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Improving ITIL Strategic Alignment Approach Using COBIT Framework

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Abstract— **IT Governance provides a business focus to enable alignment between business and IT objectives at high level COBIT framework and focused on IT operational levels, ITIL standard. COBIT and ITIL are not mutually exclusive and can be combined to provide a powerful IT governance, control and best-practice framework in IT service management. So ITIL business-IT strategic alignment perspective could be improved using COBIT framework.**

Focusing on COBIT processes which support (primarily and secondarily) strategic alignment, in this paper, first, we map COBIT 4.1 to ITIL v3 to identify how ITIL cover COBIT control objectives. Furthermore, based on control objectives which are not completely addressed by ITIL processes, the opportunities to improvement in ITIL strategic alignment activities, functionalities, and relationships are identified. Consequently, appropriate and adequate practices to improve strategic alignment approach of ITIL v3 are proposed.

Keywords-component; Strategic Alignment; IT Governance; ITIL v3; COBIT 4.1.

I. INTRODUCTION

Successful organizations understand the risks and exploit the benefits of IT and find ways to deal with aligning IT strategy with the business strategy creating constructive relationships and effective communication between the business and IT. [1]

Organizations cannot deliver effectively against these business and governance requirements without adopting and implementing a governance and control framework for IT to make a link to the business requirements and make performance against these requirements transparent. [1]

The basic principle of the IT governance is to manage IT resources by IT processes to achieve IT goals that respond to the business requirements and meet strategic alignment between business and IT. [2]

A framework for IT governance such as COBIT and ITIL defines the reasons IT governance is needed, the stakeholders and what it needs to accomplish. COBIT helps to define what should be done at the highest level of IT governance and ITIL provides the how for operational service management aspects. [9]

Science standards and best practices are not a panacea; their effectiveness depends on how they have been implemented and kept up to date. So organizations that want to put their ITIL program into the context of a wider control and governance framework should use it combined with COBIT. [10]

In this regard, the research attempts to identify improvement opportunities of strategic alignment in ITIL v3, focusing on COBIT 4.1 approach.

II. IT GOVERNANCE

IT can extend and influence the performance of organization, but it has to be subject to adequate governance. On the other hand, business processes require information from the IT processes, and this interrelationship has to be governed as well. [1]

In this subject matter, IT governance is the responsibility of executives and the board of directors, and consists of the leadership, organizational structures and processes that ensure that the organization's IT sustains and extends the organization's strategies and objectives. [2]

IT governance integrates and institutionalizes good practices to ensure that the organization's IT supports the business objectives. IT governance focus areas are business-IT Strategic alignment, Value delivery, Resource management, Risk management, and Performance measurement. [2]

IT governance enables the organization to take full advantage of its information, thereby maximizing benefits, capitalizing on opportunities and gaining competitive advantage. These outcomes require a framework such as COBIT and ITIL for control over IT in respect of the business. [2]

III. COBIT

COBIT (Control Objectives for Information and related Technology) is a globally accepted framework for IT governance based on industry standards and best practices. ITGI (The IT Governance Institute) released COBIT 3rd Edition in 2000, COBIT 4.0 in 2005 and COBIT 4.1 in 2007. COBIT provides a common language for business executives to communicate goals, objectives and results with audit, IT and other professionals. Once implemented, executives can ensure IT is aligned effectively with business goals and better direct the use of IT for business advantage. [2]

Thus, COBIT supports IT governance by providing a framework to ensure that:

- IT is aligned with the business
- IT enables the business and maximizes benefits
- IT resources are used responsibly
- IT risks are managed appropriately

COBIT is focused on what is required to achieve adequate management and control of IT, and is positioned at a high level. [2]

To govern IT effectively, COBIT defines IT activities in a generic process model throughout 34 processes within four following domains:

- Plan and Organize (PO): Provides direction to solution delivery (AI) and service delivery (DS)
- Acquire and Implement (AI): Provides the solutions and passes them to be turned into services
- Deliver and Support (DS): Receives the solutions and makes them usable for end users
- Monitor and Evaluate (ME): Monitors all processes to ensure that the direction provided is followed.

The process structure of COBIT and its high-level, business-oriented approach provide an end-to-end view of IT and the decisions to be made about IT in organization. [2]

IV. ITIL

Released by the UK Office of Government Commerce (OGC), ITIL (IT Infrastructure Library) it is the most widely accepted approach to IT service management in the world. ITIL v1 (focused on managing technology) was created in the 1980s and ITIL v2 (focused on implementing service management processes) in the 1990s. ITIL v2 was superseded by an enhanced and consolidated third version of ITIL consists of 27 detailed processes organized into five high-level processes described in five core books (Service Strategy, Service Design, Service Transition, Service Operation, and Continual Service Improvement) that comprise one function: effective IT service management. [3]

IT service management is concerned with planning, sourcing, designing, implementing, operating, supporting and improving IT services that are appropriate to business needs. [1]

The role of ITIL is to give guidance at the lowest level that is applicable generally. Below that level, and to implement ITIL in an organization, specific knowledge of its business processes is required to tune ITIL for optimum effectiveness. [10]

V. STRATEGIC ALIGNMENT AS AN IT GOVERNANCE FOCUS AREA

Strategic alignment focuses on ensuring the linkage of business and IT strategies, goals, and plans, defining, maintaining and validating the IT value proposition, and aligning IT operations with organization operations. [1]

A strategic reference point for an organization to improve management and control of IT processes can be found by looking at emerging international standards and best-in-class practices. The emerging practices of today may become the expected level of performance of tomorrow and, therefore, are useful for planning where an organization wants to be over time. [2]

To achieve alignment of IT to business requirements, formal processes in support of good IT governance should be used, science one of IT governance focus areas is strategic alignment.

A. Coverage of Strategic Alignment by COBIT 4.1

Due to its high level and broad coverage and because it is based on many existing practices, COBIT is often referred to as the 'integrator', bringing disparate practices under one umbrella and, just as important, helping to link these various IT practices to business requirements. The business orientation of COBIT 4.1 consists of linking business goals to IT goals, providing metrics and maturity models to measure their achievement, and identifying the associated responsibilities of business and IT process owners. [2]

Requirements of strategic alignment can be covered by implementing the COBIT processes. Strategic alignment is addressed in two levels by processes. First, processes with a primary impact on this focus area. Second, processes with a secondary impact on strategic alignment. [9]

These processes ensure that the IT-enabled initiatives are planned and organized in a structured manner and initiated appropriately. In addition, the delivery of IT services meets business and regulatory requirements and enables management and the business to oversee the service development and service delivery.

B. Coverage of Strategic Alignment by ITIL v3

ITIL is based on defining best practice processes for IT service management and support, rather than on defining a broad-based control framework. [9]

ITIL v3 provides useful guidance on strategic alignment of service strategies, particularly how to understand the business requirements, the potential demand on capacity, and how to organize services in a portfolio to ensure balance and prioritization of resources. It also helps to understand the options for choosing service providers and how to decide sourcing strategies. Furthermore, ITIL v3 providing the how for service management to define requirements by creating service level agreements and setting clear, business-related IT objectives and metrics, to ensure value for the business customer by delivering IT services, and to increase customer satisfaction by implement continuous improvement from both the business and the technical viewpoint. [3]

VI. MAPPING ITIL TO COBIT: BASED ON STRATEGIC ALIGNMENT APPROACH

As stated previously, information requirements of strategic alignment can be covered by implementing a set of COBIT processes which addressed it primarily and secondary. The detailed mapping consists of the coverage information requirements of ITIL v3 that were mapped to each COBIT processes which support strategic alignment in aspect of control objectives.

The coverage of the mapped information requirements is denoted in six different levels:

- E: Exceeded; the requirements stated in ITIL v3 exceed the requirements of COBIT.
- C: Complete coverage; the requirements of the COBIT process are covered by the mapped requirements of the guidance in ITIL v3.
- A+: Many aspects addressed; many aspects of the COBIT process are addressed by ITIL v3.
- A: Some aspects addressed, but the requirements are not covered completely.
- A- : A few aspects addressed.
- N/A: Not addressed; there is no match between the requirements of COBIT and ITIL v3.

For the purposes of this mapping:

- Text shown in bold indicates where the process addresses strategic alignment primarily.
- Text shown in italics indicates where the process addresses strategic alignment secondarily.

TABLE I. MAPPING ITIL V3 TO COBIT 4.1 SUPPORTIVE PROCESSES OF STRATEGIC ALIGNMENT

COBIT Supportive Processes to Strategic Alignment	**ITIL Coverage**
Plan And Organize Domain (PO)	
PO1: Define a Strategic IT Plan	A
PO2: Define the Information Architecture	A-
PO3: Determine Technological Direction	A-
PO4: Define the IT Processes, Organization and Relationships	A+
PO5: Manage the IT Investment	A+
PO6: Communicate Management Aims and Direction	A-
PO7: Manage IT human resources	A-
PO8: Manage Quality	A
PO9: Assess and Manage IT Risks	A
PO10: Manage Projects	A-
Acquire and Implement (AI)	
AI1: Identify Automated Solutions	A+
AI2: Acquire and Maintain Application Software	A+
AI4: Enable Operation and Use	A+
AI7: Install and Accredit Solutions and Changes	C
Deliver and Support (DS)	
DS1: Define and Manage Service Levels	C
DS3: Manage Performance and Capacity	C
DS4: Ensure Continuous Service	A+
DS7: Educate and Train Users	A-
Monitor and Evaluate (ME)	
ME1: Monitor and Evaluate IT Performance	A+
ME3: Monitor and Evaluate Internal Control	N/A
ME4: Provide IT Governance	A-

VII. IMPROVEMENT OPPORTUNITIES TO ITIL STRATEGIC ALIGNMENT APPROACH: BASED ON COBIT

As mentioned, COBIT 4.1 is focused on what is required to achieve strategic alignment, as an IT governance focus area, at a high level. On the other hand, the role of ITIL v3 is to give guidance at the lowest (operational) level that is applicable generally. COBIT helps to define *what* should be done at strategic level and ITIL provides the *how* for service management aspects. [10]

When used together, COBIT and ITIL provide a top-to-bottom approach to IT governance and, thus, service management. COBIT guides management's priorities and objectives within a holistic and complete approach to a full range of IT activities. ITIL supports this with best practices for service management.

So the power of ITIL strategic alignment approach is amplified by combining with COBIT with a greater likelihood of management support and direction, and a more cost-effective use of implementation resources.

Focusing on information requirements of COBIT supportive processes to strategic alignment, which are not completely addressed by ITIL processes, the opportunities to improvement in ITIL strategic alignment approach are identified.

Consequently, based on control objectives of COBIT 4.1, activities to improve ITIL v3 strategic approach to alignment business and IT in each phases of ITIL is proposed.

TABLE II. IMPROVEMENTS ACTIVITIES IN ITIL V3 STRATEGIC ALIGNMENT PERSPECTIVE ACCORDING TO COBIT 4.1

ITIL Phase	**Strategic Alignment Improvement Opportunities of ITIL v3**	**COBIT Process**	**Coverage**
Service Strategy	Define, establish and align the IT governance framework with the overall organization governance and control environment.	**ME4**	A
	Establish an IT strategy committee: To ensure that IT governance, as part of organization governance, is adequately addressed; advise on strategic direction; and review major investments on behalf of the full board.	*PO4*	A
	Establish an IT steering committee: Composed of executive, business and IT management to prioritize IT-enabled investment programs in line with the organization's business strategy and monitor service levels and service improvements	*PO4*	N/A
	Place the IT function in the organizational structure with a business model contingent on the IT criticality to business strategy and the level of operational dependence on IT.	*PO4*	A
	Identification of External Legal, Regulatory and Contractual Compliance Requirements for incorporation into the organization's IT policies, standards, procedures and methodologies.	**ME3**	N/A
	Technological direction planning: Analyze existing and emerging technologies, and plan which technological direction is appropriate to realize the IT strategy and the business systems architecture. Identify which technologies have the potential to create business opportunities. The plan should address systems architecture, technological direction, migration strategies and contingency aspects of infrastructure components.	*PO3*	A
	IT policies management: To develop and maintain a set of policies to support IT strategy including policy intent;	**PO6**	N/A

ITIL Phase	Strategic Alignment Improvement Opportunities of ITIL v3	COBIT Process	Coverage
	roles and responsibilities; exception process and compliance approach.		
	Resource management: To use and allocate IT resources to ensure appropriate alignment with current and future strategic objectives and business imperatives.	**ME4**	N/A
	Monitor future trends and regulations: Establish a process to monitor the business sector, industry, technology, infrastructure, legal and regulatory environment trends to develop IT technology infrastructure plan.	*PO3*	A
	Prioritize IT budget: To maximize IT's contribution to optimizing the return on the organization's portfolio of IT-enabled investment programs and other IT services and assets.	*PO5*	A
	Manage IT benefits: To monitor IT's contribution to the business, either as a component of IT-enabled investment programs or as part of regular operational support.	*PO5*	A
	Focus on critical IT resources: To ensure response and recovery in line with prioritized business needs, while ensuring that costs are kept at an acceptable level and complying with regulatory and contractual requirements.	*DS4*	A
Service Design	Establish and maintain an optimal co-ordination, communication and liaison structure between the IT function and various business units, executives and board.	*PO4*	A
	Establish organization information architecture model: To enable IT services development and decision-supporting activities, consistent with IT plans to facilitate the optimal creation, use and sharing of information by the business.	**PO2**	A
	Provide and maintain an organization data dictionary and data syntax rules: To enable the sharing of data elements amongst applications and systems and promote a common understanding of data amongst IT and business users, and prevent incompatible data elements from being created.	**PO2**	A
	Establish a technology forum: To provide technology guidelines and standards and practices based on their business relevance, risks and compliance with external requirements.	*PO3*	N/A
	Create technology infrastructure plan in accordance with the IT strategic and tactical plans.	*PO3*	A
	Establish integrity management: To define and implement procedures to ensure the integrity and consistency of all data stored in electronic form.	**PO2**	A
	Establish an IT architecture board: To direct IT architecture design and ensure it enables the business strategy and considers regulatory compliance and continuity requirements.	*PO3*	N/A
	Provide IT Quality Assurance group with appropriate QA systems, controls and communications expertise.	*PO4*	A
	Develop organization IT risk and control framework in alliance with the organization risk and control framework.	**PO6**	N/A
	Roll out and enforce IT policies to all relevant staff, so they are built into and are an integral part of organization operations.	**PO6**	N/A
	Communicate awareness and understanding of business and IT objectives and direction to appropriate stakeholders and users throughout the organization.	**PO6**	A
	Establish IT risk management framework that is aligned to the organization's risk management framework.	**PO9**	A
	Prepare quality management plan for key IT processes to guide the organization in meeting the intent of the Quality Management System.	**PO8**	A
	Develop a feasibility study to examine the possibility of implementing the IT requirements and make a recommendation to the business sponsor.	**AI1**	A
	Obtain stakeholder commitment and participation to the overall IT-enabled investment program.	**PO10**	A
	Evaluate compliance of IT policies, standards, procedures and methodologies with external legal and regulatory requirements.	**ME3**	N/A
	Develop a strategy and plan for the maintenance and improvement of delivered IT services.	**AI2**	N/A
	Integrate IT reporting on legal, regulatory and contractual requirements with similar output from other business functions.	**ME3**	N/A
Service Transition	Manage IT staff policies: to ensure that the IT function has sufficient resources to support the business goals and objectives.	*PO4*	N/A
	Define and identify key IT personnel and minimize reliance on a single individual performing a critical job function.	*PO4*	N/A
	Provide IT personnel training with appropriate orientation when hired and ongoing training to maintain their knowledge and skills at the level required to achieve organizational goals.	**PO7**	A
	Manage IT personnel recruitment processes in line with the overall organization's personnel policies and procedures.	**PO7**	N/A
	Take expedient actions regarding job changes, especially job terminations. Knowledge transfer should be arranged, responsibilities reassigned and access rights removed.	**PO7**	N/A
	Establish Quality Management system in alliance with business requirements.	**PO8**	A
	Establish risk context in which the risk assessment framework is applied to ensure appropriate outcomes.	**PO9**	A
	Plan data conversion and infrastructure migration as part of the organization's development methods, including audit trails, rollbacks and fallbacks.	*AI7*	N/A
	Identify IT education and training needs and target groups.	*DS7*	N/A
	Deliver IT training and education to target groups.	*DS7*	N/A
	Communicate IT service release: To ascertain stack holders whether the IT service delivered the planned results and benefits. Identify any outstanding activities required to achieve the planned targets.	**PO10**	N/A
	Transfer knowledge to business management: To allow individuals to take ownership of the IT services, and exercise responsibility for service delivery and quality.	*AI4*	N/A

ITIL Phase	Strategic Alignment Improvement Opportunities of ITIL v3	COBIT Process	Coverage
	Verify the business sponsor to approve and sign off on IT services in aspect of business functional and technical requirements.	**AI1**	A
	Obtain and report positive assurance of compliance to all internal policies or external legal, regulatory or contractual requirements, confirming that any corrective actions to address any compliance gaps have been taken by the responsible process owner in a timely manner.	**ME3**	N/A
Service Operation	Implement adequate supervisory practices in the IT function to ensure that roles and responsibilities are properly exercised and to generally review KPIs.	*PO4*	N/A
	Verify personnel have the competencies to fulfill their roles on the basis of their education, training and experience.	**PO7**	N/A
	Identify, document and analyze risks associated with the business requirements and solution design as part of the organization's process for the development of requirements.	**AI1**	A
	Evaluate IT education and training content delivery upon completion for relevance, quality, effectiveness, the retention of knowledge, cost and value. The results of this evaluation should serve as input for future curriculum definition and the delivery of training sessions.	*DS7*	N/A
	Evaluate IT employee job performance on a regular basis against individual objectives derived from the organization's goals, established standards and specific job responsibilities. Employees should receive coaching on performance and conduct whenever appropriate.	**PO7**	N/A
Continual Service Improvement	Develop senior management reports on IT's contribution to the business, specifically in terms of the performance of the organization's portfolio, IT-enabled investment programs, and the solution and service deliverable performance of individual programs.	*ME1*	A
	Review and adjust IT policies, standards, procedures and methodologies to ensure that legal, regulatory and contractual requirements are addressed and communicated.	**ME3**	N/A
	Obtain independent assurance (internal or external) about the conformance of IT with relevant laws and regulations; the organization's policies, standards and procedures; generally accepted practices; and the effective and efficient performance of IT.	**ME4**	N/A

VIII. CONCLUSION

To summarize, IT Governance frameworks are essential for ensuring IT resources are aligned with an organization's business objectives, and that services and information meet the business requirements.

Based on above discussions, to achieve strategic alignment, we recommend that ITIL be used at tactical and operational level of IT service management, providing detailed, standardized practitioner processes. There is also a need for overall control framework based on an IT process model, such as COBIT which is used at the highest level of IT governance and is mapped to the ITIL framework, thus providing a hierarchy of guidance materials to strategic alignment.

This research attempted to resolve the issue of business-IT strategic alignment by investigating the improvement opportunities of ITIL strategic alignment approach using COBIT 4.1 framework.

Taking into account COBIT 4.1 and ITIL v3 approach to meet strategic alignment as an IT governance focus area, firstly, we present detailed mapping consists of the coverage information requirements of ITIL v3 that were mapped to each COBIT processes which support primarily or secondarily strategic alignment.

Secondly, focusing on information requirements of COBIT which are not completely addressed by ITIL processes, the opportunities to improvement in ITIL strategic alignment approach are identified.

Finally, based on control objectives of COBIT, we propose practices in each phases of ITIL v3 to improve its strategic approach of aligning business and IT.

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