
Assessing Governance of Enterprise IT implementation in Algerian public companies

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Abstract:

The governance of enterprise IT (GEIT) deployment in Algerian public firms is examined in this article. 88 people completed the self-administered questionnaire that was distributed to 100 employees of various public firms operating in various industries due to this reason. The reliability of the questionnaire design was tested, and the gathered data was handled, using SPSS V24. At $\alpha = 5\%$, a single-simple test is selected to confirm the research assumptions. The findings showed that the sample of public enterprises in Algeria that were examined did not meet GEIT procedures. In summary, the research has unequivocally demonstrated that several structural and resource modifications are necessary for Algerian public firms in order to achieve the adoption and execution of GEIT.

Keywords: Information Technology (IT), Governance, Governance of Enterprise IT (GEIT), Implementation, Change.

Jel Classification Codes: D83, D89.

1. Introduction :

In today's digital economy, when enterprises significantly rely on IT to promote innovation, competitive advantage, and operational efficiency, effective governance of corporate IT is essential. Organizations may make wise IT decisions, maximize resource usage, and guarantee that IT expenditures positively affect the performance of the firm by putting strong governance procedures into place (Yannick Bartens et al. 2015). The governance of enterprise IT has received a lot of importance. This necessitates evaluating the degree of achievement in Algerian public enterprises.

1.1. Literature review:

Previous studies were reviewed as follows to establish a compelling problematic for the study.

❖ **Ahmad A. Abu-Musa (2009), Exploring Governance of Enterprise IT in Saudi Organizations: An empirical Study.**

The primary objective was to investigate the formality, auditing, responsibility, and accountability of implementing COBIT processes for IT governance (ITG) in Saudi organizations. To achieve this, an empirical survey was conducted using a self-administered questionnaire. The survey targeted a selected sample of organizations in Saudi Arabia, with 500 questionnaires distributed and 127 valid responses collected and analyzed. The study found that while the majority of respondents recognized the importance of COBIT processes and domains, there was a lower percentage who believed these processes were adequately implemented in their organizations. Specifically, banks, financial institutions, and service organizations showed a higher concern and application of COBIT processes compared to other types of organizations.

❖ **Yoonsung Jo et al. (2010), An Empirical Analysis of Influential Factors for IT Governance Adoption.**

The paper examines the key factors influencing IT organizations' decision to adopt COBIT (Control Objectives for Information and related Technology), a prominent framework for effective IT governance. The study classifies these factors into internal and external categories. The internal factors are based on the theory of innovation diffusion, while the external factors include influences such as outside certification and expertise support not present within COBIT. The study's findings reveal that internal factors like understandability, transition, and effectiveness did not significantly impact COBIT's adoption. In contrast, external factors, particularly expertise support, were found to have a significant effect. This result indicates a lack of internal support and knowledge for COBIT within organizations, emphasizing the importance of external expertise in the successful adoption and implementation of the COBIT framework.

❖ **Yannick Bartens et al. (2015), Moving IT Governance Nearly to a Minimum Threshold using expert opinions:**

The article focused on employing expert opinions to guide the selective implementation of Enterprise Governance of IT (EGIT). The authors undertook a Delphi study to gather data regarding the perceived ease and effectiveness of specific COBIT 5 processes. The findings of this study aimed to identify processes within COBIT 5 that are both effective and easy to implement, providing a starting point for organizations in their IT governance implementations. This approach was particularly relevant given the limited research on the partial implementation of COBIT 5. By focusing on expert views, the study aimed to streamline the implementation process of COBIT 5 in a more strategic and efficient manner

1.2. Research Problematic:

The purpose of this paper is to provide an accurate answer to a query that comes up while discussing enterprise IT governance. The following succinctly summarizes this main question:

Do Algerian public enterprises implement the Governance of Enterprise IT?

1.3. Study hypotheses:

In order to address the mentioned problematic, the study includes a null hypothesis and its contrasting one that are outlined below:

H0: Algerian public enterprises implement the Governance of Enterprise IT

H1: Algerian public enterprises don't implement the Governance of Enterprise IT

1.4. The Study Objectives:

The main objective of this study is to understand the Governance of Enterprise IT, and to explore it's implementation achievement in Algerian Public companies. Moreover, the article aims at setting the light on the following points:

- To explain the academic meaning of Governance of Enterprise IT
- To assess the adoption of GEIT by Algerian companies
- To make a diagnosis for the allocated resources concerning the GEIT in the Algerian public companies.
- To analyse the enablers and inhibitors of GEIT implementation in public Algerian companies
- To suggest uefull recommendations for assuring the good applying of GEIT processes in public companies

2. Theoretical framework of the study

2.1. Defiinition of Governance of Enterprise IT (GEIT):

The term "Governance of Enterprise IT" (GEIT) describes the procedures, frameworks, and guidelines that a company puts in place to guarantee that information technology (IT) is used effectively and efficiently to

accomplish its goals. The system of governance seeks to minimize risks associated with IT, maximize the value that IT adds to the company, and coordinate IT operations with the overarching business plan. (Wim van Grembergen & Steven De Haes, 2013).

2.2 Key aspects of Governance of Enterprise IT (GEIT)

Key aspects of Governance of Enterprise IT include:

- **Strategic Alignment:** Ensuring that IT initiatives and projects are aligned with the organization's business goals and objectives. This involves active involvement of IT in the strategic decision-making process and regular communication between business and IT leaders (**Bandar Alraggas and Asaad Alzayed , 2014**).
- **Risk Management:** Identifying, assessing, and mitigating IT-related risks that could impact the achievement of business objectives. Risk management in GEIT involves addressing cybersecurity threats, compliance issues, data breaches, and other potential risks associated with IT (**Symantec, 2006**).
- **Resource Management:** Efficiently allocating and managing IT resources, including budget, technology infrastructure, human capital, and other assets, to support business priorities and meet strategic objectives (**IT Governance Institute, 2013**).
- **Performance Measurement:** Defining key performance indicators (KPIs) and metrics to monitor the performance of IT processes and services. Regular assessment and reporting enable organizations to identify areas for improvement and demonstrate the value of IT to stakeholders. (**Peter Weill and Jeanne W. Ross , 2004**)
- **Value Delivery:** Ensuring that IT investments and projects deliver measurable value to the organization. This includes assessing the return on investment (ROI) of IT initiatives and prioritizing projects based on their potential impact on the business. (**Wim Van Grembergen ,2004**)
- **IT Risk and Compliance Management:** Implementing controls and practices to comply with relevant laws, regulations, and industry standards. This involves maintaining data privacy, adhering to cybersecurity protocols, and following governance best practices. (**E. Kritzinger and L.A.M. Strous , 2002**).

2.3 Enhancing processes for applying Governance of Enterprise IT (GEIT):

The processes intended to apply Governance of Enterprise IT (GEIT) are outlined in Table 1.

Table 1. Enhancing Processes for applying GEIT

Monitor projects and programs.	Use the project and IT portfolios as strategic instruments to implement a comprehensive plan to enhance the profitability of projects and the performance of various programs.
Control the Definition of Requirements	Clarify the needs of the company and evaluate the viability of suggested solutions before implementing them. This entails a thorough examination of corporate IT and procedures to prevent losses and elevated risk.
Oversee the Identification of Solutions and Development	Select the options with the least amount of risk and expense. This entails evaluating the efficacy of the remedy from three angles: related risk, cost, and effectiveness.
Control Performance and Availability	Make sure the company has the capability to achieve the strategic objectives of the company. This entails enhancing corporate resources and processes and opening up the parts that make them up.
Supervise Organizational Change Facilitation	Make sure all parties involved are prepared for and aware of impending change.
Control Modifications	Use the change management method to reduce the risk associated with change and to increase the efficacy of both IT and business strategies.
Control Transitions, Acceptance, and Transformation	Make sure change management incorporates clever solutions that are in line with company objectives and doesn't negatively impact the organization.
Manage intellectual capital	Produce, organize, and disseminate knowledge to enhance staff competencies and to support company decisions.
Control resources	Maximize company value through using the most of IT resources. This entails keeping these resources safe, ensuring their accessibility, and adhering to contractual obligations.
Control configuration	Make sure there is access to pertinent data so that the assets are managed efficiently. The data need to be current and adequate.

Source: by the author using: ISACA (2012), GEIT Enabling Processes, PP: 51-213

3. EXPERIMENTATION:

3.1. Methodology:

3.1.1. Data sampling and analysis:

3.1.1.1. Data sampling:

A self-administered questionnaire was employed in Algeria between March 2023 and June 2023 to gather the data for this investigation. 100 people from various public enterprises received 50 paper surveys and 50 Internet questionnaires. The questionnaire was completed by 88 out of 100 respondents, or 88% of the overall. The distribution of these respondents by sector is summed up in Table 2. It demonstrates that 30.7% of the respondents are in the insurance sector.

Table 2: The distribution of respondents according to their industries

Industry	Percentage (N=88)
Energy	22.7 %
Telecommunications	15.9 %
Manufacturing	3.4 %
Transportation	2.3 %
Commerce	3.4 %
Banking	10.2 %
Insurance	30.7 %
Pharmaceutics	1.1 %
Other industries	10.2 %

The positions held by the targeted persons in their respective firms are displayed in the next table. The findings indicate that 40.9% of the respondents are managers.

Table 3: The distribution of respondents according to their current jobs

Current job	Percentage (N=88)
Chief Executive Officer (CEO)	1.1 %
Chief information officer (CIO)	0 %
Chief of IT department	1.1 %
Auditor of IT	0 %
Manager	40.9 %
Admin	14.8 %
Accountant	14.8 %
Other position	27.3 %

The responsibilities that respondents performed in their organizations with regard to IT are displayed in the following table. According to the findings, the majority of respondents (62.5%) are users of IT.

Table 4 : The distribution of respondents according to their roles relevant to IT function

Role	Percentage (N=88)
Software Programmer	8 %
Deciding which hardware and software to purchase	4.5 %
Designing IT	1.1 %
IT user	62.5 %
Budgeting for IT	6.5 %
Supervising the projects of IT	2.3 %
Contributing in establishing the policy of IT	14.8 %
Other role	0 %

3.1.1.2. Data analysis:

The credibility of the data sources and questionnaire was evaluated using SPSS V24. For every relationship, the level of significance is fixed at 0.05. The following statistical methods were applied to validate the study's hypotheses. Cronbach's α coefficient is used to assess the construct's reliability, descriptive statistics are used to analyze sample characteristics and measure GEIT Process components, and a one-sample test is used for verifying the hypotheses.

1.2. Construct Measurement:

Ten (10) measurement elements are included in this area, as Table 5 illustrates. Four-point Likert scale (0= Not accomplished (0 to 15%), 1= Partially achieved (>15 to 50%), 2= Largely achieved (>50 to 85%), and 3= Fully achieved (>85 to 100%)) based on the Rating Scale developed by ISACA (2013).

Table 5 : Measurement items

Item number	Content
01	Monitor projects and programs.
02	Control the Definition of Requirements
03	Oversee the Identification of Solutions and Development
04	Control Performance and Availability
05	Supervise Organizational Change Facilitation
06	Control Modifications
07	Control Transitions, Acceptance, and Transformation
08	Manage intellectual capital
09	Control resources
10	Control configuration

Table 6: Four-point Likert Scale

Likert Scale	Interval	Description
0	0-0.75	Not achieved (0 to 15%)
1	0.76-1.51	Partially achieved (>15 to 50%)
2	1.52-2.27	Largely achieved (>50 to 85%)
3	2.28-3.03	Fully achieved (>85 to 100%)

The Alpha Cronbach Coefficient was computed in order to perform the reliability study (Table 7). The findings revealed a high level of internal consistency among the construct's elements.

Table 7: Cronbach's α and reliability of scale for GEIT Processes

Items	Cronbach's α (performance)
Ten items (item 01, item 02, item 03, item 04, item 05, item 06, item 07, item 08, item 09, item 10).	0.957

Source: By the author using SPSS V24

3.2. Results and discussions:

The primary findings pertaining to the Governance of Enterprise IT (GEIT) procedures are shown in this section. The thesis hypotheses were tested in many ways. The experiments that come later are designed to provide a solution to the research problem.

The article examines the progress levels in the Governance of Enterprise IT (GEIT) process attained by the investigated enterprises. Table 8 demonstrates that all item mean values fall within the second interval (0.76-1.51). They, therefore, fit into the second degree on the four-point Likert scale (Partially attained (>15 to 50%)).

Table 8: Means and standard deviations of GEIT Processes

BAI (Build, Acquire & Implement) items	Mean	Std. Deviation
Monitor projects and programs.	1.193	0.992
Control the Definition of Requirements	1.386	0.940
Oversee the Identification of Solutions and Development	1.341	0.921
Control Performance and Availability	1.170	0.900
Supervise Organizational Change Facilitation	1.193	0.945
Control Modifications	1.170	0.925
Control Transitions, Acceptance, and Transformation	1.216	0.940
Manage intellectual capital	1.364	1.041
Control resources	1.443	0.969
Control configuration	1.329	0.943

Source: By the author using SPSS V24

At an alpha level of 0.05, a One-Sample Test was performed to validate the null hypothesis (H0). Table 9 summarizes the test findings overall.

Table 9: The results of the null hypothesis H0 test

Test Value = 1							
Mean	Std. Deviation	t	Mean Difference	df	Sign. (2-tailed)	95% Confidence Interval of the Difference	
						Lower	Upper
1.281	0.808	3.260	0.281	87	0.02	0.109	0.452

Source: By the author using SPSS V24

The weighted arithmetic mean of the GEIT construct is equal to 1.281, as Table 9 demonstrates. This number, with a mean difference of 0.281 at a freedom degree of 87, is more than the Likert scale mean. On the four-point Likert scale, it corresponds to the second degree (Partially attained (>15 to 50%)), which is represented by the second interval (0.76-1.51). Additionally, the findings demonstrate a statistically significant difference ($p < 0.05$) between the examined Algerian enterprises' levels of GEIT Reference Processes and the attainment progress levels of GEIT processes. In order to reach this conclusion, the alternative hypothesis, H1, must be accepted and the null hypothesis, H0, that Algerian public firms execute governance of enterprise IT, must be rejected.

The findings indicate that the targeted Algerian enterprises had issues with process governance, among other issues. The following is a summary of these shortcomings:

Monitor projects and programs:

- The lack of a successful plan for business initiatives;
- The organization lacks the necessary skills and resources, thus it is ill-prepared to implement a successful program on complex projects.
- The lack of effective stakeholder and real stakeholder negotiation;
- The lack of a reliable reporting system that offers sufficient details on the tasks undertaken by the firm;
- The lack of initiative in the beginning of new undertakings;
- The lack of TQM involvement in project management inside the organization;
- The lack of a practical plan to address potential threats in the future;
- The lack of a comprehensive monitoring mechanism for business initiatives;

3. Control the Definition of Requirements:

- The lack of an effective probability assessment for the remedies that are suggested, which include the corporation using resources;

Oversee the Identification of Solutions and Development:

- The enterprise does not prepare the best options;
- The suggested remedies lack a thorough business plan;
- The firm management system does not provide clear answers;
- The lack of purchasing suggested remedies;
- The failure of TQM in creating workable solutions;
- The shortage of a solution analysis prior to its ultimate implementation;
- The modifications pertaining to corporation requirements lack clarity.
- The inadequate handling of suggested remedies.

Control Performance and Availability:

- The shortage of an evaluation mechanism for the company's real performance and its available resources;
- The client is dissatisfied as the company's results do not meet his requirements;
- The company's strategy planning does not take into account modifications to its requirements;
- The inadequate and inefficient handling of business capacity;
- The shortage of daily reporting on the resources that the organization has accessible and those that it has overlooked.

Supervise Organizational Change Facilitation :

- The lack of desire for change inside the organisation;
- The absence of a team capable of leading the change in change management, comprising qualified persons;
- The communication difficulty on the significance of the change and its successful plan;
- The specific change processes are not defined by the firm management;
- The shortage of a sensible change management strategy;
- The realised modifications are not maintained by the firm.

Control Modifications :

- The management of the organisation has not organised the transformation initiatives adequately;
- The lack of change management for indigence;

- The inadequate reporting of specific modifications;

Control Transitions, Acceptance, and Transformation:

- The lack of an efficient information assurance plan;
- The shortage of practices and expertise that support efficient firm transitions;
- The business doesn't do a trial run to see if the new system is accepted by its stakeholders;
- The lack of the phase-after-implementation plan for cybersecurity.

Manage intellectual capital:

- The lack of a knowledge-sharing culture between coworkers at the organisation;
- The sources of the information are not clearly identified;
- The overall functioning of the business when there is no efficient system in place.

Control resources:

- The administration of the firm has not clearly specified the possessed assets;
- The most important assets are not handled by the firm in an efficient manner;
- The inadequate cost of corporate asset optimisation;
- Some of the software programmes that the firm employs don't meet their specifications.

Control configuration:

- The organisation configures its information technology and resources without using a reference model;
- The enterprise lacks a database with information on the status of resource and IT configuration using IT Governance framework
- the lack of reporting on the state of configuration;

3. Conclusion :

The objective of this paper is to conduct an empirical analysis of the state of governance enterprise IT implementation maturity in Algerian public businesses. This resulted in the use of a self-administered questionnaire to generate a sound.

Given the strength of our study's findings, it is reasonable to draw the conclusion that Algerian public firms fall short of best practices when it comes to establishing governance of enterprise IT. Moreover, the findings suggest that these publicly traded corporations lack numerous critical success criteria and enabling mechanisms for putting the Governance of Enterprise IT into practice.

Recommendations:

Based on the conducted study, We provide the following recommendations.

- To enhance the skills of individuals in public enterprises about the creation and usage of IT through e-learning and training sessions.
- To make a sufficient budget for the procurement of well-refreshed software and new IT peripheries
- To identify strategic and operational requirements for the effective implementation of Governance of Enterprise IT;
- To create a mechanism that is efficient in ensuring that resources for projects involving public companies are allocated well;
- To elaborate a new strategy, which aims at aligning public company strategy with IT
- To make organizing laws and regulations adequate for applying Governance of Enterprise IT in public companies
- To create a global IT risk management system in public companies to deal with cyber malicious
- To certify Algerian public companies in IT Governance and cyber security through collaborative agreements with international institutions acting in digitalization certification and cybersecurity development, such as ISACA.

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