

# Chapter 16

## Management Instruments for Sustainable Information Systems Management

**Koray Erek**

*Berlin Institute of Technology, Germany*

**Nils-Holger Schmidt**

*University of Göttingen, Germany*

**Rüdiger Zarnekow**

*Berlin Institute of Technology, Germany*

**Lutz M. Kolbe**

*University of Göttingen, Germany*

### ABSTRACT

*The increasing dissemination of information systems (IS) into all areas of business and personal life has drawn attention to its economic, environmental and social effects. IS organizations are becoming aware that they have to take up their responsibility by thinking seriously about sustainability management for information systems. While measures for using computing resources efficiently have received considerable attention, the topic of sustainability in IS management is still lacking theoretical and conceptual foundation. As a contribution to the ongoing discussion of “Green IT”, the purpose of this chapter is to apply the concept of sustainability into the field of IS management using practical concepts such as a procedural model, the balanced scorecard and a maturity model.*

### INTRODUCTION

The increasing dissemination and growing dependency on information technologies (IT) and related services create new unconsidered ecological and

social challenges for information systems (IS) management. IS management is confronted with new demands from business units, customers and employees. A sustainable IS management covers not only the economical, but also the ecological and social perspective, extending traditional concepts of IS management.

DOI: 10.4018/978-1-61520-981-1.ch016

The ecological impact of the IS business has been discussed under the headline of “Green IT”. The global ICT industry is claimed to account for approximately two percent of global carbon dioxide (CO<sub>2</sub>), a figure equivalent to the aviation industry (Gartner, 2007). IT service providers, such as Google, whose 450 000 operating servers consume approximately 800 gigawatt hours electricity per year, account for tremendous amounts of indirect CO<sub>2</sub> emissions (Chou, 2008, p. 93). The energy consumption of all servers worldwide approximately equates to the consumption of the entire Polish economy (Koomey, 2007).

High technological intensity, rapid technological progress and short life time cycles of IT products contribute significantly to the waste stream of electronic products (e-waste). Information and communication equipment as well as monitors make up 25 percent of the approximately 20 to 50 million tons of e-waste generated each year (UNEP, 2007), an amount comparable to the weight of almost 9000 fully loaded Airbus A380 passenger planes containing dangerous metals, such as lead, mercury and cadmium.

The social responsibility of IS management is outlined by the frequent reports about data misuse connected to IT, in which companies, employees or customers are affected. The handling of data within many companies is described as being challenging (BSI, 2009, p. 7). Hence, IS management is coming under increasing pressure from external stakeholders. The social dimension of sustainable IS management includes topics of IT utilization by individuals and organizations, but also comprises the challenges of generating, preserving and safeguarding knowledge, information and data.

The above facts not only point to a huge need, but also to a great complexity of sustainable management in IS. Porter and Reinhardt (2007) argue that companies have no other choice than to deal with sustainability and that the challenge has moved from “whether” to “how” to integrate corporate sustainability into day-to-day management decisions. Despite the hype in trade press,

especially concerning “Green IT”, the topic of sustainability in IS management is still lacking practical and theoretical foundation. The purpose of this paper is to provide a theoretical basis with key definitions and contexts on the one hand and to illustrate initial steps towards operational planning and controlling of sustainability in IS managements otherwise.

## **SUSTAINABILITY AND INFORMATION MANAGEMENT**

In the following sections a clear view on IS management and on the concept of sustainability and Green IT will be worked out. The proposed concept is based on the St. Gallen model of “industrialized information management”, whose explicit consideration of external interfaces seems to be suitable to describe the IS management in the context of its environment.

### **The Concept of Sustainability**

Sustainability has been extensively discussed within corporate management under the synonyms of corporate social responsibility, greening the business, eco-efficiency or eco-advantage (Epstein & Roy, 2001; Esty & Winston, 2006; Porter & Van der Linde, 1999; Schaltegger & Wagner, 2006). The predominant understanding of sustainability was shaped by the definition of the Brundtland Commission in 1987, which defined “sustainable development” as a “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987).

At the business level, the concept of sustainability has emerged, based on the objectives of resource conservation and environmental protection, as an equitable and simultaneous consideration of economical, ecological and social objectives, known as the triple-bottom-line concept of sustainability. In this context, sustainable management can be

15 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/chapter/management-instruments-sustainable-information-systems/44830](http://www.igi-global.com/chapter/management-instruments-sustainable-information-systems/44830)

## Related Content

---

### Responsible Management Education in Practice: The Principles and Processes for Educating Socially Responsible and World Engaged Leaders

Marco Tavanti (2014). *Sustainable Practices: Concepts, Methodologies, Tools, and Applications* (pp. 1164-1181).

[www.irma-international.org/chapter/responsible-management-education-in-practice/94988](http://www.irma-international.org/chapter/responsible-management-education-in-practice/94988)

### Rural-Urban Food Movement: Role of Road Transportation in Food Chain Analysis

Ayobami Abayomi Popoola, Yahya Dele Adeyemi, Femi Emmanuel Oni, Odunayo Omojola, Bamiji Michael Adeleye, Samuel Medayeseand Ojoma Gloria Popoola (2021). *Handbook of Research on Institution Development for Sustainable and Inclusive Economic Growth in Africa* (pp. 276-298).

[www.irma-international.org/chapter/rural-urban-food-movement/266990](http://www.irma-international.org/chapter/rural-urban-food-movement/266990)

### Positions of Mobile Phone Brands on University Students' Mind

Tamer Baran (2016). *International Journal of Sustainable Economies Management* (pp. 18-28).

[www.irma-international.org/article/positions-of-mobile-phone-brands-on-university-students-mind/161629](http://www.irma-international.org/article/positions-of-mobile-phone-brands-on-university-students-mind/161629)

### Sustainable Food Consumption in the Neoliberal Order: Challenges and Policy Implications

Henry E. Alapikiand Luke A. Amadi (2018). *Food Systems Sustainability and Environmental Policies in Modern Economies* (pp. 90-123).

[www.irma-international.org/chapter/sustainable-food-consumption-in-the-neoliberal-order/200092](http://www.irma-international.org/chapter/sustainable-food-consumption-in-the-neoliberal-order/200092)

### An Assessment Framework of Environmental Management Practices of EMAS Certified Firms

Ioannis E. Nikolaou, Lundy Shaun, Konstantinos Evangelinosand Antonis Skouloudis (2018). *International Journal of Social Ecology and Sustainable Development* (pp. 1-17).

[www.irma-international.org/article/an-assessment-framework-of-environmental-management-practices-of-emas-certified-firms/211226](http://www.irma-international.org/article/an-assessment-framework-of-environmental-management-practices-of-emas-certified-firms/211226)