembergen, 2004). They are practical and easy-to-understand tools that allow the organization to benchmark itself against best practices and standards guidelines. In this way, it will be easy to detect and identify gaps and define specific actions to achieve the desired level of alignment and governance (Guldentops, 2003).

Catalyst 6: Commitment and involvement of top management

The commitment of top management is often synonymous with organizational involvement. Huff et al. (2006) interviewed 17 boards of directors of several companies of different sizes. They identified attention to IT strategy, IT vision, and core IT applications as some of the topics that suffer from a lack of attention. The authors call this phenomenon "IT-deficit intention" which can be translated as a deficit of intention towards the IT issue.

To cope with it, the authors proposed the following six ways:

- Put IT on the agenda of the board of directors;
- Invite IT managers to board meetings;
- Get brief presentations from IT managers;
- Recruit experienced IT staff;
- Make IT speak to the councils;
- Be aware of how the board functions in an IT environment.

Van Grembergen and De Haes (2009) and ITGI (2001) remind us in their definitions of IT governance of the indisputable importance of the involvement of the board of directors and top management in IT governance processes. For his part, Luftman (2000) indicates that executive support for IT has been the most important catalyst for improved IT governance. Similarly, Weill and Ross (2004) identified top management involvement as one of the most important factors in effective IT governance.

Catalyst 7: Participation and collaboration between stakeholders

For any governance to be successful in an organization, it is necessary to think about maintaining good relationships with the different stakeholders of the organization. In this study, all six organizations have successfully implemented the mechanism of stakeholder participation and collaboration, and consider the evolution and future of public organizations, which provide an important social service to the nation, to be a priority for all of them. This is especially true for the IT issue. In addition, IS users, and more specifically business units, are the main stakeholders. They are therefore involved in the participation in IT service management. Moreover, the IT manager considers them as invaluable resources in the success of IT projects. Similarly, the IT managers of organizations A and D indicate that when it is necessary to create an IT solution to meet a business need (non-standardized solution), it is necessary or even imperative to consult with the main stakeholders. IT managers from the other organizations in this study also confirmed this, and emphasized collaboration with the business during the design, implementation, and deployment of IT projects.

Catalyst 8: Cross-functional training between business and IT

Cross-training between IT and business is the most implemented and effective practice in the eyes of IT managers in all six organizations. Business staff regularly participate in training sessions organized by IT managers to present, explain, and elucidate how IT solutions work and the specifics of an application, whether it is internally or externally developed or standardized. The training days also cover various IT topics such as security and networks.

It is about facilitating and catalyzing mechanisms for effective IT governance implementation. In what follows, we will deal with the inhibitors that can act as obstacles to good IT governance.

Inhibitor 1: Insufficient IT human resources

The lack of human resources is a fiasco that affects all the organizations involved in this research. Following a question about the problems that IT governance has not been able to solve, IT managers show that the remarkable lack of qualified and specialized IT human resources has not helped organizations to reach all the expected objectives. More than that, the absence of a clear and well-defined design of the strategy for outsourcing some IT tasks without added value constitutes a brake and an obstacle for the proper implementation of IT governance.

Organization C explains, « There is a glaring lack of IT-related human resources. Then, the lack of clear design for outsourcing of IT solutions so that the IT function can focus on its core business ».

Inhibitor 2: Absence of a budget specific to the IT function

The lack of human resources is not the only shortcoming suffered by the IT function in the organizations in our sample. Indeed, apart from the strategic role that they play within organizations and apart from the recognition by business units and general management of the importance of the services provided by the IT function, the absence of a well-defined budget (whether variable or fixed) for IT function expenses is intolerable from a governance perspective. We give here the example of organizations A, C, D, E and F that do not have their own budget for their IT functions. On the other hand, organization B has a budget of 2 million dirhams (equivalent to 0.15% of the organization's annual budget). Furthermore, the AFAI (quoted by Fustec and Ghenassia, 2004) in a study, showed an average budget of 1.9% of turnover for IT functions in public sector organizations.

Inhibitor 3: SLA and IT outsourcing

Service Level Agreements (SLAs) are very important in the governance process. The absence of IT outsourcing practices has condemned this process to non-fulfilment in organizations B, C, D, E, and F. In contrast, organization A has effectively implemented SLAs when procuring IT applications in the form of contract specification documents to ensure the quality of the purchased solutions in terms of SLA compliance.

The IT outsourcing practices recommended overcoming the scarcity of experienced profiles, the time, and high costs of training newcomers, difficulties in paying experienced staff, etc. are almost impossible, as indicated by the IT managers of organizations B and D, under such circumstances (referring to the lack of IT budget).

Table 2: Main catalysts and inhibitors of IT governance in the public sector

Catalysts	Inhibitors
<ol style="list-style-type: none"> 1. Determination of roles and responsibilities 2. Organization of the IT function 3. Strategic IS Planning 4. Building an IT Balanced Scorecard 5. Ensure alignment between IT strategy and business strategy 6. Commitment and involvement of top management 7. Participation and collaboration between stakeholders 8. Cross-functional training between business and IT 	<ol style="list-style-type: none"> 1. Insufficient IT human resources 2. Absence of a budget specific to the IT function 3. SLA and IT Outsourcing

CONCLUSION

Today, we are witnessing a massive use of information technologies within organizations of different sizes, given the estimate that the overall cost of IT resources represents up to 40% of the operating cost of companies, depending on the sector of activity (Georgel, 2005). This dependence of companies on their technological resources automatically puts a strain on the budgets allocated to IT investments. This observation has been noted in private companies as well as in public administrations and organizations that are also seeking to modernize and automate their management processes.

Faced with the high cost of acquiring and developing IT solutions, organizations are adopting IT governance frameworks to comply with regulatory requirements, optimize IT spending, maximize the value of IT investments, and ensure alignment between IT and business unit objectives. Moroccan public organizations are no exception to the rule. Indeed, Morocco has embarked on huge projects to modernize and digitize its public administrations, which require careful monitoring to ensure that the expected objectives are met. In this sense, some Moroccan public organizations have put in place formal frameworks to govern their IT and IS.

The objective of this paper was to identify the enablers and inhibitors of a successful implementation of IT governance in the context of Moroccan public organizations. To do so, we conducted a literature review dealing with the concept of IT governance, its mechanisms and the specificities of IT governance in the public sector context. Then we presented the reasons that led us to conduct a qualitative study by multiple case study.

The managerial contribution of this paper is to present a set of catalyst mechanisms for a possible implementation of IT governance in Moroccan public organizations. Without forgetting the inhibitors that can act as barriers to the success of this implementation.

Finally, it is very interesting to remember that any governance mechanism that is poorly designed or poorly implemented can be an obstacle that can affect the objectives for which that governance was designed. In addition, each organization must be fully aware of the mechanisms that are favourable to it and that can contribute to the implementation of an effective IT governance.

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