Service-Oriented Enterprise Engineering: A Modeling Discipline Based on the Viable Systems Approach (vSa) for Strategic Sourcing Decision-Making

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ABSTRACT

Strategic sourcing, as a critical area of strategic management, is centered on decision-making towards achieving value-driven targets. Many companies face challenges in obtaining the benefits associated with effective strategic sourcing decision-making. Enterprise modeling can contribute to strategic sourcing decision-making by helping in the conceptualization, design and exploration of multiple strategic options for better decision-making. In this article, the authors explore a solution approach that refines the existing Enterprise Engineering (EE) modeling discipline into a Service-oriented Enterprise Engineering (SoEE) modeling discipline, by founding it on the novel application of the Viable Systems Approach (vSa) towards strategic (sourcing) decision-making. The proposed modeling discipline provides (1) the systemic viewpoints to interpret complex sourcing phenomena; and (2) the outside-box models to specify the value-driven interactions of an enterprise (as a system) with other actors. Finally, to operationalize the modeling discipline the authors introduce the conceptual basis (C.A.R.S) of a modeling language to apply the SoEE viewpoints and develop the related models for supporting strategic sourcing decision-making. The paper elaborates on preliminary ideas presented at the SoEA4EE 2013 workshop.

KEYWORDS

Service-Dominant Logic, Service-Oriented Enterprise Engineering, Strategic Sourcing Decision-Making, Value-Driven Strategic Sourcing, Viable Systems Approach

INTRODUCTION

Strategic management as the art and science of formulating, designing and evaluating strategic options and alternatives enables an organization to achieve its long-term objectives. Strategic management deals with survival and competitiveness in the long-term. At the strategic management level, decision-makers deal with complex, non-routine problems. Strategic sourcing has become a critical area of strategic management that is centered on decision-making regarding an organization’s procurement activities such as spend analysis, choosing sourcing strategies, supplier selection and evaluation. Many companies face challenges in obtaining the benefits associated with effective strategic sourcing decision-making. A common language and a stable overarching view are needed to define and articulate concepts that facilitate the description and interpretation of objects of strategic interest and
that improve the strategic discussions and enhance related decision-making (Lohse, Biolsi, Walker, & Rueter, 1994; Eppler & Ge, 2007; Lengler & Eppler, 2007; Clark & Brennan, 1991). From an Information System (IS) research perspective, enterprise modeling provides a unique opportunity to contribute to strategic management research by helping in the conceptualization, design and exploration of multiple strategic options, much in the way it has contributed to better decision-making with respect to information technology and information systems (Osterwalder & Pigneur, 2013). Here, our opportunity-driven research question is: how enterprise modeling can support decision-makers at the strategic management level for strategic sourcing?

In this research, we explore a solution approach that refines the existing Enterprise Engineering (EE) modeling discipline (Dietz, 2006) into a Service-oriented Enterprise Engineering (SoEE) modeling discipline, by founding it on the novel application of the Viable Systems Approach (vSa) (Barile & Saviano, 2011) towards strategic (sourcing) decision-making. We show that the vSa foundation of the proposed modeling discipline allows for (1) viewing an enterprise as a viable system that survives through value creation interactions internally and externally with other systems in an ecosystem; and (2) focusing on the ecosystem of the enterprise as a system of viable systems, particular considering value-driven interactions among its sub-systems and its supra-systems. The proposed SoEE modeling discipline founded on vSa provides (1) the appropriate viewpoints to interpret complex sourcing phenomena such as value creation, capability configuration, resource integration and actor interactions; and (2) the related models to specify the interaction of an enterprise (as a system) with other actors (as sub-systems and super-systems) for value creation to achieve strategic sourcing outcomes like sustainable competitive advantage, survivability and long-term partnership. Finally, to operationalize the modeling discipline we introduce the conceptual basis of what can become a simple graphical modeling language for strategic managers to apply the SoEE viewpoints and develop the related models for supporting strategic sourcing decision-making. The language, called Capability-Actor-Resource-Service (C.A.R.S) was developed using concepts from the well-known Service-Dominant Logic (S-D Logic) (Lusch & Vargo, 2006), which fits well with the introduced service ecosystem perspective on value-driven strategic sourcing. Example models are provided as part of an IT outsourcing case-study we conducted at a large university hospital.

Our research methodology was Design Science Research (Hevner, Park, & Ram, 2004), which is the standard research methodology used in the Information Systems discipline for designing new artifacts that solve unsolved problems or improve upon existing solutions. Referring to the DSRM process model we distinguish the following research phases 1) Problem Analysis Phase: we conducted a literature review of value-driven strategic sourcing to define key requirements for strategic sourcing decision-making; 2) Solution Analysis Phase: we defined solution objectives and contributions by introducing an enterprise modeling discipline to support strategic (sourcing) decision-making according to the requirements specified in the problem analysis phase; 3) Design Phase: we developed a conceptual basis for applying models and views of the proposed modeling discipline toward strategic sourcing decision-making; and 4) Demonstration Phase: we used a case-study in the healthcare domain to illustrate and evaluate the use of our modeling approach for strategic sourcing decision-making.

Preliminary ideas regarding our solution approach are presented in (Rafati & Poels, 2013). The current paper differs from the previous one in important aspects. First, the theoretical basis of the modeling discipline that is founded on vSa is expanded and a new type of models (i.e., outside-box models) for SoEE is introduced. Second, the modeling discipline itself, only roughly outlined in the previous paper, is formalized. Third, a proof-of-concept demonstration using a healthcare case-study is added.

The paper is organized as follows: Sect. 2 describes the results of our literature review of value-driven strategic sourcing and defines key requirements for supporting strategic sourcing decision-making. Sect. 3 introduces the proposed SoEE modeling discipline (as a set of theory, viewpoints and models) based on applying vSa towards strategic decision-making; Sec 4 explains the contributions of the proposed modeling discipline for value-driven strategic sourcing; Sect. 5 defines C.A.R.S as
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