Chapter 4
Green IT Strategies:
A Conceptual Framework for the Alignment of Information Technology and Corporate Sustainability Strategy

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ABSTRACT

This chapter clarifies the linkages of strategy types and levels that relate to Green IT: business, sustainability, and IT strategy. The significance of aligning IT with business and environmental strategies is pointed out. It is emphasized that trade-off decisions are inherent to strategic management and essential for competitive positioning. Following this, a choice-based conceptual framework for the strategic alignment of Green IT is presented. The underlying strategy framework consists of three different strategy levels (corporate, competitive, functional) and domains (business, IT, sustainability). The conceptualized framework facilitates a holistic Green IT alignment with the aid of a five-step process. In the scope of this alignment process, four different Green IT strategies are presented. These strategies are subdivided along two dimensions: competitive advantage and focus. This research is supposed to provide new insights concerning the strategic impact of Green IT and to assist practitioners in identifying the Green IT strategy that corresponds most appropriately to their firm-specific context.

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INTRODUCTION

Environmentalism and sustainability have emerged as relevant topics of strategic management during the last years – and they are supposed to become game-changing megatrends in the near future (Lubin & Esty, 2010). New thinking and innovation is urgently required: "If we are to become more sustainable in the way we live our lives, we must find new ways to do old things, as well as new ways to do new things" (Placet, Anderson & Fowler, p. 40). Due to the fact that the issue of sustainability is still new to many business executives, firms are struggling to integrate social and environmental aspects into their corporate strategy. Especially the definition of a distinctive market position and the development of unique resources being related to the achievement of corporate sustainability pose major challenges.

With reference to IT infrastructure and services, the situation is similarly difficult: the information technology should be aligned with the business strategy to develop its full competitive potential, but this alignment turns out to be a serious challenge – as numerous studies reveal, it is one of the main concerns of CIOs for many years already (Luftman & Ben-Zvi, 2010). While sustainability issues add a new perspective to strategic management, the role of information technology becomes even more ambiguous. On the one hand, IT consumes considerable amounts of electricity and the demand for data processing and storage capacity is continuously rising – just as the IT-related global CO2 emissions. On the other hand, innovative IT-based processes can essentially support companies in reducing their environmental footprint (Watson, Boudreau & Chen, 2010). Thus, the interrelation of business strategy, sustainability objectives and information technology constitutes a complex challenge, which simultaneously implies unimagined opportunities for environmental protection and economic progress.

WHAT IS GREEN IT?

At first it can be stated that *Green IT* describes the management of IT systems and processes under consideration of environmental factors. Until now, *Green IT* is neither a well-defined concept nor does *Green IT* describe a specified set of practices and measures. The term *Green IT* has become the latest buzzword in IT management although a common understanding of the coverage and scope is still missing in research and practice (Velte, Velte & Elsenpeter, 2008). The concept of *greening* focused environmental initiatives and differs from the term *sustainability* due to the fact that *corporate sustainability* is more far-reaching and refers to business practices that take into account economic, ecological and social aspects. According to this, the corporate *greening* process can be understood as a first step towards the superior goal of sustainability (Molla, 2009). The concept of Green IT covers the emission reductions related to the IT infrastructure (sometimes denominated as *Green in IT*) as well as emission reductions induced by IT-based modifications of production and business processes (sometimes labeled as *Green through IT* or *Green Business*).

We define *Green IT* as follows:

Green IT is the systematic application of practices that enable the minimization of the environmental impact of IT and allow for company-wide emission reductions based on technological innovations.

Mingay and Maio (2007) differentiate between three degrees of ecological impact of information technology: the direct impact of IT, the production impact, and the consumption impact. The distribution of IT's environmental impact with reference to these three degrees heavily depends on the industry, as illustrated in Figure 1, and thus the applicability and effectiveness of Green IT measures must be analyzed in the firm specific context. Investments should be made especially