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The IS Governance Perspective of IS Performance Management

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Abstract

The paper deals with the lack of a robust and complete model to evaluate IT/IS Performance which practitioners could apply in their companies. If scholar research on IT/IS success have been able to define quantitative and perceptual measures to assess efficiency of IT/IS, the issue of evaluating IT/IS effectiveness is not resolved. As a consequence of that, practitioners prefer implementing IT/IS Performance Management System according to an IT/IS Governance approach. This result is justified by the lack of feasible quantitative effectiveness measures but also by organizational variables. The paper also highlights how this situation acts on the design and development of IT/IS performance Management System and thus outputs, like IT/IS Services Catalogue and Service Level Agreement, become not by-product of the implementation process but some of its main outputs.

Keywords: performance, evaluation, effectiveness

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The IS Governance Perspective of IS Performance Management

A. Perego¹

Abstract The paper deals with the lack of a robust and complete model to evaluate IT/IS Performance which practitioners could apply in their companies. If scholar research on IT/IS success have been able to define quantitative and perceptual measures to assess efficiency of IT/IS, the issue of evaluating IT/IS effectiveness is not resolved. As a consequence of that, practitioners prefer implementing IT/IS Performance Management System according to an IT/IS Governance approach. This result is justified by the lack of feasible quantitative effectiveness measures but also by organizational variables. The paper also highlights how this situation acts on the design and development of IT/IS Performance Management System and thus outputs, like IT/IS Services Catalogue and Service Level Agreement, become not by-product of the implementation process but some of its main outputs.

Introduction

The evaluation of performance is critical in all functional departments (accounting, marketing, operations, etc.); each department is involved in Performance Measurement and has to show his contribution to Business. In particular, the control and governance of internal services such as Information Systems (IT/IS) have become quite critical in organizations due to the large amount of expenditure and investment. So IT/IS managers have faced growing pressure to measure the performance of IT/IS department. In addition frequently IT/IS department struggles to be accepted as a full member of management team because it is not used to handle traditional management practices and tools like other departments. So IT/IS Performance Management Systems could provide the opportunity to evaluate the outcomes of IT/IS practises, processes and systems, to prove the management capability and the importance of IT/IS department to top management.

Unfortunately it does not exist a robust and complete model to evaluate IT/IS Performance which practitioners could apply in their companies. If scholar researches on IT/IS success have been able to define quantitative and perceptual measures to assess efficiency of IT/IS, the issue of evaluating IT/IS effectiveness

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is not resolved. As a consequence of that, IT/IS Performance Management System seems to be more useful to measure IT/IS efficiency and support an IT/IS Governance approach than assessing IT/IS Business Value. The paper conveys that the most common reason which leads to the implementation of IT/IS Performance Management Systems is actually to support an IT/IS Governance approach. This result is justified by the lack of feasible quantitative effectiveness measures but also by organizational variables like information asymmetry between IT/IS department and the rest of the organization, power struggle and IT/IS maturity of user departments. The paper also highlights how this situation acts on the design and development of IT/IS Performance Management System.

Theoretical perspective

The assessment of IT/IS effectiveness and their contribution to Business has been widely debated both among business scholars and practitioners. The interest in the debate has increased even if the conclusions of several studies in this area can be summed up using the famous sentence of Robert Solow: "*we see computers everywhere except in the productivity statistics*" [1]. Brynjolfsson called this phenomenon "IT productivity paradox" [2]. He grouped into four categories the causes of the lack of good quantitative measures for the output and value created by IT/IS: (1) Mismeasurement of outputs and inputs; (2) Lags due to learning and adjustment; (3) Redistribution and dissipation of profits; (4) Mismanagement of information and technology. Starting from his studies, several other researchers have tried to examine the organizational performance impact of IT/IS, employing several theoretical paradigms based on Microeconomic theory [3, 4, 5, 6, 7, 8].

Other researchers have moved the debate "*from the question of whether IT creates value to how, when and why benefits occur or fail to do so*" [9] and focused their attention on the construction of the IT/IS Business Value generation process. One of the first to move towards this new direction was Weill [10]. He argued that firms do not use their IT/IS investments with equal effectiveness because context, which is not a constant, affects IT/IS Performance. Therefore he introduced the variable "conversion effectiveness" that represents the aspects of the firm's climate which influence IT/IS or, as Weill said, the quality of the firm-wide management and commitment to IT/IS. Conversion effectiveness contains four of the factors which the literature suggests will help ensure successful use of IT/IS: (1) top management commitment to IT/IS; (2) previous firm experience with IT/IS; (3) user satisfaction with systems; (4) turbulence of the political environment within the firm. In 1995 Markus and Soh proposed a theoretical model of IT/IS value creation which synthesizes the prior contributions in a chain of three different process models. Each element of this theoretical chain would specify a sequence of necessary (but not sufficient) conditions in a "recipe" that explains how the IT/IS outcomes occur. "*The recipe comprises necessary conditions and prob-*

abilistic processes in the following sequence: organizations spend on IT and, subject to the varying degrees of effectiveness during the IT management process, obtain IT assets. Quality IT assets, if combined with the process of appropriate IT use, then yield favorable IT impacts. Favorable IT impacts, if not adversely affected during the competitive process, lead to improved organizational performance” [9]. Their study highlights the distance between IT/IS investment and organizational performance. As a matter of fact IT/IS impact on firm performance is mediated by intermediate processes. Since then, a lot of researchers have undertaken studies on the factors which lead to IT/IS Business Value. A synthesis of the major highlights can be found in the “Integrative Model of IT Business Value” proposed by Melville, Kraemer and Gurbaxani [11]. They identified the organization as the locus of IT/IS business value generation and pointed out IT/IS business value is generated by the employment of IT/IS resources (Technological IT/IS resources and Human IT/IS resources) and complementary organizational resources (non IT/IS existing resources which create synergies with IT/IS resources in order to improve organizational performance). They also emphasized the role of external factors (industry characteristics, trading partners and political, regulatory, educational, social and cultural context) in shaping the extent to which IT/IS business value can be generated and captured.

A third research stream concerns IT/IS Success measurement. The first study which tried to impose some order on IT/IS researchers’ choices of success measures was the paper of DeLone and McLean [12]. In their paper they proposed a IT/IS success Model based on six distinct constructs of information systems: System Quality; Information Quality; Use; User Satisfaction; Individual Impact; Organizational Impact. Pitt, Watson e Kavan [13] gave a relevant contribution to the development of this model. They highlighted that IT/IS department has expanded its role from product developer and operations manager to service provider. Therefore the quality of the IT/IS department’s service, as perceived by its users, is a key indicator of IT/IS success. Based on these considerations they proposed to augment DeLone and McLean’s model in order to reflect the IT/IS department’s service role. In their revised model, service quality affects both use and user satisfaction. Grover also, in his studies, gave some inputs to complement and extend the IT/IS Success Model of DeLone and McLean, building a theoretically-based construct space for IT/IS effectiveness [14]. Starting from the work of Grover et al. [14], Seddon et al. [15] proposed a new framework based on the seven questions that must be answered when measuring organizational effectiveness according to Cameron and Whetten [16]. They pointed out that all these questions are relevant to IT professional measuring IT/IS effectiveness and defined the construct space for IT/IS effectiveness measurement. Starting from this debate, recent studies have tried to empirically and theoretically assess these theoretical models of IT/IS success in a IT/IS use context [17] and address several areas of uncertainty with past IT/IS Success research designing robust, economical and simple models which practitioners can put into practice [18]. Finally, other research have deepened the relationships among constructs related to information system success and

they have underlined the importance of user-related and contextual attributes in IT/IS success [19].

A last research stream proposes the adoption of Balanced Scorecard concept [20] to measure the value of IT/IS and evaluate IT/IS Performance. Martinsons et al. [21] developed a Balanced Scorecards for Information Systems that “allows managers to see the positive and negative impacts of IT applications and IS activities on the factors that are important to the organization as a whole” [21]. Their studies have integrated efficiency and effectiveness measures, “doing things right and doing the right things respectively” [21]. They also pointed out that measurement is a prerequisite to management and, as a consequence, they proposed IT/IS Balanced Scorecard as a strategic IT/IS Management tool that can be used to monitor and guide performance improvement efforts. In particular IT/IS Balanced Scorecard becomes IT/IS Performance Management System which can be defined as the set of metrics used to quantify both the efficiency and effectiveness of actions [22] in order to evaluate the outcomes of IT/IS activities, practices and processes at all level of the IT/IS organization. Therefore they suggested a new point of view of IT/IS success evaluation. This new perspective highlights the managerial role of IT/IS evaluation and how it can support an IT/IS Governance approach [21, 23, 24, 25]. In confirmation of that the IT Governance Institute (ITGI)² considers Performance Management a fundamental area of IT/IS Governance process which starts with setting IT/IS objectives for the organization, then IT/IS activities are developed and their performance measured and comparing to objectives and, finally, the result of measurement redirects and balance activities and objectives if necessary.

Research Objective and Method

The new perspective, which links “measurement” to “management”, is sponsored by CIOs and IT/IS Managers who need more frequently and timely ex post measures as management tools [24, 25]. That is in order to understand the reasons of the actual performance, define how to improve practices and procedures to align better IT/IS to business changes and finally improve IT/IS performance. In confirmation of this trend, international standard methodologies, like CobiT, are adding the concept of process performance indicator in their traditional approach based on the measurement of results. This research intends to investigate which perspective is prevailing, which variables affect this choice and finally how the chosen perspective acts on the design and development of IT/IS Performance Management System.

IT/IS Business Value research field is strongly based on a quantitative methodology, but the nature of the research focused on the analysis of process and organ-

² Web site: <http://www.itgi.org>; last access: July 4th, 2008

izational variables suggests that Action Research could be successfully applied to reach the aim. In fact Action research is a research methodology that aims to solve current practical problems while expanding scientific knowledge, and whose meaningfulness has been recently highlighted for IS research [26]. It is a clinical method that puts IS researchers in a helping role with practitioners. Epistemologically, it is grounded on a pragmatist knowledge claim [27, 28] which conveys the importance on focusing on the research problem and using pluralistic approaches to derive knowledge about the problem. As a method, it has been proposed first in the organizational development field [29], to lead researchers to understand change and evolution within organization. Lewin [29] recognizes that an action research intervention is made up by three phases: (1) diagnostic stage (understanding of the organizational problem); (2) therapeutic stage (working with the organization to solve the actual problem); (3) evaluative one (exiting from the organization and reflecting on the theoretical insights).

The research consists in four action research projects. Companies were chosen in order to have different cultural and organizational contexts to study and complete willingness of the managers to collaborate with the researchers. In particular the action researches have been undertaken in the following companies³:

- (1) no-food retailer whose goal was to evaluate internal customers' satisfaction, IT/IS activities and IT/IS costs. The sponsor was the CIO.
- (2) local subsidiary of a global electronic equipment corporation in which the Italian IT/IS department needed to provide the required quantitative data about IT/IS contribution to internal audit and local top management. The sponsor was the CEO.
- (3) big Italian insurance group which had started to manage IT/IS as a service. The sponsor was the CIO.
- (4) global producer of health-related products whose aim was to evaluate IT/IS contribution to business strategy, the service level of corporate IT/IS and the efficiency of the global infrastructure. The sponsor was the CEO.

In all organizations researchers worked with IT/IS department as member of the team projects and their role was to provide a methodological support in term of process and focal points to deal with. All the action research projects were based on the same phases:

- (1) definition of the boundary of the initiative together with the organization (i.e. perspective, domain of activities, level of analysis, evaluation purpose) [16];
- (2) understanding of the context and the problem (i.e. business and IT/IS strategy, relationship between IT/IS department and User Departments, main issues);
- (3) working with the organization to solve the actual problem (i.e. IT/IS Performance Management design, definition of the set of measures, deployment of the organizational and technical procedures, collection of source data);
- (4) exiting and reflecting on the theoretical insights.

The researchers applied an IT/IS Performance Management framework in order to provide a wide set of measures which include all the dimensions of analysis pro-

³ The author can not disclose the real name of the companies

posed by the literature. In particular the framework groups metrics in two main measurement areas:

- (1) **Effectiveness Area.** Its mission is to demonstrate to stakeholders how IT/IS supports strategic objectives (quantitative measures) [1, 2, 3, 4, 5, 6, 7, 8] and the high IS/IT Service Quality [13] that leads to Customer Satisfaction and Use (perceptual measures) [12, 13, 18, 19].
- (2) **Efficiency Area.** Its aim is to evaluate efficiency of IT/IS processes (System and Process Quality measures) [13, 20, 21, 23] and of IT/IS management (organizational measures and innovation measures) [20, 21, 23, 24, 25].

Discussion

All action research projects started to focus the attention on the Efficiency Areas even if the sponsor was the CEO and not the CIO. That highlights the necessity to better understand the IT/IS activities before to approach the external context and try to measure the IT/IS impact on the whole organization. As a matter of fact IT/IS department has not always got competencies and structured IS management tools (e.g. accountancy of IS costs, IS human resource management, project management systems, customer survey and Help desk automation) which produce source data to feed IS Performance Management System. Thus it needs to acquire skills and be trained to apply a modern and sophisticated IT/IS Management framework. In confirmation of that, outputs, like IT/IS Services Catalogue and Service Level Agreement, become not by-product of the implementation process of IT/IS Performance Management System but some of its main outputs. These outputs are as important as IT/IS Performance Indicators in order to improve IS department readiness to deal with IT/IS evaluation [30].

The research also highlights that companies have difficulty in finding indicators for the Effectiveness Areas and scholar researches do not help them in this activity because they do not propose robust and feasible measures. Therefore this area is less developed than Efficiency Area and usually it especially includes IS/IT cost metrics (i.e. % of IT/IS costs expends to support key business processes or decision making processes). Therefore IT/IS Performance Management System does not completely help IT/IS department to demonstrate the IT/IS Business Value to stakeholders and thus IT/IS department is not encouraged to share this system with the users because its sketchy results could improve negative perception about IT/IS impact on Business Value . Resistance in sharing IT/IS Performance Management System with users also depends on [30]:

- Information asymmetry between IT/IS department and the rest of the organization. Usually users understanding of the complexity of IT/IS activities is limited, thus user departments are not able to analyse IT/IS performance indicators and really understand them.

- Power struggle. The power of IT/IS department depends on the amount of IT/IS budget and re-sources that it manages. As IT/IS Performance Management System leads to a “transparent” communication between IT/IS department and user departments, they could reduce IT/IS department power, especially in case of inefficient situation or opportunistic behavior.

Action research projects shows that IT/IS maturity of user departments is quite low [30]. Usually user departments are not interested in understanding how IT/IS department provides IT/IS services and if these services are real consistent with their needs. As a consequence, users are not used to handling sophisticated IT/IS performance indicators. Also in the projects in which the sponsor was the CEO the request of indicators was not so sophisticated.

Conclusion

The results of the action research projects suggest that the “management” perspective IT/IS evaluation is prevailing. This result is justified by the lack of feasible quantitative effectiveness measures but also by the low IT/IS department Readiness. The paper also highlights how this situation acts on the design and development of IT/IS Performance Management System and thus outputs, like IT/IS Services Catalogue and Service Level Agreement, become not by-product of the implementation process but some of its main outputs. Finally it highlights that organizational variables (information asymmetry, power struggle and IT/IS maturity) also affects the evolution of IT/IS Performance Management System.

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