Chapter 11

Toward a Conceptual Model for Sustainability and Greening through Information Technology Management

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ABSTRACT

This study describes a conceptual approach to greening and sustainability through Information Technology management. The authors reviewed existing research and publications on the topic of greening, and concluded that while much has been written about ways to go green, much less are available on guidelines to help gauge the degree of greening efforts. To help alleviate this shortcoming, the authors propose a model–called the Greening through Information Technology Model (GITM)–based on the framework of Capability Maturity Model. The authors are currently in the process of developing questions to be used for each aspect of the greening management to determine the GITM level that an organization is in.

INTRODUCTION

Even though the financial crisis of recent times has served to deemphasize the urgency global

greening and sustainability, the issue is likely to return in the near future. The failure of the recently concluded Copenhagen Climate Conference has taught activists in this area some useful lessons (Dvorsky, 2010), which are likely to help in creating alternative strategies for change. As the

world leaders grapple with redefining the rules for global finance, another way to move forward policies that promote greening and sustainability is to concentrate on bottom-up initiatives.

Toward this end, the authors of the study described below have chosen to focus on a relatively small area affecting global climate change: that of managing Information Technology. Even a perfunctory review of literature shows that many an IT manager have undertaken to increase employee awareness of greening and sustainability issues, and have worked to put in place policies and procedures to enhance both outcomes. However, a more thorough review of literature points to problems and shortcomings. For example, there appears to be no widely acceptable framework to help gauge the degree of organizational greening efforts. How are managers to know, how well they are doing in this area? To help alleviate this shortcoming, we propose a model – called the Greening through Information Technology Model (GITM) – based on the framework of Capability Maturity Model.

To be sure, ours is not the only effort to help IT managers in their greening programs. For example, consultants at Accenture have built one model – called Green Maturity Assessment (GMA) – for assessing greening efforts of an Information Technology organization (available at www.accenture.com/gmm). That model produces a greening effort rating, based on a series of questions the responses to which are Likert-scale answers from strongly disagree to strongly agree. Even though the authors of this paper were not aware of GMA's existence when GITM was being developed, one could see GMA and GITM as complementary in focus and range.

BACKGROUND: SUSTAINABILITY AND GREENING

The terms sustainability and greening are often used interchangeably; however, the terms are not synonymous. The topic of sustainability has been of interest to various disciplines for many years and as a concept has had many definitions. In a general sense, sustainability is the ability to maintain a certain process or state indefinitely. In recent years, the concept has been applied to living organisms and systems. When applied to the human community, the most widely accepted definition has been that proposed by (Brundtland, 1987) who defines the concept of sustainability as "meeting the needs of the present generation without compromising the ability of future generations to meet their needs." The interdependency of nations requires that sustainability become the goal of all nations if the needs of present and future generations are to be met. Sustainability is a multifaceted concept. It rests on three pillars: the economy, the environment, and society. Thus, the achievement of sustainability requires interventions in these three areas.

Greening is one aspect of sustainability which typically focuses on environmental measures (Ivanovich, 2008). Efforts to recycle and reuse materials, to reduce if not eliminate toxic components or to responsibly design products or industrial processes are examples of greening policies. Even though the concept of greening is not immediately connected to costs, greening is often about reducing consumptions and therefore reducing costs.

Greening requires interventions by both governments and organizations. From this perspective, governmental actions through legislation, regulations, and executive orders can provide a top-down approach to impact the achievement of greening and sustainability while organizations by greening through IT management can provide a bottom-up approach to implement governmental actions (Figure 1).

One area within organizations which appears ripe for greening is that of technology. While information technologies are critical to the operation and success of today's businesses, these same technologies are also often seen as a cause of environmental burden (Boudreau, Chen, &

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