

INFORMATION TECHNOLOGY AND BUSINESS AWARENESS DIAGNOSTIC TOOL

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ABSTRACT

This paper provides an overview of three widely employed IT governance sets of procedures; these are COBIT, ITIL and OPM3. The main purpose of this study is to propose a new conceptual framework for an IT-Business Awareness Diagnostic Tool. The primary objective of such a framework is to assess the degree of organizational capability in managing IT activities in relation to all business functions and provide guidelines and principles for designing IT management systems as well as setting standards for measuring the progress to be made.

Keywords: IT Governance; Business Awareness Diagnostic Tool

1. INTRODUCTION

The historical widespread infusion of IT in organizations has made it a managerially challenging issue for both executives and IT managers in the sense that they need to rethink and reassess the very nature of the business and its corporate governance in relation with IT. Over the past decades, a number of frameworks which are focusing on specific parts of the problem have been offered, but there is still no single comprehensive and effective framework addressing all parts put in place to guide IT management. Therefore, this area of aligning IT management with that of business strategy has relatively remained untouched and thus unchallenged. On the other hand, organizations have been continually struggling to address day-to-day operating problems, while at the same time trying to assimilate new technologies and managerial tools. It would be rather a serious mistake to think that the problems of IT management are totally different from those encountered in other business areas. The issues of IT organization are closely related to corporate governance and there are frameworks designed specifically for IT governance. Analysis of and understanding these frameworks is crucial for compliance, for building an organization's own internal frameworks or for reevaluating current perspectives and biases. In this study, three widely-accepted sets of procedures have been evaluated to provide a knowledge baseline for IT governance concepts. These are;

- COBIT (Control Objectives for Information and Related Technology)
- ITIL (Information Technology Infrastructure Library)
- OPM3 (Organizational Project Management Maturity Model)

The main purpose of this study is to offer a new framework for designing an IT-Business Awareness Diagnostic Tool that is intended to assess the degree of capability at which an organization has attained in managing IT with its critical dependence on business; that is, where it should go and how to measure its progress. This new framework has been developed for two different managerial audiences in mind. The first one is the group of general managers who are responsible for providing direction for all business activities in organizations. The second audience is the group of IT managers who are responsible for IT activities with a wider "helicopter management" point of view.

Part of this study has been based on a literature survey to position the new framework proposed with respect to existing ones. Also, as the justification for and basis of the new framework suggested, a group of system administrators, business analysts, developers, CIOs and executives have been observed and interviewed [4]. Many concerns on bridging the gap between technical issues, business risks, and performance compliance requirements, without incurring system and framework overloads, have also been discussed.

The remainder of this paper is organized as follows: In Section 2, we provide an overview of the necessary background for common IT governance frameworks; these are COBIT, ITIL and OPM3 as well as their comparative evaluation. In Section 3, we present the new IT-Business Awareness Diagnostic Tool. Finally, Section 4 includes some concluding remarks.

2. COMMON APPROACHES CRITIQUE: COBIT, ITIL, AND OPM3

2.1. COBIT: Summary and Critique

COBIT is the open standard of IT Governance Institute and it is produced and published by ISACA – The Information Systems Audit and Control Association and Foundation. Its focus is mainly on IT Governance – how executive management fulfills its responsibilities with respect to IT and auditing of IT operations. COBIT documentation presents the basic principles of the framework in considerable detail. Figure 1 depicts COBIT in a summary form. As can be observed from Figure 1, there are three dimensions of COBIT: the “business requirements – dimension 1” of an organization are achieved through “IT processes – dimension 2” using “IT resources – dimension 3.” Business requirements consist of effectiveness, efficiency, confidentiality, integrity, availability, compliance, and reliability. These requirements are to be achieved through IT goals. In other words, IT goals must be in concordance with business requirements. The IT goals are realized through ‘IT processes”, which are defined as “domains”, “processes” and “activities.” IT processes involve IT resources, which are classified as applications, information, infrastructure, and people. Three levels of IT efforts are considered while managing IT resources: these are at the activity level, process level, and domain level.

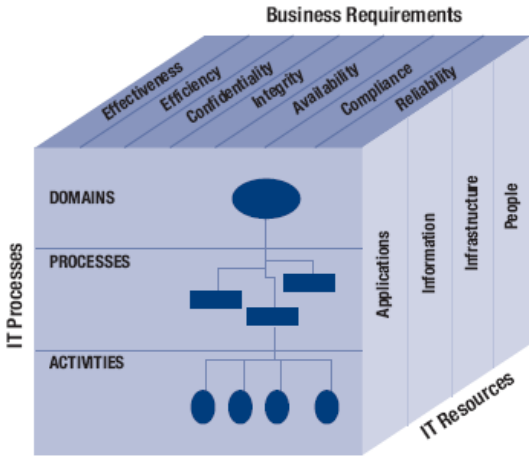


Figure 1 – COBIT Cube (Source: COBIT 4.0)

In summary, The COBIT procedures seem to offer the following advantages: (1) it provides a comprehensive checklist for a variety of IT decisions; (2) it enables IT management to deal with risks not explicitly addressed by other frameworks and to pass the audits in this regard; (3) It can work well with other quality frameworks, especially with ITIL. However, COBIT is not without its own shortcomings and limitations. Among these are: (1) COBIT basically lists what needs to be done for sound governance but it falls short in offering how such needs are to be met. (2) It does not deal directly with software development or IT services, thus falling short in making operational recommendations or offering practical procedures. (3) It does not provide a road map that is needed for continuous process improvement. (4) COBIT takes considerable effort to integrate any additional feature or need into a company's processes. This is due to the fact that COBIT is in essence an “umbrella quality framework” for IT decisions and designs. For example, for something as simple as

adding the BlackBerry PDA to the company's catalog of approved devices, COBIT will ask whether there is help desk support for it, whether security has been addressed, whether procedures are in place to acquire and maintain the device and so on.

2.2. ITIL: Summary and Critique

ITIL was originally a set of standards developed for guiding IT decisions and actions and initiated by the UK Office of Government Commerce (OGC) in the 80's. Today, The IT Service Management Forum (ITSMF) is responsible for the development and refinement of ITIL [1], [3]. The primary objective of developing and initiating ITIL was to enable organizations to become cost-effective in using their IT resources. With this main objective in perspective: (1) ITIL outlines the organizational structure and skill requirements for IT service management (2) ITIL includes a collection of best practices to allow IT people to manage their IT operations and associated with these operations to build an IT infrastructure that is independent from particular vendors and applicable to all items of equipment within the IT infrastructure. (3) ITIL is quite appealing to anyone who is involved in the management or day-to-day practice of IT Service Management, in-house or outsourced, as well as anyone defining new IT processes or refining existing processes.

ITIL (Version 2) Jigsaw is the description of the model and has designed for the current edition of ITIL (See Figure 2). The library comprises five principal elements, each of which has interfaces and overlaps with each of the other four. However, in practice, when analyzing the processes in more detail, elements overlap. This characteristic illustrates the need for both consistencies across the guidance, and advice on how to deal with management problems that may arise. The cause of these management problems may be the result of boundaries drawn that perhaps has more to do with the span of control than with logical grouping of related processes. In summary, ITIL provides a framework for organizing service management in an IT environment and is used to reveal the interfaces and any communications deficiencies within existing IT processes.

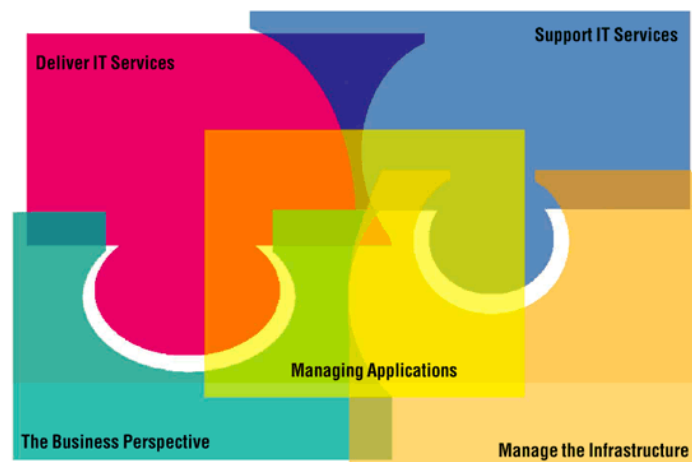


Figure 2 – ITIL Jigsaw Diagram (Source: ITIL: Service Support, 2001, p.4)

The strengths of ITIL can be listed as follows. It is well established, mature, detailed and focused on IT production and operational quality issues. The limitations of ITIL, on the other hand can be briefly stated as: (1) It does not address the development of quality management systems, a serious shortcoming for those organizations that are primarily concerned with quality issues. (2) It is not geared towards software development processes, something that might be of great importance to some organizations. (3) Its use is highly dependent on interpretation. ITIL, for many, is the tool of choice for the operations and infrastructure side of IT, particularly for IT services. ITIL tracks problems in IT service areas such as help desk, applications support, software distribution and customer-contact system support. ITIL tracks the changes made to operational systems, but not the quality of those changes—in terms of the number and severity of problems resulting from them. ITIL facilitates root-cause analysis of problems.

2.3. OPM3: Summary and Critique

OPM3 was first published in December 2003 by PMI – Project Management Institute. “The organizational project management is the application of knowledge, skills, tools, and techniques to organizational and project activities to achieve the aims of an organization through projects.” “OPM3 is the authoritative maturity model for helping organizations achieve their strategic goals through the development of project management, program management - centralized, coordinated management of a program to achieve strategic results, and portfolio management – centralized management of one or more portfolios, or collections of projects and/or programs, capabilities” [2]. PMI claims that OPM3 is designed for use in various industries across diverse cultures and organization sizes. Organizations that may have already invested in a specified maturity model can use OPM3 to complement their existing model for added project management maturity results.

OPM3 is comprised of three interlocking elements: Knowledge, Assessment, and Improvement. OPM3 has identified in excess of 600 Best Practices, 3,000 Capabilities, and 4,000 relationships between Capabilities. In turn, every Best Practice has been placed within a context called the OPM3 Process Construct. OPM3 combines the five project management process groups: Initiating, Planning, Executing, Controlling, Closing Processes, within each of the three strategic importance domains: Portfolio, Program, and Project Management, interacting with and progressing through the four stages of process improvement: Standardize, Measure, Control, and Continuously Improve.

The strengths of OPM3 can be listed as follows. It provides an organization-wide strategy and structure for selecting the right projects, IT project as well as others. It acts as a foundation of measurements and logic and a sense of fairness for portfolio decisions. It presents a way to link portfolio decisions to strategic direction and business objectives, and to establish ownership among staffers by involving them at the right levels. It provides appropriate allocation of resources, which reduces wasteful spending. The limitations of OPM3 can also be listed as follows. Since it is not directly designed for IT project management domain, but for project management in general, it is sometimes not too much effective to address some IT domain-specific issues. It tends to be hierarchical and the exact points of transition between the levels of the hierarchy are not always clear. OPM3 is relatively a new proposal and therefore lacks empirical support for determining which competencies contribute most to success in IT management.

2.4. Comparative Evaluation

ITIL and COBIT are perhaps the most well known frameworks that support the implementation of effective IT processes [5]. COBIT’s bottom line is to ensure IT funds are spent wisely and linked to business outcomes and it has a tendency to expose flaws in investment and execution. ITIL, on the other hand, looks at whether technology delivers the business-grade services that it promises and easily deals with the understood concepts, such as uptime and response times. OPM3 is a staged maturity model providing requirements for assessing and developing capabilities in portfolio, program, and project management, helping organizations to advance organizational strategies through projects. ITIL is not a maturity model, but is a customizable framework of best practices. COBIT’s maturity model component could be used to check the ITIL implementation. Organizations wanting to adopt ITIL need effective IT governance and control framework for successful ITIL implementation. As can be observed from Figure 3, which relates the three frameworks one to another, COBIT provides a broad-based governance framework that includes guidelines to help organizations move toward the business requirements. COBIT also provides a mechanism for measuring the capability of the organization (people, processes, and technology) to achieve a successful outcome in meeting the business requirements, and for measuring performance.

Although COBIT is oriented towards IT processes, it does not include process steps and tasks. It focuses on what an organization needs to do rather than telling how to do it. COBIT processes are focused on business requirements and provide guidance in determining what is sufficient to meet these requirements. ITIL, on the other hand, defines best practice processes for IT Service Management and shows how to get there. ITIL focuses on method and defines a more comprehensive set of processes than COBIT, providing a roadmap for building processes.

If the goal is to improve the quality and measurability of IT governance across the entire networked application implementation life cycle or implementing a control system for improved regulatory compliance, COBIT and OPM3 probably would be a more effective and wiser choice. On the other hand, if the objective is to continuously improve IT operations efficiency and IT customer service

quality, ITIL would probably be a better bet. Figure 4 presents the differences in several dimensions. However, it is better not look at these comparisons as a COBIT vs. ITIL vs. OPM3 analysis. It is rather important to well understand the merits of each IT approach and adapt them as needed to meet the specific requirements of a unique environment.

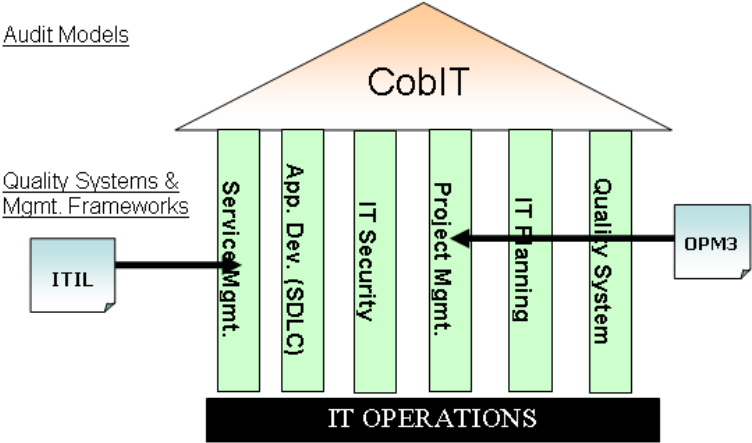
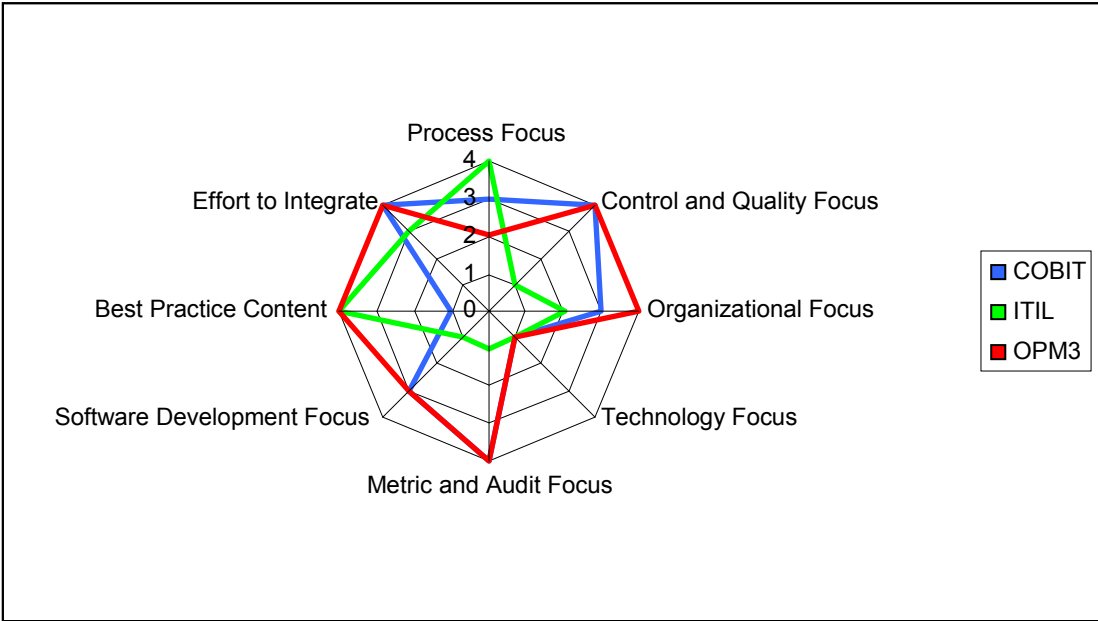


Figure 3 – COBIT, ITIL, and OPM3 in an IT Governance Model (Source: Pacific Northwest Digital Government Summit, June 2006)



Metric and Audit Focus: How much it provides metrics and audit facilities to define and measure their outcome and performance.
Technology Focus: How much it concentrates on details of technology side.
Organizational Focus: How much it presents structures and roles of the organization.
Control and Quality Focus: How much control and quality focus it applies on IT process management.
Process Focus: How much it defines how process flows are.
Effort To Integrate: How much effort an organization should pay to integrate it.
Best Practice Content: How much it comprises best practices.
Software Development Focus: How much it gives focus on software development.

Figure 4 – A Comparison of Three IT Governance Frameworks

3. IT – BUSINESS AWARENESS DIAGNOSTIC TOOL – A NEW FRAMEWORK

There is astounding value in getting IT aligned with business requirements as single one whole unit, from end to end. However, most organizations still do not realize that their approaches to delivering IT services are really without much visibility, no baselines, no common understanding, no efficiency, and no ability to consistently improve and adapt. In other words, IT-Business Awareness is usually considerably at low level in most organizations. The term “IT-Business Awareness” here refers to having an understanding of, being aware of IT in co-relation with business. An organization’s IT-Business Awareness is defined as an organization’s total considerations of IT-Business co-operation at a given point in time.

Organizations should continually go and follow an IT-Business awareness circle of planning, modeling, managing, and measuring. Put differently, they should plan, and then implement what they plan, they manage the model and then on an ongoing basis, they measure what they are managing and then when they find it’s not working or there is a need for upgrading or updating, feed these needs into the new plan to provide a better model than the last one they had. IT-Business Awareness Diagnostic Tool is designed to support organization’s continuous IT-Business awareness cycle. It is composed of three sections: Assessments – measure where the organization is; Vision and Objectives – decide where to go; Metrics – measure progress against the set objectives.

3.1. Assessments

An assessment needs to be done in order to identify where the organization currently stands with respect to its IT operations and services. To start such an assessment process, the following three main factors of IT-Business Awareness should be taken into consideration:

- *Perceived Ease of Use* – It describes the degree to which technology makes communication easier through the organization.
- *Keep Up To Date* – It refers to the degree at which technology is capable of providing the desired information.
- *Relevancy to the Relations* – It refers to the degree at which a technology is relevant to the relationships among the various organizational levels.

Then the following set of criteria should be used to reveal organizational issues affecting IT-Business awareness;

- *Authority* – There is a predefined scope and levels of authority for IT decisions among company executives.
- *Accountability* – There is accountabilities for IT decisions.
- *CIO’s Role* – He or she works hard on creating an environment in which he is genuinely engaged in all discussions concerning key day-to-day business issues. He decides where the strategic priorities lie and consequently adjust and directs IT resources. He puts himself in a position where he can genuinely request – or even demand – the business leaders reciprocate and become involved in the relevant issues of IT.
- *IT Sponsorship* – There is proactive decision makers such as information technology innovation committee.
- *Collaboration With Business Users* – There is no resistance to IT for business process changes.
- *Executive Commitment* – There is familiarity and involvement of senior executives with the IT process. There is ability to define clear business objectives for IT investment. There are processes for managing exceptions, and consistent procedures for making IT decisions from year to year.
- *Responsibility and Capability Assignment Matrix* – There are responsibility definitions and required capabilities/competencies definitions of IT people.
- *Outsourcing and Contracting Policy* – There is outsourcing and contracting policies.

3.2. Vision and Objectives

After analysis of assessment results, the organization decides where to go by defining vision and objectives of IT governance structure. The crucial and major actors of this phase are necessarily the IT leaders. They need to develop IT structures that are efficient, streamlined, and less bureaucratic. Over time, leaders might figure out though what tasks can be achieved through relationships and what must

be accomplished through more formalized assessment and decision-making processes. In such processes, they might find themselves in employing some rules of thumb such as

- Considering the risk of evolving into a mammoth system of checks and balances, meetings, and multiple committees.
- Building a structure to make decisions on technology investments.
- Examining the broader questions regarding IT value.
- Transforming, even radically, to release workforce back into IT.
- Deciding degree and areas of outsourcing.

The most important decision is building a structure either on 'offensive' or 'defensive' mode. In offensive mode, organization does things that will bring a significant increase in market share, measurable improvement in service and significant reductions in cost to allow him to better position. Whereas, in defensive mode, when there is a trend in the industry, you move quickly to close the gap.

3.3. Metrics

In order to measure the progress made against the defined visions and objectives, there should be metrics that are manageable and applicable in real-life settings. As mentioned the unique output of IT domain, processes and activities to business is valuable "information" which is required on right time and right form. In this regard, COBIT's seven information criteria would be suitable to apply here;

- *Effectiveness* deals with information being relevant and pertinent to the business process as well as being delivered in a timely, correct, consistent and usable manner.
- *Efficiency* concerns itself with the provision of information through the optimal (most productive and economical) use of resources.
- *Confidentiality* concerns itself with the protection of sensitive information from unauthorized disclosure.
- *Integrity* relates to the accuracy and completeness of information as well as to its validity in accordance with business values and expectations.
- *Availability* relates to information being available when required by the business process now and in the future. It also concerns the safeguarding of necessary resources and associated capabilities.
- *Compliance* deals with complying with those laws, regulations and contractual arrangements to which the business process is subject, i.e., externally imposed business criteria, as well as internal policies.
- *Reliability* relates to the provision of appropriate information for management to operate the entity and exercise its fiduciary and governance responsibilities.

In addition to above set of criteria, another set of more intangible criteria could be used to assess the progress made more comprehensively. A possible set of such criteria is provided below:

- *Project evaluations*: Analyze a project's cost, its compliance with internal IT standards and its potential impact on customer satisfaction and business processes – all against the backdrop of how it aligns with company's strategic direction.
- *Complexity of application architectures*: Analyze application architectures for simplicity, efficiency and effectiveness.
- *Availability of an integrated view of performance and compliance*: Availability of a centralized view for performance and compliance monitoring.
- *Visibility of issue handling*: IT issues, planned operations or unplanned requests should be managed in a highly visible manner by all stakeholders.
- *Availability of change/configuration/release management*: Acceptance and execution of change/configuration/release management.
- *Integrity of initiative*: Running as a cross-organizational program.
- *Degree of participation*: Early and continuing commitment.

Also some tangible assets that may be called as key performance indicators should also be monitored. A set of such indicators could be following:

- Percentage of Customers Get Served via Internet
- Percentage of Inquiries Taken over the Internet

- Percentage of Service Requests
- Percentage of Warranty Requests
- Percentage of Breakdowns
- Percentage of Customer Complaints
- Customer Satisfaction Index
- Percentage of Escalations
- Percentage of New Customers per Year
- On Time Pricing to Customers

All the indicators suggested above for the new framework will of course vary in terms of their importance and usefulness depending on the characteristics of the organization where they are intended to be used. An organization's own characteristics as well as its business environment will greatly influence the choice of their criteria set.

4. CONCLUDING REMARKS

An organization's effective IT operations producing business profitability hinge heavily on ensuring that the IT governance is well executed. There are mainly three widely employed approaches to providing a knowledge base for IT governance and they have been briefly presented in this paper. In summary, although COBIT is oriented to IT processes, it does not include process steps and tasks to make it completely practical and operational. It mostly focuses on what an organization needs to do rather than how to do it. COBIT processes are focused on business requirements and provide guidance in determining what is sufficient to meet these requirements. ITIL, on the other hand, defines best practice processes for IT Service Management and shows how to get there. It basically focuses on method and defines a more comprehensive set of processes than COBIT does by providing a roadmap for building processes. However, none of the frameworks is sufficient alone, and therefore it is most sensible to make use a meaningful combination of all these three approaches to have a customized framework that will meet the specific requirements of a given organization.

IT is advancing at an exponential rate, making previous technologies and methods rapidly obsolescent. Therefore it is an absolute necessity to assess, on a continuous basis, the IT processes to find out whether there are current or potential shortcomings. If any shortcomings are found, then there must take place a series of measures in order to guide IT operations in a desired direction. One should also look for opportunities that new technologies can offer to the benefit of organizations. The conceptual framework suggested in this paper as an IT-Business Awareness Diagnostic Tool is a step in that direction, for it is a framework specifically designed for this purpose. More over, the suggested framework has been developed for both business executives and IT executives in mind, where the former ones are in charge of business operations and the latter group responsible for IT operations. Through such a framework it is hoped that the linkage between business requirements and IT operations will be established and a more sound IT governance will come into existence.

Although the conceptual framework suggested in this paper as an IT-Business Awareness Diagnostic Tool has been partially based on a series of interviews with IT managers, such a concept is to be put in a company-specific context for a test to make it more operational one. This is the intention of the authors as their next item of research agenda. Having experience with several such company-specific frameworks one will be able to design a more comprehensive IT-Business Awareness Diagnostic Tool that will be more understandable and useful for both business managers and IT-managers alike.

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