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Sustainable IT Governance (SITG): Is COBIT 5 An Adequate Model?

Jeffrey W. Merhout
Miami University, jmerhout@miamioh.edu

Joseph O'Toole
Grant Thornton LLP, otooleje@miamioh.edu

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Jeffrey W. Merhout
Miami University
jmerhout@MiamiOh.edu

Joseph O'Toole
Grant Thornton LLP
joe.o'toole@us.gt.com

ABSTRACT

Arguably, IT Governance should address sustainability. This study reviews a prominent IT governance framework, COBIT 5, to determine the extent to which it supports sustainability dimensions, especially as related to the acquisition, use and disposal of IT assets. Based on our analyses, we conclude that COBIT 5 does not adequately address sustainability concerns facing organizations today. The drivers, benefits, risks, and security considerations associated with sustainability in IT governance are explored in this discussion. We conclude our review with suggestions on how COBIT could be possibly be enhanced to remedy its present sustainability deficiencies.

Keywords

IT Governance, sustainability, ISACA, COBIT, triple bottom line.

INTRODUCTION

Sustainability is becoming increasingly important for organizations in today's business environment. Organizations are incorporating sustainability dimensions into the entity's governance structure on a frequent basis, for a variety of reasons. As this becomes more prevalent, organizations must ensure that information technology (IT) governance policies are aligned with the entity-wide governance position. This is especially important given the history of IT as an enabler of major organizational transformation. IT is also an enabler of green initiatives in organizations, and the inclusion of sustainability dimensions in IT governance is critical for success of such initiatives. There are several different governance frameworks available for organizations. Thus, analyses of such options can be beneficial for management. The main question driving this research is to determine how well COBIT 5 supports the governance of organizational sustainability initiatives.

Our analyses of COBIT 5 have led us to conclude that it fails to include enough of a sustainability focus within its processes. In our analyses we provide a background on sustainability and COBIT 5 in its current state. We then detail why we believe COBIT 5 does not adequately address sustainability factors, as well as provide input as to how it could possibly be improved to remedy the present sustainability deficiencies.

BACKGROUND

In its white paper on the topic, the Information Systems Audit and Control Association (ISACA) uses the classic definition of sustainability coined by the United Nations (1987); in this context, sustainability is defined as "meeting the needs of the present without compromising the ability of future generations to meet their needs." When taken in the context of information technology, sustainability factors into the entire life cycle of IT assets. Sustainable IT minimizes damage to the environment during the manufacturing, managing, using and disposing of IT assets (ISACA Sustainability White Paper, 2011). There has been an increased focus on the use and disposal phases of the IT asset life cycle as more information has come to light regarding the damage IT assets have on the environment. The use of IT assets consumes a great deal of energy, which can be both costly to the organization and detrimental to the environment (ISACA Sustainability White Paper, 2011). IT assets also contain chemicals that can harm the environment if the assets are not disposed of properly.

According to ISACA, there are several different sustainability drivers (ISACA Sustainability White Paper, 2011). The first driver is the economic sense behind sustainability. This incorporates the cost savings and product innovation associated with the use and development of green products. Sustainable IT assets consume less energy during usage, which in turn can lead to decreased energy costs for the organization. If the organization is able to develop new green products, there is potential to generate revenues from the sale of these green products. A new sustainability focus can likewise generate a competitive advantage by appealing to the organization's sustainability-minded stakeholders (Faris, Gilbert, LeBlanc, Ballou, and Heitger, 2013). The second driver is environmental survival. This means confronting the "inconvenient truth" that our

environment is changing and possibly due to human actions. The third driver is social responsibility. This encompasses balancing long-term sustainability with short-term economic growth and profit generation. Corporate social responsibly evolves the traditional financial focus to a "triple bottom line" of economics, social, and environmental considerations. The fourth driver is sustainability considerations imposed by legislation. This involves complying with sustainable practice regulations imposed by national and international regulators and providing this compliance in a transparent manner.

The importance of sustainability to organizations has grown to a level such that many executives appear to recognize that it should be incorporated into an organization's enterprise risk management (ERM) scenario (ISACA Sustainability White Paper, 2011). It is also becoming a strategic priority for many companies due to the convergence of risks and opportunities associated with environmental, social, and economic performance. Consequently, organizations today are facing increased pressure from stakeholders to succeed in a manner that supports sustainability principles (Faris et al., 2013). However, incorporating these new sustainability dimensions into enterprise and IT policies and procedures brings many new risks and vulnerabilities to organizations.

In our research, we reviewed Molla, Cooper & Pittayachawan's (2011) model that assesses how prepared an organization is to manage the sustainability dimensions of its IT function. We then compared ISACA's COBIT 5 processes to Molla et al.'s G-Readiness model to determine how COBIT 5 incorporates sustainability considerations in its current state. From there we reviewed the 2011 ISACA Sustainability White Paper that discusses the drivers, benefits, risks, and security factors associated with sustainability. Subsequently, we again compared the COBIT 5 sets of practices and activities to the ISACA White Paper to determine which aspects of the White Paper are and are not currently covered by COBIT 5. After making these comparisons we created a matrix, located in Appendix A of this paper, which provides a side-by-side comparison of the three IT frameworks. These analyses allowed us to reach the conclusion that COBIT 5 does not adequately address sustainability concerns facing organizations today. We believe this analysis is a major contribution to the eventual development of a generic, but comprehensive Sustainable IT Governance framework.

COBIT 5 OVERVIEW

COBIT 5 is the 5th edition of an IT framework created by ISACA to control the management and governance of information technology (ISACA, 2015). COBIT 5 aims to provide a generally accepted set of IT control objectives for business managers and IT professionals in all types of industries. COBIT 5 is divided into five categories, referred to as domains. These domains each have unique processes, which are "a collection of practices influenced by the enterprise's policies and procedures that takes inputs from a number of sources, manipulates the inputs and produces outputs" (ISACA, 2012, p.19). These collections of practices are specifically worded to cover seemingly every possible responsibility of the IT function.

Nicho and Fahkry (2013) assert that COBIT 5's 37 management processes, because they are generic, can be mapped to multiple security vulnerabilities in their present form. In its current form, however, we believe COBIT 5 has sustainability deficits (Figure 1). COBIT 5 fails to consider the environmental and, partially, the social aspects of the triple bottom line. This failure is due mainly to the current absence of environmental and social stakeholder drivers, needs, and objectives within COBIT 5 (Moeller, Loeser, Erek & Zarnekow, 2013). If COBIT 5 wording is updated to include a sustainability focus, its revamped management processes could be mapped to even more vulnerabilities. Entirely new, sustainability-focused sets of practices and activities could also be created and implemented. Figure 2 illustrates some potential sustainability-focused additions to COBIT 5 we have created along with process details. These updates could help COBIT 5 be applicable to the vulnerabilities brought about by the transformation of the existing technology infrastructure to support sustainability dimensions.

COBIT 5 Sustainability Limitations	
1	Lack of emphasis on the organization's attitude toward sustainability.
2	IT policies surrounding sourcing, use, and disposal of IT assets fail to account for sustainability.
3	Lack of emphasis on application of sustainable IT policies in an organization's daily operations.
4	Lack of emphasis on the importance of sustainable IT practices to ensure environmental safety.
5	Failure to consider the responsibility of the organization to society to act in a sustainable manner.

6	Lack of assurance considerations with a sustainability focus.
7	Lack of emphasis on the interdependencies between the business and the environment in which it operates (ISACA 2011).
8	Failure to consider sustainability as a corporate management issue.
9	Failure to support the control and implementation of sustainable information management (Moeller et al, 2013).
10	Narrow application for supporting the control and implementation of a holistic, sustainable information system (Moeller et al, 2013).

Figure 1. COBIT 5 Sustainability Limitations

Suggested New COBIT Sustainability Processes	
Domain: Manage Sustainable IT Practices	
MSP01: Ensure sustainable IT asset disposal practices	Analyze the asset disposal process to ensure that all IT assets are disposed of in a manner that prevents harmful chemicals from being released into the environment.
MSP02: Manage energy consumption of IT assets	Seek to minimize energy consumption of IT assets by embracing technologies that allow for reduced energy use. Use energy efficiently by turning off power to applicable assets when not in use.
MSP03: Ensure sustainable IT goals are incorporated into enterprise's ERM scenario	Utilize sustainability-focused IT practices in the enterprise's ERM scenario to help achieve strategic goals and stay aligned with the organization's risk appetite.
MSP04: Manage cost savings	Generate cost savings through the implementation of sustainable IT practices, such as reduced energy consumption and the reuse or recycling of IT assets.

Figure 2. New COBIT Sustainability Processes

SUMMARY

In its current form, none of the 5 domains of COBIT 5 relate directly to sustainability. As with much of COBIT 5, the only way it could presently apply to sustainability is if the organization specifically includes sustainable practices in its entity-wide governance and management structure. It is our opinion that this is insufficient. COBIT 5 should serve as an authoritative framework that guides organizations to incorporate sustainability into the use and management of its IT assets and practices. This is especially true considering that one of COBIT 5's principles is "applying a single integrated framework" (ISACA.org, 2015). A framework that is applicable to all types of organizations across every industry and that successfully integrates sustainability considerations could create a positive impact for many different organizations.

CONCLUSION

Sustainability is becoming increasingly important in today's ever-changing business environment. As these changes have been made, IT governance and management frameworks have failed to keep pace with the businesses that utilize these models. Our analysis details COBIT 5's sustainability dimensions, or lack thereof. Moreover, we find it curious that COBIT 5 has such significant deficiencies with respect to IT governance over sustainability given that it was updated from COBIT 4.1 roughly two years after ISACA published its White Paper about addressing sustainability in assurance activities. Thus, we assert that the existing COBIT 5 processes should soon be updated again to include a sustainability emphasis. New,

sustainability-focused practices, similar to the ones we propose in Figure 2, should also be created and incorporated into COBIT 5's processes.

REFERENCES

1. Faris, Craig; Gilbert, Brian; LeBlanc, Brendan; Ballou, Brian; Heitger, Dan (2013), *Demystifying Sustainability Risk: Integrating the Triple Bottom Line into the Enterprise Risk Management Program*, The Committee of Sponsoring Organizations of the Treadway Commission (COSO).
2. ISACA (2011), "Sustainability – An ISACA White Paper," ISACA: Rolling Meadows, IL.
3. ISACA (2012), *COBIT® 5: Enabling Processes,* ISACA: Rolling Meadows, IL.
4. ISACA (2015), "COBIT 5. What is it?" Information Systems Audit and Control Association, accessed April 24, 2015 at https://cobitonline.isaca.org/.
5. Moeller, Bjoern; Erek, Koray; Loeser, Fabian; Zarnekow, Ruediger (2013). "How Sustainable is COBIT 5? Insights from Theoretical Analysis and Empirical Survey Data," *Americas Conference on Information Systems*: Vol. 19.
6. Molla, Alemayehu; Cooper, Vanessa; and Pittayachawan, Siddhi (2011) "The Green IT Readiness (G-Readiness) of Organizations: An Exploratory Analysis of a Construct and Instrument," *Communications of the Association for Information Systems*: Vol. 29, Article 4.
7. Nicho, Mathew and Fahkry, Hussein (2013), "Using COBIT 5 for Data Breach Prevention," *ISACA JOURNAL,* Volume 5, 2013, pp. 23-70.

APPENDIX A – COMPARISON OF IT FRAMEWORKS

	Attribute	COBIT 5	ISACA White Paper	G-Readiness Model
1	Emphasis on organization's attitude toward sustainability		X	X
2	IT policies surrounding the sourcing, use and disposal of IT assets take sustainability into account		X	X
3	Emphasis on application of sustainable IT policies in day-to-day operations		X	X
4	Emphasis on use of sustainable technology		X	X
5	Emphasis on governance and oversight of IT policy implementation	X	X	X
6	Economic importance of sustainable IT practices (cost savings, new product innovation, etc.)	X	X	X
7	Importance of sustainable IT practices for environmental safety		X	X
8	Responsibility of organization to society to act in sustainable manner		X	X
9	Importance of sustainable IT practices to remain in compliance with regulators	X	X	X
10	Creation of assurance measures that incorporate sustainability		X	
11	Emphasis on the interdependencies between the business and the environment in which it operates		X	
12	Sustainability viewed as a corporate management issue		X	X

13	Realization that implementation of sustainable IT strategy will involve transforming existing technology infrastructure	X	X	X
14	Identification of new risks and security concerns of sustainable IT practices	X	X	

These charts are intended to provide a side-by-side comparison of three sources of IT-related sources - COBIT 5.0, ISACA 2011 Sustainability White Paper, and the G-Readiness Model. The attributes are taken directly from their publications, detailing what each one entails. This chart allows for a quick analysis of the similarities and differences between the three analytical frameworks and further reiterates the sustainability shortcomings of COBIT 5.0.

Attribute 1 - One of the 5 components of an organization's G-Readiness score is its attitude toward eco-sustainability. According to the G-Readiness Model, Green IT Attitude is defined as "an organization‘s IT people sentiment toward climate change and ecosustainability" (Molla et al., pg. 10). This framework places a direct focus on an organization's attitude toward sustainability.
Attribute 2 - One of the 5 components of an organization's G-Readiness score is the frameworks (policies) an organization puts in place to apply environmental criteria in its IT-related activities. The policy section of the G-Readiness Model defines "the extent to which Green issues are encapsulated in organizational procedures guiding the sourcing, use, and disposal of the IT technical infrastructure" (Molla et al., pg. 11).
Attribute 3 - Both the Policy and Practice components of the G-Readiness framework cover the use of IT in a sustainable manner. The Practice component describes examples of companies banning screen savers, issuing energy-efficient laptops to employees and retiring inefficient IT equipment to reduce energy usage and CO2 emissions.
Attribute 4 - The Technology component of the G-Readiness score "refers to technologies and Information Systems for (a) reducing the energy consumption of powering and cooling corporate IT assets (such as data centers) (b) optimizing the energy efficiency of the IT technical infrastructure (c) reducing IT induced greenhouse gas emissions (d) supplanting carbon emitting business practices and (e) analyzing a business‘s total environmental footprint" (Molla et al., pg. 11). The ISACA White Paper describes both the economic and environmental benefits of using sustainable technology solutions.
Attribute 5 - COBIT 5.0 has several processes (EDM01, EDM04, APO02) that discuss the governance and oversight of IT policy implementation. One component of the G-Readiness Model is governance. This section "defines the administration of Green IT initiatives" (Molla et al., pg. 11) and discusses the importance of assigning responsibility to key executives over Green IT initiatives. The ISACA White Paper discusses how existing governance frameworks need to be updated to reflect sustainability objectives.
Attribute 6 – Per ISACA, "there are distinct advantages to taking sustainability into account, including cost efficiencies, competitive pricing…" (ISACA, 2011, pg. 7). The White Paper discusses numerous business benefits that can be achieved through the implementation and consistent use of sustainable IT practices.
Attribute 7 – Per ISACA, "sustainable IT minimizes damage to the environment in the process of manufacturing, managing, using and disposing of IT assets" (ISACA, 2011, pg. 5). The White Paper also discusses the need to deal with the "inconvenient truth" that humans are likely causing rapid environmental change.
Attribute 8 – Per ISACA, "enterprises need to think beyond their own organizations to include their entire extended enterprise or stakeholder network" (ISACA, 2011, pg. 7).
Attribute 9 – Per ISACA, "noncompliance issues and violation of rules are risky behaviors and some companies have learned hard lessons by not taking their responsibilities seriously" (ISACA, 2011, pg. 7).

Attribute 10 – Per ISACA, "from an assurance perspective, the enterprise's strategic objectives, goals and targets must be considered in the context of sustainability as a factor fully integrated into governance and accountability practices and the enterprise risk management (ERM) program" (ISACA, 2011, pg. 12).
Attribute 11 – Per ISACA, "they are inextricably linked with the society in which they operate," referring to enterprises today (ISACA, 2011, pg. 7).
Attribute 12 – Per ISACA, "sustainability is a corporate management issue and should be included in the enterprise risk management (ERM) scenario" (ISACA, 2011, pg. 7).
Attribute 13 – Per ISACA, "the development and implementation of a sustainable IT strategy will involve a transformation of the existing technology infrastructure to support sustainability objectives" (ISACA, 2011, pg. 8).
Attribute 14 - The White Paper discuses four classes of risks associated with sustainability: Financial, Operational, Customer and Strategic. It also discusses numerous security concerns that come with implementation of sustainable IT practices (ISACA, 2011).