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Towards a more Circular Economy: Proposing a framework linking sustainable public procurement and sustainable business models

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ABSTRACT

Sustainability aims at addressing environmental and socio-economic issues in the long term. In general, the literature on sustainability has focused mainly on the environmental issues, whereas, more recently, a Circular Economy has been proposed as one of the latest concepts for addressing both the environmental and socio-economic issues. A Circular Economy aims at transforming waste into resources and on bridging production and consumption activities; however, there is still limited research focusing on these aspects. This paper addresses the link between procurement and supply practices, and proposes changing from a traditional public procurement process, based on product-selling business models, to a more service-oriented system. The paper proposes a framework to include technical and non-technical specifications of product/service combinations that improve resource usage efficiency through recovery. The framework also considers socio-cultural specifications and physical and social proximity between the stakeholders in the procurement process. The framework is based on collaboration, which is a vital link between the public procurement process and the development of more sustainable business models, where the experience gained in the collaboration process serves as the bases for suppliers and procurers in improving their contribution to CE, whilst at the same time securing economic benefits for both parties. Although, in this process, the specification setting may take longer, the relationships between procurer and supplier tend to be longer lasting and stronger. This research shows that collaboration between procurers and suppliers throughout the procurement process can lead to reductions in raw material utilisation and waste generation, whilst promoting the development of new, more sustainable, business models.

1. Introduction

Sustainability is aimed at addressing environmental, and socio-economic issues of this and future generations (Hopwood et al., 2005; Lozano, 2008; WCED, 1987). In general, the sustainability literature has focused on environmental issues (e.g. Atkinson, 2000; Costanza, 1991; Rees, 2002; Reinhardt, 2000); although, a number of authors have highlighted the importance of balancing the sustainability issues (i.e. economic, environmental, and social; Elkington (1998)), and the time dimension, as well as their interconnections (Lozano, 2008) through a holistic perspective (see Escobar, 1999; Hjorth and Bagheri, 2006). The concept of the Circular Economy (CE) has become one of the most recent proposals to address environmental sustainability (Murray et al., 2015). This is done through addressing economic growth, while at the same time considering the shortage of raw materials and energy (Yuan et al., 2006), as well as a new growing business construct (Murray et al., 2015). CE[1] is based on –closing loops' through different types and levels of recovery (Yong, 2007; Yuan et al., 2006) by transforming material into useful goods and services through resource efficiency (Klettner et al., 2013; Webster, 2013). Resource efficiency within CE is achieved by keeping the added value through the prudent use of raw materials and energy consumption throughout all stages of the value chain (Yuan et al., 2006), and by using products for as long as possible, thereby eliminating waste (Bilitewski, 2012).

According to the European Commission (2014), some of the ways to achieve resource efficiency include light-weighting, durability, efficiency, substitution, eco-design, industrial symbiosis, and leasing/renting. The transformations needed to achieve

[1] The concept of CE has been used since the 1930s in its original conception by Leontief (see Leontief, 1928); however, discourses relating it to environmental issues are recent, such as research in China and the Ellen McArthur foundation (Naustdalslid, 2014), CE still lacks a thorough definition.

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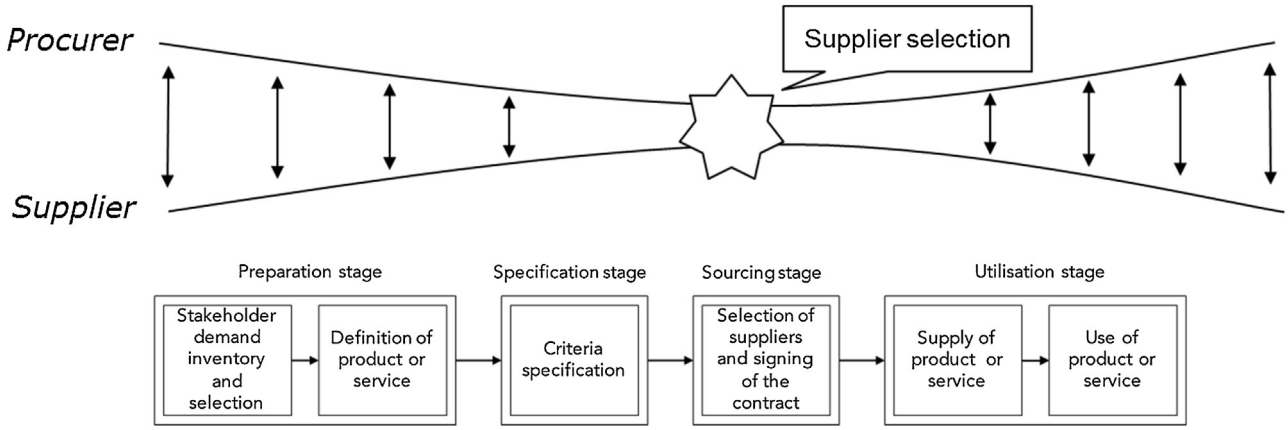

Fig. 1. The changing contact between the procurer and supplier during the PP process showing the different stages from preparation to utilisation (based on UNEP (2014)).

such resource efficiency are based on technical, social, and organisational innovations throughout the value chain, which connect production and consumption (European Commission, 2014). The components that achieve these transformations include (European Commission, 2014): (1) Skills and knowledge, including entrepreneurship and capacity-building and multi-disciplinarity; (2) Organisational innovation, including integrated solutions and systems, logistics, business models, and policy supporting tools; (3) Social innovation, including new production and consumption models, citizens' involvement, product service models, and design services; (4) Technological innovation, including design of materials and processes, product design, and resource management (waste, water, energy and raw materials); (5) Financial instruments; (6) Awareness, dissemination and internationalisation; and (7) Multi stakeholder involvement.

Government and companies have been two of the key players addressing a number of CE's components and transformations through redesigning their products and processes (Murray et al., 2015). The United Nations Environmental Programme (UNEP), as one of the outcomes of the Rio + 20 conference in 2012, set up an initiative to promote sustainable public procurement (SPP) (UNEP, 2014). The goal of the initiative is to link the consumption side, through governmental public procurement, to the production side, through the development of more sustainable business models (SBM). In spite of such calls, there has been little academic research focusing on linking SPP and SBM.

The aim of this paper is to contribute to CE by expanding knowledge of the relationships between SPP and the development of more sustainable business models, and is structured in the following way: Section 2 discusses the literature on SPP; Section 3 reviews sustainable business models discourses; Section 4 focuses on collaboration, as a means to linking SPP activities and sustainable business models; Section 5 presents the methods used; Section 6 proposes a framework for linking the public procurement process with the development of business models to better contribute to CE; and Section 7 presents the conclusions.

2. The link between public procurement (PP), business models and sustainability

Public procurement (PP) is a key economic activity of governments (Brammer and Walker, 2011). It refers to the acquisition of goods and services by governments or public sector organisations through a public contract (Kiiver and Kodym, 2014), and allows public sector organisations to perform their functions and deliver its services (Uyarra et al., 2014).

PP includes education, leisure, and social services (Walker and Preuss, 2008). It ranges between 8 and 25 per cent of the gross domestic product (GDP) of countries falling under the Organisation for Economic Co-operation and Development (OECD) and 16 per cent of countries in the European Union (EU; Brammer and Walker, 2011).

According to UNEP (2014), the procurement process consists in four stages: (1) Preparatory stage, where the problem is defined, and an inventory is made of the demands of related internal and external stakeholders, resulting in a first set of specifications. This set is integrated into the first concepts of a product or service that will be procured; (2) Specification stage, where the first concepts are further analysed and developed, leading to the definite specifications of the product or service; (3) Sourcing stage, also called the tender process, where the product or service specifications are made public to potential suppliers, and where the selection of the supplier and their signature on the contract finishes the tender; and (4) Utilisation stage, where, after signing the contract, the product or service is supplied. Fig. 1 shows the PP process including these four stages.

In the PP process, the tender process plays a central role, as it links governmental specifications to potential suppliers (Kiiver and Kodym, 2014). Contact between suppliers and the procurer is not allowed prior to the publication of a tender in order to ensure healthy competition (Kiiver and Kodym, 2014). With the publication of the tender, the procurer details the required specifications. The suppliers develop a particular business model to satisfy the procurer's specifications, such as operational excellence, product leadership or customer intimacy (Kamann, 2007). The procurer then selects the most suitable supplier (Kiiver and Kodym, 2014).

According to Uyarra et al. (2014), the influence of the PP process on a companyís business model is usually linear (see Fig. 2), where over-specified tenders and price per unit are the main focus of negotiations between the supplier and procurer (Kiiver and Kodym, 2014). Once the procurer decides on the product's technical specifications (e.g. size, weight and colour), the supplier defines the necessary raw materials for the production process, and the product is then delivered to the procurer as per specification. After the use period, the product partly becomes waste and the procurer decides whether to dispose of it. The optimization of used raw materials or generated waste is not explicitly addressed in the productís technical specifications.

In linear frameworks, such as the one presented in Fig. 2, raw materials are defined as inputs for the manufacture of the product, and the generation of waste as an output of product use. In a product specification, raw materials and waste are defined (e.g. specific environmental friendly materials, or a product that can be