

Applying Importance-Performance Analysis (IPA) for assessing the feasibility of COBIT 5: An exploratory study of some Algerian companies

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ملخص : يدور هذا المقال حول تحليل جدوى نموذج كوبيت 5 بالنسبة للمؤسسات الجزائرية و ذلك باستخدام طريقة تحليل الأداء-الأهمية. إن الاطلاع على الدراسات السابقة قد دفع الباحثين إلى اختيار بطاقة الأداء المتوازن كمحور تركز عليه عملية التقييم ، كما قادهما إلى الاعتماد على تحليل الأهمية-الأداء كطريقة لدراسة وجهات نظر مستخدمي تكنولوجيا المعلومات حول هذه الأخيرة من منظور الأهمية و الأداء. كما تم دعم الجانب النظري بدراسة تطبيقية شملت بيانات خاصة بثلاثين فرد ، و لقد بينت النتائج وجود فرق كبير بين الأهمية التي تحظى بها أهداف نموذج كوبيت 5 و بين قدرة المؤسسة على تحقيقها ، و هذا ما قاد الباحثين إلى خلاصة مفادها أن تطبيق كوبيت 5 على مستوى المؤسسات الجزائرية يجب أن تسبقه مرحلة تحضيرية تشمل عدة تغييرات.

الكلمات المفتاحية: نموذج كوبيت 5، بطاقة الأداء المتوازن، تحليل الأهمية-الأداء، مصفوفة الأهمية-الأداء

Abstract : The article analyses the feasibility of COBIT 5 for Algerian companies, using Importance-Performance Analysis. By reviewing the COBIT 5 literature, the Balanced Scorecard (BSC) is chosen as a pillar for assessment, and how IPA can be used to analyse the perceptions of IT users about its goals from the perspective of importance and expected performance. The theoretical framework is enriched by an empirical study, which includes a collected survey data from 30 individuals. The results show that there is a big difference between the importance of COBIT 5 goals and the ability of Algerian companies to meet them. These findings led the authors to conclude that implementing COBIT 5 in Algerian industries necessitate a preparative phase contains many changes.

Key Words: COBIT 5, Information Technology (IT), Balanced Score Card (BSC), Importance-Performance Analysis (IPA), Importance-Performance matrix

JEL Classification : D83, D89

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Introduction :

In the last century there has been a growing interest in Information Technology (IT), which plays a vital role in different today industries. Business executives cannot avoid IT decisions, or delegate them like in the past (Wim Van Grembergen, 2004). Furthermore, it has become an investment for today enterprise, which analyses its feasibility before adopt it. Many scientific studies had found effective frameworks for managing and governing IT such as COBIT 4.1, Val IT 2.0 and Risk IT. In 2011, ISACA had combined the previous frameworks, and used them in releasing a new one, which called COBIT 5 (IT Governance Institute, 2011). Like any other management framework, COBIT 5 implementation success necessitates a set of conditions.

Study Problematic:

COBIT 5 is an effective framework to enhance the governance of enterprise Information Technology (L Maseko & B Marx, 2016). It also protects the corporation from different cyber attacks, and ensures information assurance (Mark Wolden et al. 2015). COBIT 5 as a concept exists in many foreign corporations, but it is new for Algerian companies. In this paper, we explore the possibility of implementing COBIT 5 by some Algerian companies, using Importance-Performance matrix.

As a consequence, the study problematic is summarized in the following question; “Can COBIT 5 be determined as a feasible framework for Algerian companies?”. This includes using the Importance-Performance Analysis to assess the perception of IT managers and users on the importance and performance of COBIT 5 goals before carrying out any change effort.

In order to answer the problem, we have formulated the following sub-questions:

- Can the Algerian companies implement COBIT 5 effectively?
- What are the necessary changes to be done before implementing COBIT 5?

Study hypothesis:

In order to answer the problem we have developed a null hypothesis, and its alternative hypothesis, which are as follows:

H0: COBIT 5 is feasible for Algerian companies

H1: COBIT 5 is not feasible for Algerian companies

Literature review:

In the last decade COBIT 5 has attracted much attention from research teams. In this part, there are several publications documenting the analysis of COBIT 5 with Balanced Score Card (BSC), and Importance-Performance maps.

Walter Skok et al. (2001), Diagnosing information systems success: importance–performance maps in the health club industry.

The study documented the capability of adopting information system within the United Kingdom Health Club Industry, using Importance-Performance Maps. The study sample is composed of 83 responses from 11 organizations. The authors tested a model, which includes a set of interacting variables: system quality,

information quality, service quality, the use, user satisfaction, individual impact, and organizational impact. These variables are mapped into 26 attributes. The authors based the results on the means of appropriate numbers given for the importance and performance, and the difference between them for such attribute. Different from many other studies, this paper demonstrated that I-P maps are not complex to understand, and they are useful for this kind of empirical investigations. However, the authors concluded that the benchmarking method applied in this study is not so appropriate for the non-trading industries, which don't enhance gathering information about the competitors. Finally, they deduced that I-P analysis is suitable only for the human perception-based studies.

Kallaya Jairak and PrasongPraneetpolgrang (2013), Applying IT governance balanced scorecard and importance-performance analysis for providing IT governance strategy in university.

The paper aims at diagnosing the IT Governance, and its future practice in developing countries, choosing Thailand as an example. The authors applied the Importance-Performance analysis matrix on an IT Governance balanced scorecard-based questionnaire in order to assess the perceptions of 64 IT executives. The sample represents 54.7 % as response rate. The authors made a reliability test, and a paired t-test. Turning on the questionnaire, which includes four constructs (corporate contribution, future orientation, stakeholder orientation, operational excellence) mapped into 23 items. After calculating Cronbach's α and reliability of scale, KallayaJairak and PrasongPraneetpolgrang discussed the results, and made conclusions.

Firstly, the universities should make a preparative phase before carrying out any IT Governance action. This phase includes analyzing the situation, using Balanced Score Card and Importance Performance Analysis in order to choose the best implementation strategy, as well as to eliminate failure risks. Secondly, the Thai universities should make the features that fall into the keep up the good work as conducting processes for implementing effective IT Governance.

Melita Kozina& Ines Sekovanić (2015), Using the Cobit 5 for E-health Governance.

The paper provides insights into the use of COBIT 5 for managing IT-based activities for healthcare organization in Croatia. The authors made a mapping for the IT Balanced Scorecard compatibly with business-to-e-health strategic alignment. Concerning the customer side, the organization aims at updating the e-ordering application and the information of keeping the Patient saving systems well-refreshed. For the internal dimension, the study referred to the computerization of the process of waiting patients on services. The paper further states that learning and growth dimension includes enabling and training workers to use new applications such as Enterprise Resource Planning (ERP). Moreover, the authors set the light on the distribution of responsibilities, accountabilities, consulting processes, and informing roles on different governance and management entities, using the RACI matrix.

1. Theoretical framework of the study:

1.1. COBIT 5:

a. Definition:

COBIT 5 (Control Objective for Information and its related Technology) is an integrated approach for managing and governing IT. Furthermore, it provides effective adequate metrics for stakeholders to assess and improve the performance of enterprise IT. (ISACA, 2011).

b. COBIT 5 goals:

COBIT 5 is based on five goals: making different stakeholders satisfied, including different company resources and systems, adopting a lone framework, enhancing all the enterprise strategic goals and avoiding the mixing between management and governance. (ISACA, 2012).

c. COBIT 5 Balanced Score Card:

The enterprise implements COBIT 5 for the purpose of achieving a set of IT-related goals. Balanced Score Card is the strategic tool, which collects these objectives into four dimensions (see Figure 01).

Figure 01: IT-related Goals

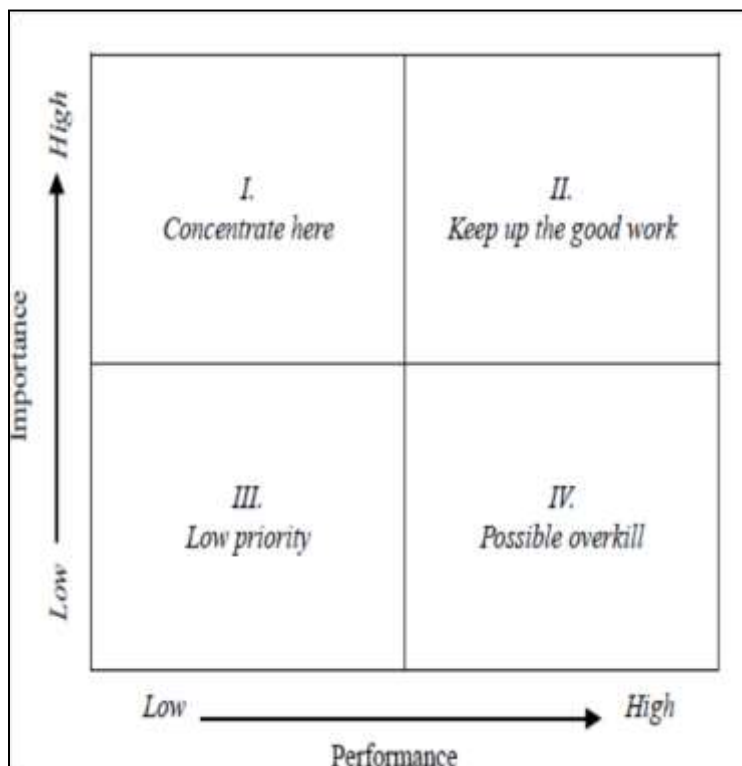
IT Balanced Score Card Dimension	Information and Related Technology Goal
Financial	01-The strategic alignment between enterprise strategy and IT ; 02-The conformity of IT with the enterprise strategy, and its legislative environment; 03-The executive management obligation for making decisions concerning IT; 04-Managing enterprise risk concerning IT; 05-Achieving good level of returns on IT-enabled investments; 06-The disclosure concerning IT risk, benefits and costs.
Customer	07-Making IT-related services adequate for the company needs; 08-Decent use of applications, information and technology solutions.
Internal	09-The IT quickness; 10-The Security of information and related applications; 11-The improvement of IT and its related assets and resources; 12-The integration of effective applications into enterprise processes; 13-Availability of programs that respect high quality standards in terms of business returns, time and budget; 14-Availability of effective information for making wise decisions; 15-The conformity between IT and enterprise internal policies.
Learning and Growth	16-The motivation of enterprise and IT personnel and the optimization of their competencies; 17-The skills, initiatives and experience for innovation.

1.2. The Importance-Performance matrix:

After its establishment by Martilla and Jamesin 1977, the Importance-Performance Analysis (IPA) is a method used for complex qualitative studies. As shown in Figure 02, the horizontal axis reports the perceived performance given for the attributes. While, vertical axis represents the different values of perceived importance (Angelo Riviezzo et al. , 2009).

The different resulted quadrants are submitted as strategic alternatives. In the first quadrant (concentrate here), performance is low, but importance is high. In this position, the organistaion should give the priority to the attributes, and to make corrective procedures. Quadrant 2 represents “keep up the good work”, both importance and performance are high. This is the ideal position, which leads the company to maintain the practices. Concerning the third quadrant (Low priority), low importance with low performance. The wise enterprise doesn’t spend their efforts on these useless attributes. Finally, possible overkill quadrant, high performance but low importance. It means that the company invested a considerable level of resources in false attributes. So, it should deliver them somewhere else. (Hélder Pires Ferreira and Paula Odete Fernandes, 2015)

Figure 02 : The IPA Matrix



Source : Angelo Riviezzo et al. , 2009

2. Experimentation:

A qualitative survey was conducted to identify the actual and perceived state of COBIT 5 for a set of Algerian companies. The empirical part includes a self-assessment based on the metrics of COBIT 5 balanced score card (BSC). The questionnaire consists of 17 attributes within four domains, importance (1= not at all important to 5= extremely important), and performance (1= very dissatisfied to 5= very satisfied). The online questionnaires were sent to 40 individuals from different companies, which act in various industries (Telecommunications: 13,3%, Energy: 33,3%, Construction: 3,3%, Commerce: 6,7%, Financial and banking: 10%, Healthcare: 3,3%, Pharmaceuticals: 3,3%, Other industries: 26,7%). We asked them to clarify their perceived importance and performance for each attribute. A total of 30 out of 40 individuals answered to the questionnaire, representing a response rate of 75%. In order to carry out the reliability analysis, we calculated the Cronbach's α coefficient. Next, the authors plotted the importance-performance matrix for COBIT5 BSC attributes. Afterwards, a Wilcoxon Signed-Rank test was run to assess the mean differences between perceived importance and performance scores, and to discuss the results.

3. Results And Discussion:

This part is about the results related to the perception of target individuals. As shown in **Table 01**, the internal consistency is high.

Table 01: Cronbach's α and reliability of scale

Dimensions	Items	Cronbach's α (importance)	Cronbach's α (performance)
Financial	Six items (V1, V2, V3, V4, V5, V6)	0.855	0.924
Customer	Two items (V7,V8)	0.737	0.824
Internal	Seven items (V9, V10, V11, V12, V13, V14, V15)	0.932	0.932
Learning & Growth	Two items (V16, V17)	0.925	0.827

Source: By the authors using SPSS V23

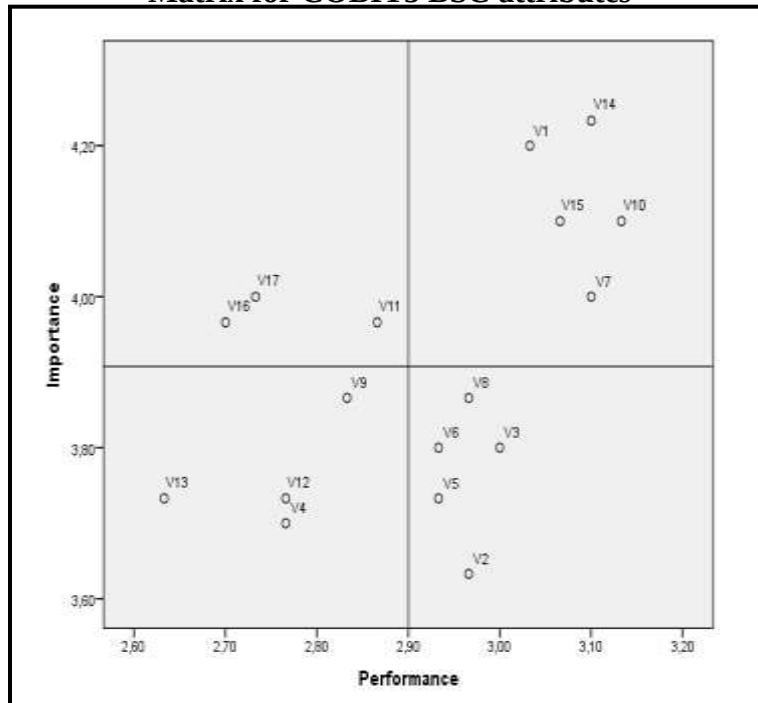
Moving on the Importance-Performance Analysis (APA), **Graphic 01** presents the obtained results. Firstly, target individuals identified three attributes in concentrate here quadrant (V11, V16, V17), this means that they think that effective management of IT assets, and improving IT-based organizational learning are important goals, which should lead organizations to improve their practices relating to them.

Secondly, five items fall into keep up the good work quadrant (V1, V7, V10, V14, V15). These attributes are submitted as leading factors for effective COBIT 5 implementation in target Algerian companies.

Thirdly, the results showed that four attributes have been identified in the low priority quadrant (V4, V9, V12, V13). It means that target IT managers and users classify these items in the worst segment.

Fourthly, it has been found that possible overkill quadrant included five attributes (V2, V3, V5, V6, V8). The target individuals think that the company should reduce the efforts for these items.

Graphic 01: Plotting of Importance-Performance Matrix for COBIT5 BSC attributes



Source: By the authors using SPSS V23

Concerning the Wilcoxon Signed-Rank test (see **Table 02**), 16 attributes (V1, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16, V17) show significant gaps between the performance and importance means ($p < 0.05$), and the absolute values of calculated z are less than the table values at an alpha level of 0.05. This means that the target sample members give between medium and high levels of importance for these items, but they think that their organizations can't achieve scores equal to them.

The mean values of perceived importance and performance support the previous result ($3,700 \leq I \text{ mean} \leq 4.200$, while $2,633 \leq P \text{ mean} \leq 3.133$). However, only one attribute (V2) shows non-significant gap ($p=0.05$). This means that they go to say that this attribute has a medium level of importance ($I \text{ mean} = 3,633$), and the related organizations can get a somewhat similar performance score ($P \text{ mean} = 2,966$). This requires rejecting the null hypothesis that COBIT 5 is feasible for Algerian companies, and accepting the alternative hypothesis.

Table 02 : IPA with COBIT 5 attributes

COBIT5 Balanced Scorecard attributes	Importance mean	Performance mean	Gap (P-I)	Wilcoxon Signed-Rank	
				Z	Significance (2-tailed)
V1.The strategic alignment between enterprise strategy and IT	4,200	3,033	-1,167	-3,881	0,000
V2. The conformity of IT with the enterprise strategy, and its legislative environment	3,633	2,966	-0,667	-2,780	0,005
V3.The executive management obligation for making decisions concerning IT	3,800	3,000	-0,800	-3,036	0,002
V4.Managing enterprise risk concerning IT	3,700	2,766	-0,934	-3,277	0,001
V5.Achieving good level of returns on IT-enabled investments.	3,733	2,933	-0,800	-3,105	0,002
V6. The disclosure concerning IT risk, benefits and costs	3,800	2,933	-0,867	-3,464	0,001
V7.Making IT-related services adequate for the company needs.	4,000	3,100	-0,900	-2,929	0,003
V8.Decent use of applications, information and technology solutions	3,866	2,966	-0,900	-3,361	0,001
V9. The IT quickness	3,866	2,833	-1,033	-3,562	0.000
V10. The Security of information and related applications	4,100	3,133	-0,967	-3,377	0.001
V11.The improvement of IT and its related assets and resources	3,966	2,866	-1,100	-3,712	0.000
V12.The integration of effective applications into enterprise processes	3,733	2,766	-0,967	-3,206	0.001
V13.Availability of programs that respect high quality standards in terms of business returns, time and budget.	3,733	2,633	-1,100	-3,673	0.000
V14.Availability of effective information for making wise decisions	4,233	3,100	-1,133	-3,590	0.000
V15.The conformity between IT and enterprise internal policies	4,100	3,066	-1,034	-3,349	0.001
V16. The motivation of enterprise and IT personnel and the optimization of their competencies	3,966	2,700	-1,266	-3,533	0.000
V17.The skills, initiatives and experience for innovation.	4,000	2,733	-1,267	-3,699	0.000

Source: By the authors using SPSS V23

Conclusion:

From the research that has been conducted, it is possible to conclude that most of Algerian companies are not ready to implement COBIT 5 actually. In other words, these companies are suffering from the lack of adequate Information Technology assets, and its related effective governance structure, wherefore they should make a set of organizational changes to succeed in implementing COBIT 5.

Next, the findings suggest that Importance-Performance Analysis can be readily used in practice. So, it may help the executives to discover the existing gaps between the importance degree of each goal and its perceived organizational performance score in order to choose the appropriate solutions for the problem of COBIT 5 implementation.

Recommendations:

From the research that has been carried out, we present the following recommendations:

- To inspire executives and IT users to apply COBIT 5, using effective communication channels, and coaching.
- To base the COBIT 5 implementation starting on the ideal attributes, which are about Business-IT Alignment, meeting business needs from IT services, IT security, information availability for wise decisions, and IT compliance.
- To ensure the availability of necessary COBIT 5 resource, through recruiting qualified human resources, adopting well-developed Information Technology, and allocating sufficient budget.

Research perspectives:

More research into COBIT 5 is still necessary before obtaining a definitive answer to the problem of its feasibility for Algerian companies. In our future study we intend to concentrate on the role of enterprise architecture in the facilitation of COBIT 5 implementation.

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Appendices:

1. Research Questionnaire

Dear Sir,

We are conducting a study titled “Applying Importance-Performance Analysis (IPA) for assessing the feasibility of COBIT 5: An exploratory study of some Algerian companies”. This questionnaire is aimed to investigate the opinions of people, who are interested in Information Technology.

Please kindly respond to this questionnaire yourself and give information which strongly represents your opinions. You will be assured of complete confidentiality as your responses will be kept confidential. The results of this study will be a beneficial guideline for executives of IT; as well as executives of general administration to be able to strategically develop and improve the benefits from utilization of IT in each organization. Moreover, the findings, revealed from this study, will provide effective methods on quality control of IT for some Algerian companies.

Please take few (approximately 15) minutes to complete the enclosed questionnaire. You have our personal assurance that all responses will remain anonymous. Your response is very important to the study, and we thank you in advance for your participation.

A-General Information:

1-What is your industry?

- ☐ Telecommunications
- ☐ Energy
- ☐ Manufacturing
- ☐ Construction
- ☐ Commerce
- ☐ Financial and banking
- ☐ Transportation

[illegible]