



Challenges of servitization: A systematic literature review

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ABSTRACT

The challenges of servitization have gained significant attention from both academics and practitioners, as more firms in the industrial sector are seeking marketing opportunities leading to business growth through the adoption of a service strategy. Although existing research has explored its challenges from multiple perspectives, this is largely fragmented and the studies offer little understanding of the impacts of the challenges on the realisation of servitization benefits and improvements in business performance. This study, therefore, aims to create a formal construct of the challenges and develop a set of hypotheses through a systematic review of the servitization literature to build a theoretical model explaining the underlying relationships. Five challenges are identified: organisational structure, business model, development process, customer management, and risk management. The indicators of each challenge are discussed to support the establishment of hypotheses. This study contributes to the current body of knowledge by reaching a clear conclusion from the fragmented literature and brings together five challenges to explore their impacts on the overall business.

1. Introduction

As the world economy and technologies are progressing, market demand has shifted from manufactured goods to integrated solutions (Davies, 2004; Windahl, Andersson, Berggren, & Nehler, 2004). The ‘Servitization of Manufacturing’ has become a growing trend in the industrial sector, which is defined as the ‘innovation of manufacturers’ capabilities and processes to transform from selling products to selling integrated solutions that deliver value in use for customers’ (Baines, Lightfoot, Benedettini, & Kay, 2009a, p. 555). According to Lightfoot, Baines, and Smart (2013), the studies on servitization have grown from 22 in the period 1991 to 2000 to more than 100 in the period 2001 to 2010, and a wide range of communities have contributed: service marketing, service management, and operations research.

There is a wide consensus in both academia and business, that servitization of manufacturing brings financial, strategic, and marketing benefits (e.g. Kinnunen & Turunen, 2012; Mathieu, 2001) to companies and addresses the challenges of business growth (e.g. Baines, Lightfoot, & Kay, 2009b; Baines et al., 2009a; Brax, 2005; Martinez, Bastl, Kingston, & Evans, 2010). Since the late 1990s, scholars have investigated the challenges of servitization from different angles; however, the findings do not clearly indicate the effects of the challenges on the achievement of its benefits and the improvement in business performance. More importantly, the joint impacts of all the challenges are still under exploration as the existing efforts have been directed at the investigation of individual inhibitors (Nudurupati,

Lascelles, Wright, & Yip, 2016). This is due to the fact that the relevant research on servitization challenges is fragmented and discursive (Baines et al., 2017). It is therefore concluded that servitization research lacks information on how exactly the challenges impact the realisation of expected benefits as well as how to sustain a superior business performance. Kowalkowski, Gebauer, and Oliva (2017) claim that the current research is marginally useful in moving the field forward as most studies examine similar issues rather than discover new knowledge. This deficiency causes the servitization research to be mired in a ‘nascent’ stage, and a clear research focus is needed for the further development of both its theory and practice. Accordingly, an improved systematic literature review (SLR) is adopted for multi-disciplinary studies to perform a solid analysis of the theories and empirical evidence and reach a clear conclusion on ‘what is and is not known’ (Denyer & Tranfield, 2009).

The aim of this study is to identify the challenges of servitization and establish a set of hypotheses to address the connection among servitization challenges, benefits, and business performance. Through the SLR, this study answers two key questions:

1. What are the challenges of servitization?
2. How can they be defined and how do they influence the achievement of servitization benefits (strategic, financial and marketing) leading to the improvement of business performance?

Answers to these questions will enhance the understanding of

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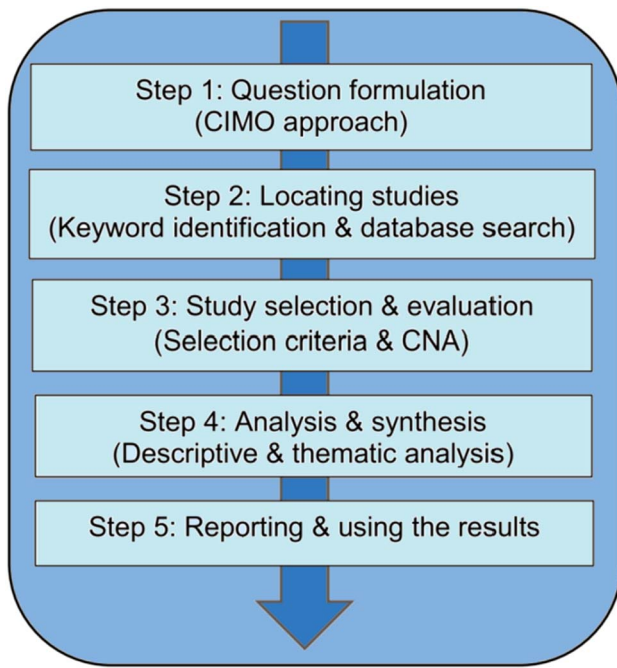


Fig. 1. Improved five-step systematic literature review process (Adapted from Denyer & Tranfield, 2009).

servitization challenges through a more comprehensive picture of underexplored connections to the benefits and the impact on business performance. This paper starts with a detailed description of the SLR method used here. This is followed by a descriptive analysis of the selected studies and a thematic discussion of the emergent themes from the literature, which identifies the constructs of servitization challenges. Through the method of reductionism, this study develops a set of hypotheses connecting the challenges to the realisation of benefits as well as to business performance. To conclude, this paper presents a discussion of the implications and limitations of the study and provides a few avenues to future research.

2. Research methodology

The SLR adopted in this study follows a rigorous process that helps search for all studies that are potentially significant (Cronin, Ryan, & Coughlan, 2008). Fig. 1 demonstrates the improved five-step approach according to Denyer and Tranfield (2009), integrating a citation network analysis (CNA) (Van Eck & Waltman, 2010) to explore the knowledge flow in the servitization research.

2.1. Question formulation

A well-designed research question is important for guiding the

study. The ‘CIMO’ (context, intervention, mechanism, and outcomes) logic proposed by Denyer, Tranfield, and Van Aken (2008) is used here to help with the question formulation.

Following the CIMO logic, by answering the guiding questions, the challenges of service growth in product-centric companies can be studied. In this context (C), the interventions (I) are the impacts of the challenges in the achievement of servitization benefits as well as the improvement in business performance. This means that the mechanism (M) of interest is the exploration of the main constructs and indicators of the challenges, and the expected outcomes (O) are a set of hypotheses indicating the correlations among servitization challenges, benefits, and business performance. To this end, the research questions were finalised as follows.

1. The overarching research question:

What are the challenges to achieve servitization benefits and improve business performance?

2. Two complementary questions designed to support the above:

- How can the challenges be defined?
- How do they affect the realisation of servitization benefits (strategic, financial, and marketing) leading to the improvement in business performance?

2.2. Locating studies

To locate relevant articles, the search engine and search strings need to be identified in advance (Wong, Skipworth, Godsell, & Achimugu, 2012). Three research engines were used: ProQuest, Scopus, and Science Direct. These databases are widely acknowledged as world-leading sources for servitization research, and they are favourites with leading scholars in the same area (e.g. Baines et al., 2009a; Nudurupati et al., 2016). Thus, it is believed that these databases provide the best coverage in this research field.

The identifying keywords were directly related to the quality of study selection in which a list of more than 20 key terms was created through a brainstorming approach. In order to ensure the validity of the search strings, several pre-tests were run to check the search results. Subsequently, the strings were reduced to eight as shown in Table 1 and resulted in the identification of 1187 scholarly papers for further evaluation.

A citation network (see Fig. 2) was created to quickly identify the papers that contribute the most to theory development in the research area, and extend our search coverage through the ‘snowballing’ approach (exploring references in influential studies) to locate relevant papers not appearing in the selected database.

The network was generated using the software VOSviewer (version 1.6.5) based on the interrelated citations of selected papers from Scopus (Van Eck & Waltman, 2010). The circles represent the publications; the

Table 1
Search strings and results.

Search engine	Search strings	Selection criteria	Result
ProQuest (654 initial search)	(servitization* OR servitisation* OR servicing* OR servicing*) AND (challenge* OR difficulty* OR barrier* OR obstacle*)	Search in all fields, full-text available, peer-reviewed, English, 1994–2016 (the earliest available year is 1994), search from all database	230
Scopus (119 initial search)	(servitization* OR servitisation* OR servicing* OR servicing*) AND (challenge* OR difficulty* OR barrier* OR obstacle*)	Article title, abstract & keywords, journal article, English, 1988–2016	46
Science direct (414 initial search)	(servitization* OR servitisation* OR servicing* OR servicing*) AND (challenge* OR difficulty* OR barrier* OR obstacle*)	Search in all fields, article only, 1988–2016, search from all journals	355
Total: (1187 initial search)			631

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