Outcome-based contracts as a driver for systems thinking and service-dominant logic in service science: Evidence from the defence industry

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Summary   Two outcome-based defence contracts are studied in the attempt to better understand the provision of services in maintenance, repair and overhaul (MRO) environment that is contracted on the *outcome* of the equipment, rather than the provision of equipment. The nature of the contract changes the dynamics of the delivery, bringing complex issues such as customer behaviours and involvement to the forefront, with both customer and firm focused on value co-creation and co-production, rather than each party's contractual obligation. We uncover four areas that are crucial in the understanding of value co-production in service delivery and analysed them through a systems approach combined with the application of the service-dominant logic, both considered as the theoretical underpinnings of service science.

Introduction

Outcome-based contracting, or its narrower equivalent of performance-based contracting, is a contracting mechanism that allows the customer to pay only when the firm has delivered outcomes, rather than merely activities and tasks. If one considers the famous quote from Levitt where ''the customer really doesn't want a drilling machine, he wants a hole-in-the-wall'', outcome-based contracts considers the possibility of customers paying only for holes in walls, when buying a drill (Levitt, 1972). While this might still be a little far-fetched for consumer goods, the idea of contracting on outcomes in B2B service contracts is increasingly possible. This is the case for Rolls Royce ''Power-by-the-hour®'' contracting for the service and support of their engines, where the continuous maintenance and servicing of the engine is not paid according to the spares, repairs or activities rendered to the customer, but by how many hours the customer obtains power from the engine. Outcome-based contracts have been shown to provide huge cost efficiencies to customers as both the firm and the customer's objectives become much more aligned (Gordon, 2001). In essence,

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outcome-based contracts drives home the concept of value-in-use, where value is defined as the benefit the customer obtains through use (Vargo and Lusch, 2004, 2008), and compels the firm to bring in customer usage as part of its responsibility to deliver the outcome.

Bringing in the customer as part of outcome-based contracts may sound intuitively appealing, but pose immense difficulties on delivery. For example it is often not possible to deliver an outcome without the customer co-creating or co-producing the service with the firm. In the case of the hole-in-the-wall, the firm can't deliver the outcome without the customer knowing how to use the drill in the first place. Thus, the role of the customer within the firm's delivery space requires new ways of thinking of the firm's governance and the design and delivery of the service under outcome-based contracts. The need to deliver outcomes also drives the need for the functions such as marketing, IT, engineering, operations, OB/HR and strategy to be much more integrated and aligned towards delivering the benefit to the customer, rather than being individually focused on their own set of activities.

Consequently, the understanding of outcome-based contracts would advance the new discipline of service science, defined as ''an integrative discipline of engineering, technological and, social sciences … for the purpose of value co-creation with customers''. Lohr describes ''service science'' as a hybrid field with a purpose to use ''technology, management, mathematics and engineering expertise to improve the performance of service businesses'' as well as service functions like ''marketing, design and customer service'' that are crucial in manufacturing industries (Lohr, 2006). Yet, there is acknowledgement amongst researchers that the hybrid field is not a result of reconciling multi-disciplinary perspectives but to investigate service phenomenon under an integrative umbrella of *service system* which, according to Spohrer et al. (2007), can be defined as a ''value co-production configuration of people, technology, other internal and external service systems and shared information such as language, processes, metrics, prices, policies and laws''. The delivery of an outcome-based contract would be an ideal setting through which a service system could be evaluated. Insights into delivering on an outcome-based contract could therefore provide frameworks necessary to advance knowledge in service science and service system.

This paper reports on a study of two outcome-based contracts in the defence industry. Our study shows how outcome-based contracts are an excellent example of organisations moving from goods-dominant logic to service-dominant logic, the latter considered as a theoretical underpinning of service science. Our study also reports the challenges in moving from the two logics which we analyse from a systems perspective, demonstrating the importance of systems thinking in driving knowledge in service science.

The discussion of this paper proceeds as follows. After a review of related literature in [Literature review], we present our methodology and our analysis in [Context and methodology] and [Findings and analysis], respectively, before concluding with a general discussion in [Discussion].

Literature review

Extant literature on service is at a relatively youthful stage with some work surfacing in the early 1960s. Yet, the literature is already burdened with different concepts, theories and application both by the business and research communities. Much of this confusion has been attributed to two reasons. First, the word ''service'' is used extensively with multiple meanings in our daily conversations. Terms such as ''customer service'', ''service charges'' and ''service centres'' are common everyday expressions, yet what exactly is meant by these expressions are very much an intuitive interpretation by the user.

Second, in an effort to unify the study of services, the lack of an accepted definition for the word ''services'' amongst the services research community has resulted in numerous debates on the legitimacy of its research (Thomke, 2003). In recent years, these continued and unsolved debates have lead Vargo and Lusch to suggest that this difficult discussion on the definition for services has been ''more abandoned than resolved'' (Vargo and Lusch, 2004). This implies that despite commendable and substantial amount of published literature on this subject over the last thirty years, very little is understood of services at an abstract level to encourage common understanding of services research. Today, we find service research being pursued by various academic disciplines, with each examining different meanings within specific contexts. This ubiquitous nature of services research has to an extent, fragmented the service research community.

Service science

In response to the fragmentation, IBM coined and championed the concept of ''Service Science, Management and Engineering'' (SSME) in order to develop an interdisciplinary and intercultural approach to service research (Spohrer and Maglio, 2005). On their website, they call for an integration of four different schools; business management, engineering, social sciences and information systems. These schools represent a diverse set of academic disciplines such as marketing, operations management, accounting, operations research, information systems, design, engineering, economics and psychology.

From an academic standpoint, service science offers a platform for the development of a new discipline equipped with its own set of curricula. A consensus is emerging that service cannot be described and understood by a single academic discipline (Glushko, 2008). Thus, service science can be defined as an integration of various disciplines such as management, engineering, accounting, finance and operations, with the aim of preparing the next wave of innovators in contributing to a service economy. Service science aims to develop a general ''theory of services with well defined questions, tools, methods and practical implications for society'' (Spohrer et al., 2007). However, in order to better understanding of the study of services under the concept of service science, there is a need for a dramatic shift from a goods-dominant logic to a service-dominant logic as proposed by Vargo and Lusch (2004). The service-dominant logic primarily argues that goods (tangible) are appliances