Chapter 1
Reengineering a Green Business

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ABSTRACT
A green environment is a social as well as business issue. Business enterprises, as a large part of the global community, are obliged to make endeavours toward an environmentally sustainable operation that reflects their corporate social responsibility. One of the effective approaches of making business operations more environmental friendly is to undertake business process reengineering with the strategic focus on green perspective. This paper discusses the reengineering of a green business from its process viewpoint. This reengineering of business processes is undertaken in the context of five areas of green business characteristics (necessary, effective, efficient, agile, and measureable) and their corresponding life cycles. This analysis paves the path for an in-depth research agenda for developing and operating green business processes in organizations. The framework is explained with five key phases namely, 1) examining business processes with green process characteristics, 2) integrating business processes with the environmental standards, 3) green business process redesign, 4) training programs development and change management, and 5) performance monitoring and process improvement. The paper concludes with a suggestion of the framework validation and future research directions.

INTRODUCTION
Business processes, representing the way in which business operate, play a significant role in contribution towards the carbon footprint of an organization. Repetitive erroneous processes not only make for an inefficient business but also result in high carbon generation. The “Carbon footprint” of an organization represents the CO$_2$ from emissions throughout the life cycle of a product, service or activity (Wiedmann et al., 2006; Barthelmie et al., 2008) and contributes to increased atmospheric carbon levels (Luchsinger, 2009). One approach for businesses to maintain sustainable operations whilst addressing its carbon footprint would be to identify the extent of carbon emissions resulting from their business processes. This has to be followed by a framework within which green
business process operates that is based on Business Process Reengineering (BPR) to minimize carbon emissions.

This position paper presents a framework for “Green Business Process Reengineering Life Cycle” with a specific focus on CO$_2$ emitting business processes. This paper further proposes a carbon reporting mechanism as part of the business reports, identifying and evaluating alternate processes, and moving towards measuring and justifying their changes. Starting with a literature review in identifying carbon emitting business processes and characteristics in transforming them to green processes, a discussion is developed on challenges in implementing green processes. From this discussion, a green reengineering framework is proposed that establishes a research agenda in the Green Business domain from the information systems management perspective. The paper concludes with delineating concepts of validating the proposed framework and future research directions.

**Literature Review**

This section aims to review current literature in business process reengineering and management to identify any gaps to develop a conceptual model for the green business process reengineering. The review explores three distinct but interconnected disciplines for a framework: business processes and management, strategies for green initiatives, and dimensions of green process characteristics.

**Business Processes and Management Framework**

Many definitions proposed by researchers and practitioners for business processes exist (Davenport, 1993; Hammer & Champy, 1993; Johansson et al., 1993). Amongst these authors, Davenport’s (1993) explanation deemed to be a comprehensive coverage of the concept and defined a business process as

a structured, measured set of activities designed to produce a specific output for a particular customer or market. It implies a strong emphasis on how work is done within an organization, in contrast to a product focus’s emphasis on what. A process is thus a specific ordering of work activities across time and space, with a beginning and an end, and clearly defined inputs and outputs: a structure for action.... Taking a process approach implies adopting the customer’s point of view. Processes are the structure by which an organization does what is necessary to produce value for its customers.

A business process is a package of various decomposed activities that have an initiating point and an ending point, and which aims to accomplish a particular task leading toward operational goals and interconnect with other business processes and organizational capabilities to form a business competency. Managing business processes is crucial to meet performance indicators and maintain the competitive advantage of an organization. Amongst others, Burlton (2001) has proposed a “process management framework” that embraces stages and supporting phases to effectively manage business processes life cycle in an organization. The business process management framework embraces four key stages namely, strategy, design, realization, and operational. Each stage contains a number of phases with specific objectives.

The strategy stage defines business scope and context at the organization level, identifies the architecture of the overall processes, and the alignment between processes and business strategy goals. Phases in the design stage include defining overall organizational visions, understanding existing business processes, and redesigning business processes. Phases such as developing process capabilities and implementing newly redesigned processes are the key elements in realization stage. Operational stage focuses on monitoring and improving processes. Through the strategic guidance and tactical phases the frame-
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