



# The relationship between sustainable procurement and e-procurement in the public sector

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## ABSTRACT

This study examines the relationship between sustainable procurement and e-procurement, two recent initiatives in public procurement in many countries. A survey of sustainable procurement and e-procurement adoption was conducted with a sample of over 280 public procurement practitioners from 20 countries and with collective responsibility for expenditure totalling \$45 BN. Using multiple regression, we develop a model to show that e-procurement and communication with suppliers supports some types of sustainable procurement, and hinders others. E-procurement and communication with suppliers may help environmental, labour, health and safety aspects of sustainable procurement. Conversely, e-procurement may hinder buying from small local firms that are not e-enabled.

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## 1. Introduction

There is increasing concern with sustainable development and the impact of businesses on society and the environment. This is apparent from trends in the media, business practices and academic literature. In an analysis of top US newspapers and network evening newscasts, it was found that media coverage on climate change has increased seven-fold since the 1980s, peaking with political discussions of the role of governments and businesses in sustainability such as the Rio Summit and the Kyoto protocol (Boykoff and Boykoff, 2007). This increased interest in sustainability is reflected by the emergence in 1999 of the Dow Jones Sustainability Indexes (2008), and in 2001 of the FTSE4Good Index Series (FTSE, 2008), which indicate that investors and companies are keen to demonstrate sustainability and corporate social responsibility (CSR) and reduce impacts on the environment. This focus on sustainability is echoed in the academic management literature, with the number of articles on sustainability increasing year on year (Linton et al., 2007; Srivastava, 2007).

Several journals have devoted special issues to sustainability and CSR in the supply chain. Special issues have appeared

in the following:

- Journal of Operations Management entitled 'Supply chain management in a sustainable environment' (Jayaraman et al., 2007),
- Supply Chain Management: an International Journal entitled 'Corporate Social Responsibility in the Supply Chain' (Lindgreen et al., 2008),
- Journal of Supply Chain Management entitled 'Sustainable supply chain management' (Krause et al., 2009),
- Industrial Marketing Management has a call for papers (2011) entitled 'Green marketing and its impact on supply chain management in industrial markets',
- International Journal of Production Economics has two calls for papers (2011) entitled 'Models for Compassionate Operations' and 'Sustainable Development of Manufacturing and Services',
- International Journal of Physical Distribution and Logistics Management has a call for papers (2011) entitled 'Logistics and supply chain solutions for a changing competitive landscape: impacts of sustainability and resource scarcity'.

These special issues and calls for papers suggest there is a lot of research interest in sustainable SCM, with the overwhelming majority of studies focusing on environmental issues in private sector manufacturing supply chain contexts (Frota Neto et al., 2008; Piplani et al., 2008; Srivastava, 2007; Vachon and Klassen, 2008b; Zhu et al., 2008). Relatively few articles have investigated sustainable supply chain issues in a public sector context

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(Mitra and Webster, 2008), which presents an interesting setting due to the magnitude of public sector purchasing power, providing the potential to make substantial contributions to the sustainable development agenda. Our research addresses this gap by conducting an international study of sustainable supply chain issues in the public sector.

In the public sector, the pursuit of sustainability objectives in the purchasing and supply process has been termed *sustainable procurement* (SP). We define sustainable procurement as the pursuit of sustainable development objectives through the purchasing and supply process, incorporating social, environmental and economic aspects. Sustainable procurement policy and national plans have been developed in many countries including the UK (DEFRA, 2007), countries in the EU (Bouwer et al., 2006; Steurer et al., 2007) and the US (McCrudden, 2004).

Academic interest in public sector expenditure attributable to purchases of goods and services (Brulhart and Trionfetti, 2004; Fernandez-Martin, 1996; McCrudden, 2004; Trionfetti, 2000) arises in part from the absolute scale of public procurement with between 8% and 25% of the GDP of OECD countries and 16% of EU GDP being attributable to government purchases of goods or services (Afonso et al., 2005; European Commission, 2006; OECD, 2000).

The role of government purchases as a stimulus for sustainable development has been a topic of particular interest in recent years (McCrudden, 2004; Walker and Brammer, 2009; Weiss and Thurbon, 2006). As the public sector is concerned with societal well being, it may have a propensity for pursuing sustainability issues compared to the private sector. The government can lead the way in stimulating sustainable supply chain management in markets, by demanding environmentally and socially responsible products and services of suppliers, who in turn are likely to offer them to other customers in the market. Although sustainable procurement has an increasingly high profile in policy circles around the world, very little is known about the extent to which sustainable procurement policies and practices are embedded within the practice of public procurement professionals globally.

This study focuses particularly on the relationships between sustainable procurement, supplier communication and e-procurement. Previous studies have identified that communicating and collaborating with suppliers can aid environmental supply chain management, although such studies have tended to be conducted in manufacturing contexts (Sharfman et al., 2007; Vachon and Klassen, 2006, 2008a; Vergheze and Lewis, 2007). Governments actively promote e-business campaigns to get firms 'connected' (Currie, 2004). E-procurement has rarely been investigated in a public sector context (Panayiotou et al., 2004; Schoenherr and Rao Tummala, 2007), and in the public domain can be seen as the use of ICT to support the delivery of public procurement policy, improving transparency and efficiency (Carayannis and Popescu, 2005). E-procurement offers a range of new opportunities to make sustainable purchasing operational for public sector organisations (Abukhader and Jonson, 2004; Legarth, 2001).

This study makes several contributions. First, the relationships between the adoption of e-procurement practices, communication with suppliers and sustainable procurement have barely been explored. Two procurement objectives are at play, these being sustainable procurement to minimise environmental impacts and increase social impacts, and e-procurement adoption to achieve greater efficiency and transparency in procurement. We shed light on the relationship and likely congruence between these two important procurement objectives, with a view to informing procurement policy and practice. Specifically, we seek to identify whether e-procurement helps to operationalise sustainable procurement.

Second, the extant literature on sustainable supply chain management and on e-business has focused mainly on private

manufacturing sector contexts (Srivastava, 2007), whereas this study focuses on the public sector. Management research has often been motivated by a desire to provide firms with an economic benefit, and similar research could be directed at non-profit, governmental and international agencies with social measures (Prasad and Babbar, 2000). The public sector is concerned with achieving value for money in the way it procures goods and services, but has other policy objectives as well. What may be good practice in a profit-making firm may not be so clearly applicable for not-for-profit and public sector organisations. The interaction between sustainable supply chain management and government policy has previously been highlighted (Linton et al., 2007):

“Changes in policy ... force both manufacturers and researchers to explore options to improve the sustainability of operations across the supply chain. However, change can also flow in the opposite direction. Research and practice in supply chain management can affect policy ... by presenting alternative scenarios for the development of sustainable supply chains”.

This research explores how sustainable procurement interacts with e-procurement adoption, responding to calls to investigate practice in sustainable supply chain management in different countries (Angell and Klassen, 1999; Zhu and Sarkis, 2004).

This paper is structured as follows. A literature review follows, that culminates in hypothesis development. Next, the methods are described, including sampling, dependent, independent and control variables. The results of the analysis are then presented, followed by a discussion and conclusions. The implications of the study for policymakers, practitioners and future research are considered.

## 2. Literature review

This section reviews literature on sustainable procurement, communication in the supply chain and e-procurement, leading to the formulation of hypotheses that are subsequently tested.

### 2.1. Sustainable procurement in the public sector

Compared to the large number of studies investigating environmental and sustainable supply chain management in the private sector, there have been relatively few studies of sustainable procurement conducted in the public sector. These studies are summarised in Table 1 and outlined below. The papers tend to focus on tools to assist buyers, incorporating green criteria into contracts and reviews of sustainable procurement policy.

It is possible to make some observations about existing studies of sustainable public procurement through descriptive analysis of the articles. First, compared to around the vast majority of studies of sustainable supply chain management conducted in the private sector there are markedly fewer studies in the public sector (32). Earlier studies tended to focus on environmental issues (18), whereas more recent studies have encompassed social, economic and environmental issues (15). The majority of studies report case studies (14), with surveys (5) conducted more recently, and other studies collecting data through interviews (5), policy analysis (3) and analysis of procurement documents (2). Most studies have been conducted in the UK (13), followed by studies in the US (6) and multiple country studies (3). The products and services procured that the studies focus upon have tended to be multiple (15), with some studies also focusing on food (5), construction (3) and IT (2). Only 7 of the studies have adopted a theoretical framework as a lens to view sustainable public procurement, and

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