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Call for Action: Investigating the Role of Business Process Management in Green IS

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Call for Action: Investigating the Role of Business Process Management in Green IS

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Abstract

Sustainable practices are more than ever on the radar screen of organizations, triggered by a growing demand of the wider population towards approaches and practices that can be considered "green" or "sustainable". Our specific intent with this call for action is to immerse deeper into the role of business processes, and specifically the contributions that the management of these processes can play in leveraging the transformative power of information systems (IS) in order to create environmentally sustainable organizations. Our key premise is that business and information technology (IT) managers need to engage in a process-focused discussion to enable a common, comprehensive understanding of process, and the process-centered opportunities for making these processes, and ultimately the organization as a process-centric entity, "green". Based on a business process lifecycle model, we propose possible avenues for future research.

Keywords: Green IS, Green IT, Business Process Management

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INTRODUCTION¹

The ever-increasing worldwide population, the demand for living standards, and the ongoing exploitation of natural resources have increased a wider awareness for the necessity of sustainability in living, organizing, performing, and managing work. Sustainable practices are more than ever on the radar screen of organizations, triggered by a growing demand of the wider population towards approaches and practices that can be considered ‘green’ or ‘sustainable.’ In consequence, organizations are increasingly motivated to implement sustainable practices while still adhering to classical business imperatives such as revenues or costs.

In their paper in the March 2010 issue of *MIS Quarterly*, Watson et al. called Information Systems (IS) researchers to investigate how the “transformative power of IS can be leveraged to create an ecologically sustainable society” (p. 23). In this context, the notion of ‘green IS’ has emerged as “the design and implementation of information systems that contribute to sustainable business processes” (Boudreau et al. 2007, p. 2). ‘Green IT,’ in contrast, “is mainly focused on energy efficiency and equipment utilization” (Boudreau et al. 2007, p. 2).

Indeed, while green IS surely is a hot topic, reflected in a number of current (Hasan et al. 2009) or upcoming (e.g., *MIS Quarterly*) journal special issues and the development of dedicated conference tracks at some of our conferences (e.g., AMCIS, ACIS), to date, aside from selected viewpoints and research agendas on this topic (Dedrick 2010; Melville 2010), few examples of empirical or theoretical work on green IS exist (Watson et al. 2010). Consequently, our aim is to assist in paving a roadmap for IS research in this important emerging topic, by highlighting and discussing a set of issues and approaches that researchers in IS can bring to the challenges of environmental sustainability.

Our specific intent with this call for action is to immerse deeper into the role of business processes, and specifically the contributions that the management of these processes can play in leveraging the transformative power of IS in order to create an environmentally sustainable society. Business process management (BPM) has emerged as an important sub-domain of the IS discipline (Sidorova et al. 2008) that is characterized by its particular relevance to practice (Gartner Group 2010).

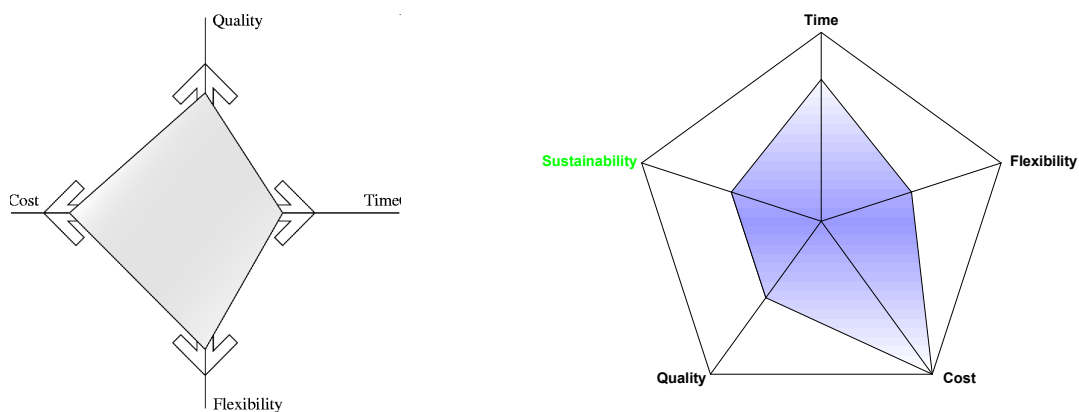


Figure 1. The Extended Devil’s Quadrangle (extended from Reijers and Mansar, 2005)

¹ A revised and condensed version of this working paper will be published as a statement in *Business & Information Systems Engineering (BISE)*.

The Australian Community of Practice (2004) defines BPM as “a structured, coherent and consistent way of understanding, documenting, modeling, analyzing, simulating, executing and continuously changing end-to-end business processes and all involved resources in light of their contribution to business success.” This notion of business success has typically been thought of in terms of improvement alongside the dimensions time, cost, quality, or flexibility—the so-called ‘devil’s quadrangle’ (Reijers and Mansar 2005). Contemporary organizations, however, increasingly become aware of the need to create more sustainable, information technology (IT)-enabled business processes that are successful in terms of their economic, ecological, as well as social impact (see Figure 1). Exemplary ecological key performance indicators that increasingly find their way into the agenda of managers include carbon emissions, data center energy, or renewable energy consumption (SAP 2010).

THE ROLE OF BUSINESS PROCESS MANAGEMENT IN GREEN INITIATIVES

BPM is a holistic management practice for managing and transforming organizational operations (Hammer 2010). In their efforts to manage and improve business processes to enable business benefits in terms of costs, flexibility, time savings, quality, or, indeed, sustainable practices, BPM also involves the use of IT and IT-based systems. Past years have seen the emergence of holistic enterprise resource planning systems (Davenport 2000), automated workflow systems (van der Aalst and ter Hofstede 2005), CASE and other process design systems (Orlikowski 1993), expert systems (Markus et al. 2002), and business rules systems (von Halle 2001) as IT-enabled systems that enable process change and management and thereby contribute to business value generation.

It is at this intersection of IT-system enablement and process change that we believe the potential for sustainability initiatives lies. Our key premise is that business and IT managers need to engage in a process-focused discussion to enable a common, comprehensive understanding of process, and the process-centered opportunities for making these processes, and ultimately the organization as a process-centric entity, ‘green.’ Our reasoning goes as follows: A discussion of only those potentials that come out of the so-called green IT systems is too limited to facilitate discussions that can help business executives in putting these green IT solutions into business work. At the same time, it is impossible today to think of undertaking a major sustainability change initiative (involving the re-design of major business processes) without considering what IT can do to that effect. Still, it is equally impossible to think about any major redesign that does not call for major changes in how employees perform their jobs (Kotter 1996). Employees and the management of employees are just as important as IT in the transformation to sustainable practices and solutions, and BPM provides just the perspective that enables an integrated, holistic approach to the management of sustainability change.

The proposition that we put forward in this call for action is that only through process change, and the application of process-centered techniques, such as process analysis, process performance measurement, and process improvement, the transformative power of IS can be fully leveraged in order to create environmentally sustainable organizations and, in turn, an environmentally sustainable society. To investigate this further, we contend that IS researchers must consider process-related concepts when theorizing about the role of IT in the transformation towards sustainable organizations. This will not only allow us to better understand the transformative power of IS in the context of sustainable development, but also to proceed to more prescrip-

tive, normative research that directly impacts on the implementation of sustainable, IT-enabled business processes. Figure 2 encapsulates this call for action.

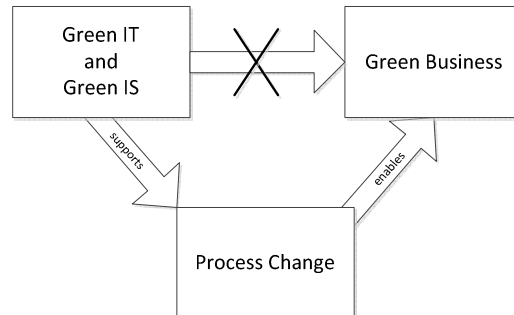


Figure 2. The Role of BPM in IS-enabled Sustainability Initiatives

A WORKING AGENDA FOR GREEN IS

Following this line of thinking, we identify the following exemplary working areas for IS research alongside a classical process management lifecycle (see Figure 3). Please note that we do not claim that these issues are exhaustive. This is just one way to conceptualize relevant areas of BPM that may be considered when investigating the role of processes and process management in the context of environmental enterprise sustainability.

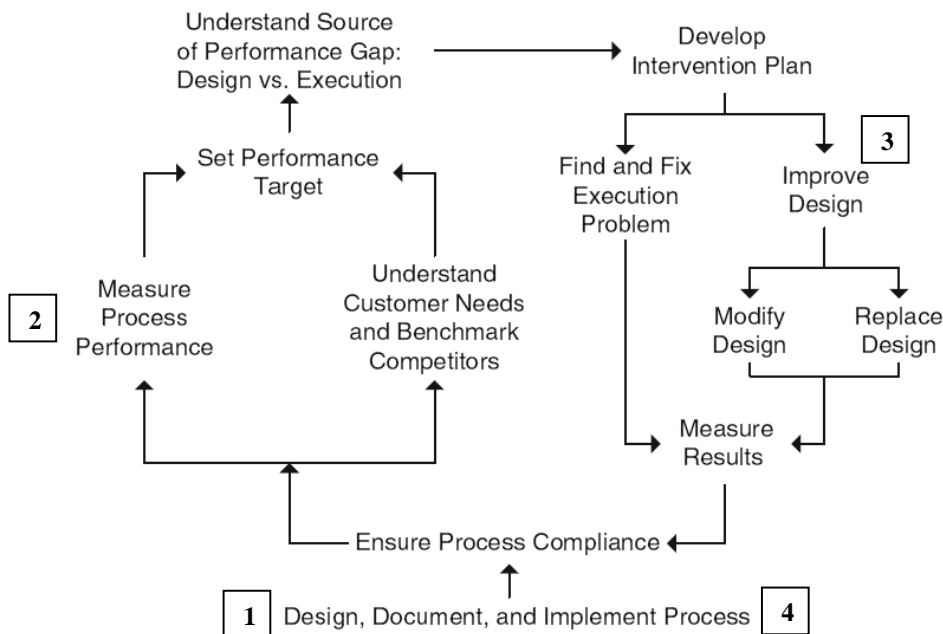


Figure 3. The 'Green' Process Management Lifecycle (based on Hammer, 2010)

1) Process design: In process modeling, for example, it will be necessary to accommodate sustainability-related concepts, such as carbon emissions or energy consumption of business

activities. This, in turn, will allow for analysis and improvement that not only consider economic, but also ecological targets. In this line of thinking, Watson et al. (2010) mention the example of diagramming business processes that could be used to document and analyze data about the waste associated with each process.

2) Process measurement: Our own research has indicated that, in order to become green, organizations need to embed sustainability-related targets at all levels of business, starting from the strategy level (Seidel et al. 2010). Consequently, process measurement needs to accommodate sustainability-related factors such as carbon emissions, energy consumption, and paper consumption. The measurement of these factors not only allows for controlling the accomplishment of sustainability-related targets, but also creates transparency and awareness that is needed in order to reach employees throughout the organization. Consequently, it will be necessary to develop a thorough understanding of the required measurement systems as well as to develop IT systems that collect data and allow for detailed monitoring of sustainability-related measures.

3) Process improvement and process change: We suggest that the deliberate improvement and re-design of processes can contribute to achieving sustainability targets. While some processes may become more sustainable through rather simple improvements, others may require a fundamental re-design. This, in turn, will assist organizations in fully leveraging the transformative power of green IS. IS researchers should thus further investigate the role of process change in the context of transformation toward enterprise sustainability.

4) Process implementation: Finally, sustainable processes need to be implemented. In order to do so, organizations are required to allocate sufficient resources, provide training to employees, and put into action the previously defined measures. Moreover, IT systems are required to collect data, monitor, and create the transparency that is required in order to involve people across the entire organization. Consequently, IS researchers need to investigate the factors and dynamics that are relevant in the context of implementing sustainable business processes.

THE WAY FORWARD

Against the above background, we propose two main avenues for future research. First, we suggest IS researchers to investigate the role of process change in the transformation process towards environmental enterprise sustainability. Such research can employ both qualitative methods for the generation of novel theory that explains the underlying transformation processes, and quantitative research that aims at testing novel theory. Second, grounded in such theories of change, and drawing on process-related concepts such as process change, IS researchers should proceed to more prescriptive, normative research that directly impacts on the implementation of sustainable, IT-enabled business processes. The results of such research may, for instance, take the form of design theories or guidelines.

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