Strategic fit of service supply chains

Raveen R. Menon (raveen.menon@monash.edu)
IITB-Monash Research Academy

Tarikere T. Niranjan
Shailesh J. Mehta School of Management, Indian Institute of Technology Bombay

Dayna Simpson
Monash Business School, Monash University

Mohan Krishnamoorthy
Department of Mechanical and Aerospace Engineering, Monash University
School of Information Technology and Electrical Engineering, The University of Queensland

Abstract

Building on the concept of strategic fit and Service-Dominant Logic (SDL), we develop a strategic fit of service supply chains and assess its impact on firm performance. SDL's prime focus on intangible skills and knowledge (operant) resources is rarely studied in the context of service supply chains. *Fit* in our framework is the match between firms' operant resources and service supply chain characteristics (viz. innovative, efficient or innovative-efficient) that lead to superior firm performance. We validate this framework using survey research and semantic analysis of publicly available data.

Keywords: Service-Dominant logic, Strategic fit, Operant resources

Introduction

Strategic management of service supply chains is largely underdeveloped even though service supply chains are considered the next frontier of competitive advantage (Sampson and Spring, 2012). This is driven mainly by lack of service supply chain frameworks that help managers to understand the best solutions for their situation (Ellram et al., 2004). Existing strategic supply chain frameworks are mainly intended for the supply chains of tangible products and have limited applicability to services (Stavrulaki and Davis, 2014). Today, expansion of service sector drives the worldwide economic growth (IMF, 2018). This calls for a well-defined strategic framework that can aid managers in designing service supply chains by focussing on speed, variety, quality, cost of service, and other performance objectives.

Achieving a proper strategic fit between the firm and its environment has important performance implications. Fisher's (1997) strategic fit framework emphasized the importance of match between a firm's product characteristics, and its supply chain. While Fisher's work has helped define a significant body of work on the strategic fit between manufacturing firms and their supply chains (e.g., Wagner et al., 2012), very little work

has addressed services, and a key aspect – customer interaction in services – is essentially missing from past frameworks. Niranjan and Weaver (2011) proposed a unifying paradigm of goods and service supply chains, which shed light on the prevailing ambiguity in this field of study. They discussed the concept of capacity as a replacement for inventory in services. Apart from this, there are hardly any studies that help service firm managers deduce anything substantially from goods supply chains.

Existing strategic supply chain frameworks emanate from a goods-centric view that concentrates mainly on operand resources that are useful for understanding tangible product supply chain. The goods-centric view, however, has limited applicability to services because operant resources are the primary source of competitive advantage in service supply chains. Service-Dominant Logic (SDL) views "goods as transmitters of operant resources" as opposed to being end products (Vargo and Lusch, 2004, p. 7). SDL, however, differentiates between operand resources (resources on which actions are performed) and operant resources (resources that act on other resources): "Operand resources are mostly physical (for example, raw materials), whereas operant resources are human (for example, skills and knowledge of individual employees), organizational (for example, controls, routines, cultures, and competences), informational (for example, knowledge about market segments, competitors, and technology) and relational (for example, relationships with competitors, suppliers, and customers)" (Madhavaram and Hunt, 2008, p. 67). Operand resources are those resources on which actions are performed to produce an effect, whereas operant resources are those which act on operand resources to produce effects (Constantin and Lusch, 1994). SDL views operant resources as the highest order resources, which, according to Hunt (1999), are organizational competencies. Operant resources are mostly invisible and intangible (Vargo and Lusch, 2004). The core competences of an organization are not physical assets but "bundles of skills and technologies," (Hamel and Prahalad, 1994, p. 202) which are essentially operant resources. Skills and knowledge are the most important types of resources (Vargo and Lusch, 2004). Considering the nature of operant resources mentioned above, they are highly relevant to services and demands higher priority than operand resources in service research.

Research on operations strategy and its implications for firm performance are well studied in operations literature, even though its extension to supply chain context emerged lately (Wagner et al., 2012). Most of the studies aligned product characteristics with the firm's competitive strategy. However, very little research studied the role of resources in supply chain strategy. Surprisingly, only a few of them tried to explore it in the service context. By extending the concept of strategic fit to service supply chains based on SDL, and aligning it with the resource-based view (RBV) of firms (Wernerfelt, 1984), we are able to provide our view of fit. Our theoretical framework has two main objectives. First, to develop the concept of strategic fit of service supply chains based on operant resources and second, to assess its impact on firm performance. By developing a strategic fit concept of service supply chains based on operant resources, we try to bring operant resources under the scope of RBV which has mainly focussed on operand resources. By understanding the impact of strategic fit of service supply chains on firm performance, our study can serve as a guideline for firm managers to outperform their competitors.

Background and Hypotheses Formation

We develop a framework that can effectively classify supply chains to account for operant resources, which according to Vargo and Lusch's (2004) SDL, are core competencies that distinguish service supply chains from good supply chains. In the following, we briefly discuss the literature on SDL, focussing on RBV and operant resources.

Previous research on service supply chains applies three important process-oriented supply chain frameworks to the service sector (Ellram et al., 2004). They were: (1) Hewlett-Packard's Model (Lee and Billington, 1995), (2) the supply chain operations reference (SCOR) model (Huan et al., 2004) and (3) the global supply chain forum (GSCF) model (Croxton et al., 2001). In Hewlett-Packard's Model, inventory acts as a buffer at different stages of a supply chain, to manage uncertainty in the environment. Hewlett-Packard's model detects serious problems with control and over-billing in services, it does not suggest a framework for better management of these issues. The SCOR model is structured around five distinct management processes: (1) Plan, (2) Source (3) Make (4) Deliver and (5) Return. The GSCF framework has the following elements in its model: business processes, management components, and structure of chain (Croxton et al., 2001). Customer and supplier relationship management also forms an integral part of the model. While these three models are effective for management of fit between firm and goods supply chains, they lack an ability to be comprehensively adapt to service environments.

Stavrulaki and Davis (2010, 2014) proposed two of the most recent strategic frameworks. The former classification focused on demand uncertainty and product variety. They proposed a framework based on four types of supply chains: "(1) build to stock (BTS), (2) assemble to order (ATO), (3) build to order (BTO), and (4) design to order (DTO)" (Stavrulaki and Davis, 2010, p. 128) . The demand uncertainty and product variety increase from BTS to DTO. Even though they studied the role of customers in value creation, its applicability to services is limited because it is viewed from a goods perspective. Stavrulaki and Davis (2014, p. 34) proposed a typology of classification for service supply chains based on two dimensions, which are "what is being transformed" and "how it is processed." The first dimension identifies operand resources as what is being transformed in a process, and three broad categories of resources: people, things, and data, which are categorized under operand resources. Although this was intended primarily for service supply chains, it does not take into account operant resources, which, according to Vargo and Lusch (2004) are core competencies that distinguish a service supply chain from a goods supply chain.

Until now, studies on developing supply chain frameworks for services were inspired by existing goods-based supply chain frameworks and most focussed on applying the existing goods supply chain frameworks to services by modifying them. In contrast, we develop a framework that is built primarily for services but can be applied to goods. Based on the SDL, we argue that this will be more productive and beneficial than the existing practice of trying to apply goods-based frameworks to services. The SDL paradigm shift subsumes the role of goods as a service provider and not as end products. Instead goods are mediums of service offerings. "Goods are not the common denominator of exchange; the common denominator is the application of specialized knowledge, mental skills, and to an extent physical labor (physical skills)" (Vargo and Lusch, 2004, p. 8). Goods are physical representations of operant resources. SDL views goods as a medium for providing services, and we argue that a framework which covers service supply chains will cover goods supply chains as well. Goods-based frameworks are inapplicable to services because the goods-dominant logic does not cover services under their scope. However, SDL considers goods under their purview, and therefore anything that studies

services on the basis of SDL ought to cover goods as well. Goods and services are non-mutually exclusive (Niranjan and Weaver, 2011). Services should not be studied in contradiction with goods but with a wider perspective on which all exchanges are based and goods are integral to it (Lusch and Vargo, 2014). The concept of services does assimilate the concept of goods within it.

The argument of applying our framework to goods is bolstered once we get into the specifics of SDL which views operant resources as highest order resources (Hunt, 1999) and it might exist in its physical form as goods or in its intangible form. Since goods are simply a physical embodiment of these resources, they ought to be covered in our framework, which is primarily intended for services. We develop a framework that is meant for services but captures the specifics of goods under its purview and, therefore aims to cover the goods supply chains as well. However, to apply goods supply chain frameworks to service, it requires a lot of additions and even those are proven ineffective and inefficient for their application in services (Stavrulaki and Davis, 2014). Thus, we argue that our framework, which is primarily intended for service supply chains, is relevant to goods supply chains.

The literature on RBV is an important starting point for our main argument that operant resources are the most important source of competitive advantage available for a firm. Later, we explore the impact of operant resources on the firm's ability to achieve strategic fit of service supply chains.

RBV of service firms and strategic fit

RBV looks at firms in terms of their resources rather than their products (Wernerfelt, 1984). We explore this view to throw a different light on the strategic option of supply chain fit. The RBV assumes that firms perform differently due to differences that arise from valuable rent-generating resources that are firm-specific and cannot be easily imitated or substituted (Amit and Schoemaker, 1993; Griffith and Myers, 2005). It is possible to find optimal activities for a firm by specifying its resource profile (Wernerfelt, 1984). Resources discussed in RBV are not limited to physical resources; they can be anything that can be considered valuable for the firm. According to this, firms do not compete on products but on the capacity and ability to develop these products (Prahalad and Hamel, 2000). The understanding of the positive relationship between a firm's financial performance and its resources has enabled several marketing scholars to focus their studies on leveraging of resources which can help firms to sustain or create a competitive advantage over others (Wu et al., 2006). We discuss operant resources, which according to Vargo and Lusch (2004), are the primary resources that a firm possesses, under the RBV.

Empirical research in strategic management is centered around the concept of fit. The effective management of the supply chain depends on manager's ability to appropriately fit organizational and strategic elements with environmental factors (Griffith and Myers, 2005). Fit is defined as "the degree to which the needs, demands, goals, and objectives and/or structures of one component are consistent with the needs, demands, goals, objectives and/or structures of another component" (Nadler and Tushman, 1980, p. 45). Fit is the adherence to a specific profile under the profile deviation perspective (Griffith and Myers, 2005). A high level of fit is advantageous; therefore, it is always advisable to maximize fit (Day, 1999; Snow and Miles, 2010).

Strategic fit refers to the efficiency with which the firm's resources are matched with its environment (Snow and Miles, 2010) and the effectiveness of the strategy implemented in certain environments (Xu et al., 2006). In strategic fit literature, the degree of congruency between a firm's strategy and its supply chain characteristics has

significant performance implications (Fisher, 1997; Hofer, 1975; Wagner et al., 2012). Firms should create or maintain supply chain activities, such that their resource sets provide a core capability that generates significant competitive advantages for them (Kakabadse et al., 2003). There is a need for a supply chain framework that can align the firm's resources and its supply chains (Lambert et al., 2005). To enable the understanding of the significance of resources in supply chain management, Ellram and Cooper (1990) describe supply chain management as a means of the effective and efficient use of resources in achieving a firm's strategic objectives.

Service supply chain fit

Achieving a proper fit between the firm and its environment has performance implications. We match the resource characteristics strategy of a firm with its supply chain, expecting it to have a significant effect on performance. We confine the concept of strategic fit of service supply chains by aligning the operant resources of a firm with its supply chain characteristics, and we hypothesize accordingly.

We extend the concept of strategic fit to service supply chains and base our argument on the RBV of firms to formalize our view of fit. Fisher (1997) formalizes fit by distinguishing products as either innovative or functional and supply chains as being either responsive or efficient, but our fit is based on the firm's operant resources.

Operational effectiveness should constantly be improved to achieve superior performance. In strategic fit concept, theorists postulate this view of constant improvement using phrases and words as matched with contingent upon, consistent with, fit congruence, and like (Venkatraman, 1989). Extant literature lacks precise guidelines on using these verbal statements in strategic fit research. Among that, strategic consistency is an important terminology that is an integral part of strategy literature. Consistency in strategic management ensures the competitive advantage of activities combines and prevail for a longer period such that they do not cancel themselves out (Porter, 1996). Consistency in strategy makes it easier to communicate within the firm as well as outside. This will ensure steadfast growth-oriented implementation of firm decisions throughout the supply chain. Thus we stress upon the consistency factor in strategic management in our hypotheses development. Strategic consistency is the ability to contribute to the achievement of the firm's strategic intent (Rangone, 1999). There is a general agreement that the effectiveness of the strategy is determined by the degree of consistency between competitive priorities and operational aspects of a firm (Boyer and Lewis, 2002).

Our concept of fit is the match between a firm's operant resources and its supply chain. In our research, we define *service supply chain fit* as the strategic consistency between a firm's operant resources and its supply chain characteristics (responsive or efficient).

Hypotheses

We develop hypotheses by moderation perspective of strategic fit, according to which the impact that a predictor variable has on a criterion variable is dependent on the level of a third variable; which is called the moderator. The moderator variable supply chain responsiveness is viewed characteristically (degree of responsiveness), and it is expected to affect the direction or strength of the relationship between resource strategy (predictor variable) and financial performance (criterion variable). This study follows the first-order fit of simple consistency between each activity and the overall strategy.

This work rests on one of the foundational premises of SDL which indicates that the organization's bundle of skills and knowledge is essential for the fundamental unit of indirect exchange. Focusing more on a firm's functional objective is expected to enhance

their financial performance (Lusch and Vargo, 2014). Minimizing the unit service production cost might force a firm to focus more on efficiency to enjoy bigger economies of scale. This could result in a loss of responsiveness of the firm. The firm will be less focused on innovation. Similarly, a firm focused on innovation will not be efficient and is not expected to enjoy bigger economies of scale. We hypothesize the above scenarios in our framework. The firm is expected to enhance their financial performance if they are successful in achieving their functional objectives. This requires the firm to develop and align their operant resources that are focused on their functional objective.

Innovation

Innovation is the mechanism by which "organizations produce new products, processes, and systems" that are "required to adapt to changing markets, technologies, and modes of competition" (Lawson and Samson, 2001, p. 378).

Service innovation can be a set of innovations in a wide range of business processes like technology, business models, socio-organizational, and demand with the objective of improving existing services (Chen et al., 2016). Even though few studies directly relate supply chain with innovation capabilities, the literature shows a positive relation between key supply chain elements and innovation. The knowledge gained through external network participation is a key to successful innovation (Cohen and Levinthal, 1990). Resources such as information and service quality widen the opportunity to maintain or enhance innovation (Gulati et al., 2000; Lawson and Samson, 2001). In a case study, Lawson and Samson (2001) explain how, in 1992, Cisco determined that their suppliers could add more to innovation than Cisco alone; and they recognized that it was not their manufacturing capability, but their relationships and partnerships with entities outside their network as their core capability that could lead to innovations. Collaborative relationships enhance a firm's performance and successful innovations (Soosay et al., 2008). Roy et al. (2004) proposed that buyer-seller interactions in supply chain relationships are positively related to innovation. Their study focused on the following variables in supply chain relationships: interaction, information technology adoption, trust, tacitness of technology, and network connections. Thus it is clear that supply chain capabilities do play a significant role in innovation.

Innovation operant resources, rather than efficiency provide the base for innovation in an organization. Building on the concept of service supply chain fit, we hypothesize that:

> **Hypothesis 1:** Firms with innovation operant resources operating within a responsive supply chain, outperform firms with innovation operant resources operating within an efficient supply chain.

Efficiency

Efficient service firms adopt cost-reduction strategies. RBV asserts that certain resources that a firm possesses can enable it to execute strategies that can lead to improvements in efficiency (Barney, 1991). Efficient supply chain strategies aim to achieve low-cost products and to improve performance. Strategies that can efficiently manage a firm's supply chain have proven to be effective in the reliable delivery of products at the lowest cost (Liang et al.). When supply chain members use resources appropriately, it will result in cost-effective products and services (Liang et al., 2006). A functional product should not be managed in the same way as an innovative product (Lee, 2002). So, the right supply chain strategy for efficient products is the devising of efficient supply chains (Fisher, 1997). Based on the above reasoning, we argue that it is operant resources that enable a

firm to execute their efficiency strategy, and we relate resources to the firm's financial performance.

A firm's resources must support and match its supply chain. Efficiency operant resources will support the firm in providing functional services (low-profit margins, less variety, and high volume). So, the firms that aim for operational efficiency should focus on building supply chains that are efficient. Based on the arguments above, we hypothesize the following:

> **Hypothesis 2:** Firms with efficiency operant resources operating within an efficient supply chain, outperform firms with efficiency operant resources operating within a responsive supply chain.

Innovation and efficiency

Firms that simultaneously offer innovative and functional products should adjust their supply chain base according to the innovativeness or the efficiency of the product (Gligor, 2016). Supply chain agility is "the firm's ability to make quick adjustments to its supply chain to respond or adapt to changes, opportunities or threats in its environment" (Gligor, 2016, p. 525). Agility is the fundamental characteristic of a supply chain and is needed for survival in turbulent and volatile markets (Agarwal et al., 2007) and is positively associated with a firm's performance (Gligor, 2016). Supply chain agility is different from supply chain responsiveness. Supply chain agility of a firm allows it to be either more responsive or more efficient depending on the product and external environmental characteristics (Gligor, 2013). While operating in an environment that may either demand innovative or functional services, firms need to develop supply chain agility to achieve the desired supply chain fit. Firms are under high pressure to improve their performance by offering products with high operational efficiency, and simultaneously, to be flexible enough to offer innovative products (Yusuf et al., 2004). Yusuf et al. (2004) also identified certain resources that are influential in integrating efficiency and responsiveness into a supply chain, which are listed as operant resources by Madhavaram and Hunt (2008). Certain resources contribute to supply chain agility (Swafford et al., 2006), some of which are listed by Madhavaram and Hunt (2008). Supply chain agility can be achieved through information technology integration and flexibility (Swafford et al., 2008). All these points toward the fact that certain operant resources can help a firm in devising agile supply chains and that have significant performance implications.

Innovation-efficiency operant resources will simultaneously contribute to innovation and functional services. It is empirically proven that while operating in environments that demand innovation and efficiency simultaneously, firms that have agile supply chains outperform those that do not have agile supply chains (Gligor, 2016). Therefore, we hypothesize that:

> **Hypothesis 3:** Firms with innovation-efficiency operant resources operating within an agile supply chain outperform firms with innovation-efficiency operant resources operating within an efficient or responsive supply chain.

The theoretical model (Figure 1) summarizes our hypotheses and is based on the strategic consistency between a firm's operant resources and its supply chain characteristics. The firm performance is the firm's return on assets (ROA).

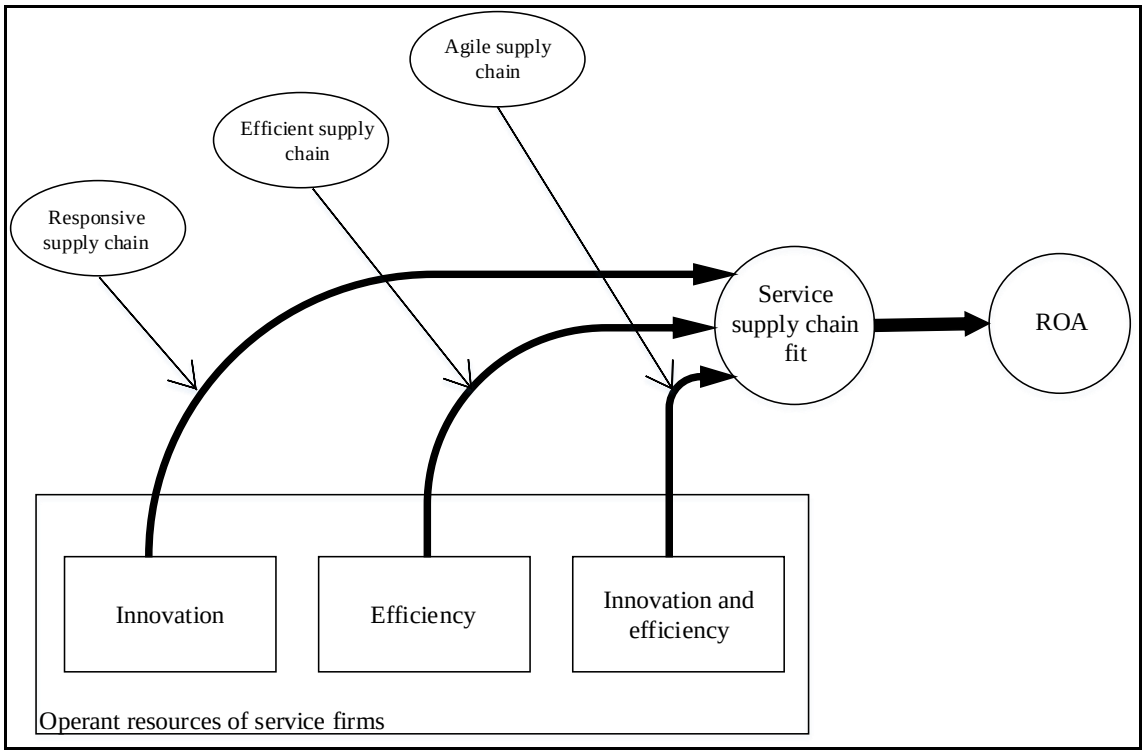

Figure 1 – Research Model

Research method

We list operant resources (Madhavaram and Hunt, 2008) and cluster firms according to their ability to contribute towards innovation and efficiency based on the firms' availability of operant resources. We validate this framework using a multi-method approach involving survey research and semantic analysis of publicly available data. This approach enhances the validity of results through triangulation.

We developed a survey scale to measure the firm's operant resources. Two sets of academic experts tested the questionnaire for validity. They reviewed the questionnaire for ambiguity, clarity and most importantly the item's ability to represent the constructs. We provided the conceptual definitions of the resources to them for judging the items' validity. We adapted Wagner et al.'s (2012) and Gligor's (2016) survey scales to measure supply chain characteristics of responsiveness and agility, respectively. We identified 26 items to measure firms' availability of operant resources and 19 items to measure firms' supply chain characteristics. As part of a pilot study, we emailed an internet-based survey questionnaire containing these items to 100 top-level managers of service firms. The survey generated 40 responses, out of which 25 were usable.

Findings and conclusions

The pilot test helped us to identify poor performing items. All the items exceeded cut-offs value of 0.70 for alpha, and factor analysis in SPSS showed cross-loading between some items. Thus, we eliminated 12 items, added attention-checks, and developed the final questionnaire with 33 items for the main study.

We measure supply chain characteristics (responsiveness, efficiency, and agility) of firms and firms' financial performance using the questionnaire survey. We use return on assets (ROA) to assess firms' financial performance (Wagner et al., 2012). We also conduct a semantic analysis of publicly available data to validate the findings of the survey.

Strategic fit of service supply chains conceives operant resources as the highest order resources that a firm can possess and we plan to assess its impact on firm performance. We developed hypotheses on the basis of the concept that service supply chain fit is the strategic consistency between a firm's operant resources and its supply chain characteristics. A multi-method approach will be used to collect the required data.

Our study will explain how service firms differ in competitive advantages on the basis of their operant resources. Our concept of service supply chain fit will aid service firm managers to understand the significance of intangible operant resources for their firm and identify, and explore, these resources to extract their maximum potential for achieving competitive advantage in their market.

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