Journal of Purchasing and Supply Management 24 (2018) 1–20

Contents lists available at ScienceDirect

Journal of Purchasing and Supply Management

journal homepage: www.elsevier.com/locate/pursup

Co-alignment of supplier quality management practices and cognitive maps – A neo-configurational perspective

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ARTICLE INFO

Keywords:
Neo-configurational perspective
Supplier quality management practices
Cognitive maps
Emerging market sourcing
Fuzzy-set qualitative comparative analysis
Linguistic inquiry and word count

ABSTRACT

Much of the previous research on the 'purchasing practice–performance link' rests on the notion of "net effects," which assumes that specific practices independently of each other impact outcomes. This study challenges this core tenet by adopting a *neo-configurational perspective*, exploring how different combinations of factors (called "configurations") affect outcomes. Another limitation of extant studies on the 'purchasing practice–performance link' is the narrow focus on practices; more recent behavioral supply management research finds the behavior of managers to be critically influenced by cognitive maps—the lenses through which managers perceive, simplify, and interpret the world. Focusing on supplier quality as a core aspect of the broader 'purchasing practice–performance link', this study explores how *configurations* of different supplier quality management (SQM) practices and SQM-related cognitive maps help firms to manage supplier quality. It uses *fuzzy-set qualitative comparative analysis (fsQCA)* to identify SQM configurations and a *cognitive-linguistic approach* for the computerized text analysis of purchasing managers' cognitive maps in the context of Western companies sourcing from Chinese suppliers. The configurational fsQCA analysis identifies four different configurations associated with overcoming barriers to SQM in emerging markets. SQM-related cognitive maps prove to be a critical component in these four configurations.

1. Introduction

The purchasing and supply management (PSM) literature has empirically demonstrated positive links between specific PSM practices and buying firm performance (Foerstl et al., 2016; Zimmermann and Foerstl, 2014). Although this research has helped to advance our understanding of the 'PSM practice–performance link', PSM research to date still demonstrates "a limited understanding of the *interplay* of different PSM practices en route to buying firm performance" (Foerstl et al., 2016, p. 351, emphasis added). One reason is that much of the previous research on the effects of PSM practices rests on the notion of "net effects" (Misangyi et al., 2017; Ragin, 2008) – that is, that specific PSM practices *independently* of each other lead to the outcome of interest. We challenge this core tenet by adopting a *neo-configurational perspective* (Misangyi et al., 2017), which has recently emerged in the broader management literature as an effective theoretical perspective to explain previously ambiguous results in situations where causation is complex (Fiss, 2011; Greckhamer et al., 2008). By accounting for co-alignment, or fit, among multiple factors, a neo-configurational perspective explores how different combinations of factors (called "configurations") affect outcomes of interest. This perspective suggests that different combinations of PSM practices influence the overall effectiveness of PSM strategies (e.g., Flynn et al., 2010; Paulraj et al., 2012), rather than the sum of the net effects of individual PSM practices.

A second limitation of extant studies on the 'PSM practice–performance link' is that they focus exclusively on PSM practices (Croson et al., 2013; Schorsch et al., 2017). The key explanatory factors for differential supply chain performance commonly are expected to be the observable and activity-oriented PSM practices, but researchers have neglected other factors that, together with SQM practices, might affect supply chain performance. A growing body of behavioral supply management research (e.g., Eckerd et al., 2016; Kaufmann et al., 2017; Stanczyk et al., 2015) has begun to highlight the need to complement the traditional perspective on activities and practices with one on managerial cognition – how managers think, make sense of contexts, and make decisions (Maitland and Sammartino, 2015b). Recent findings on managerial cognition in the broader management literature show that managers' behavior is particularly influenced by their *cognitive maps* (e.g., Maitland and Sammartino, 2015b), which can be understood as lenses through which managers perceive, simplify, and interpret the world (Maitland and Sammartino, 2015a). Findings from recent qualitative research in PSM also suggest that cognitive maps

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https://doi.org/10.1016/j.pursup.2017.11.002
Received 26 March 2017; Received in revised form 28 October 2017; Accepted 4 November 2017
Available online 20 November 2017
1478-4092/

(e.g., of purchasing teams) *coevolve* with supply management practices, such as risk mitigation strategies (Kaufmann et al., 2016). Recognizing this interplay between cognitive maps and managerial behavior, we conjecture that cognitive maps – together with PSM practices – might be a critical factor in the configurations that are associated with supply chain performance.

In this article, we focus specifically on the *quality* aspect in the 'PSM practice–performance link' because it is a critical dimension in the flow of products from the supplier to the buyer. Moreover, the quality aspect lends itself to empirical investigation because it is widely observable in an immediate way (e.g., in the form of product quality problems). Empirical studies have found that *individual* supplier quality management (SQM) practices, such as supplier development or supplier integration, can have a positive net effect on quality performance (Kaynak and Hartley, 2008; Soares et al., 2017). SQM practices in this regard are defined as "various supply chain processes associated with managing the supply function in order to reduce the occurrence and effect of disruptions stemming from quality problems and failures" (Zsidisin et al., 2016, p. 909). However, existing research on the link between SQM practices and quality performance is subject to the same constraining assumptions as described for the 'PSM practice–-performance link' in the broader PSM literature: Different practices have rarely been investigated in terms of their joint effects, and research has shed little light on the interplay between practices and cognitive factors.

In view of these omissions, this study seeks to answer the following research question: *How do configurations of different SQM practices and SQM-related cognitive maps help firms to manage supplier quality?* To address this question, we conducted an in-depth, qualitative study (Dubois and Salmi, 2016) into the SQM of 17 Western-based manufacturing companies sourcing from Chinese suppliers. "Western-based" in our study means that the firms' headquarters are located in North America or Western Europe. SQM in emerging markets such as China represents a particularly information-rich research context for several reasons. First, SQM in China is a phenomenon of high empirical relevance. Western companies source considerable portions of their purchasing spend from suppliers in emerging markets (Najafi et al., 2013). In doing so, they can face heightened supply quality risk (i.e., a higher probability of quality issues associated with a supplied component) (Steven and Britto, 2016; Zsidisin et al., 2016). Indeed, 53% of the non-food products recalled in the European Union in 2016 were produced or sourced in China (RAPEX, 2017). Second, empirical findings on the 'SQM practice–quality performance link' in emerging market sourcing are ambiguous and indicate that the efficacy of SQM practices is lower in emerging than in developed markets (Kull and Wacker, 2010; Wiengarten and Ambrose, 2017). Third, the cultural differences between Western buyers and Chinese suppliers likely entail differences in the exchange partners' "programming of the mind" (Hofstede, 1984, p. 13). SQM in emerging markets is therefore a phenomenon with complex cognitive and behavioral dimensions (Busse et al., 2016b; Stanczyk et al., 2017), which allows for an in-depth examination of interrelationships between cognitive and behavioral factors.

Our dyadic dataset includes 89 in-depth interviews, complemented by documents and observations. To explore configurations of SQM practices and SQM-related cognitive maps, we employ fuzzy-set qualitative comparative analysis (fsQCA) (Ragin, 2008), a configurational approach that analyzes how different combinations of factors (i.e., configurations) lead to an outcome of interest (Karatzas et al., 2016; Ragin, 2008). This approach is particularly well suited for the present study because it allows us to understand more fully how SQM practices and SQM-related cognitive maps work together as configurations. Because investigating managerial cognition empirically is challenging (Maitland and Sammartino, 2015b), we use a cognitive-linguistic approach that involves a computerized text analysis of our interviews to gain insights into purchasing managers' cognitive maps (Dooley, 2016). A cognitive-linguistic approach maintains that subtle differences in language reflect differences in cognition (Pennebaker et al., 2001).

The study therefore aims to make several theoretical contributions. First, we advance a *neo-configurational perspective* (Misangyi et al., 2017) for PSM research that shifts the attention away from a focus only on the net effects of individual factors and toward how the *combined effects* of multiple factors lead to outcomes of interest. The novel fsQCA methodology allows us to translate this configurational thinking into our research design. We identify four configurations of multiple SQM practices and SQM-related cognitive maps associated with our outcome of interest: overcoming barriers to SQM in emerging markets. In doing so, we contribute to a more nuanced understanding of the interplay of different explanatory factors in the 'PSM practice–performance link' (Foerstl et al., 2016), and we provide a starting point from which future research can delve more deeply into the interplay of cognition and actions in supply management.

Second, we contribute to *behavioral supply management* research (Eckerd et al., 2016; Kaufmann et al., 2017; Stanczyk et al., 2015) by showing how SQM-related cognitive maps are a critical component in each of these four SQM configurations. This finding suggests that researchers should study PSM practices in combination with cognitive factors when examining their effect on performance.

Third, we develop *middle-range theory* (Craighead et al., 2016) for SQM in emerging markets that provides managerially relevant insights for a phenomenon with high empirical relevance (Noshad and Awasthi, 2015; Stanczyk et al., 2017). Middle-range theory is more contextualized than grand theories, such as the resource-based view (Barney, 2012), and can be readily applied to an empirical context (Craighead et al., 2016). The four SQM configurations identified give a context-specific yet still parsimonious account of alternative strategies that firms can implement to successfully manage supplier quality in emerging markets.

In the following sections, we introduce the theoretical background, describe the research design and methodology, and synthesize and discuss the results. We conclude with suggestions for prospective research and implications for managers.

2. Theoretical background

2.1. A neo-configurational perspective

This study adopts a *neo-configurational perspective* (Misangyi et al., 2017) as a theoretical basis for identifying configurations of SQM practices and SQM-related cognitive maps that help firms to manage supplier quality. Configurational thinking has attracted growing attention in the management literature (e.g., Greckhamer, 2016; Misangyi and Acharya, 2014) and has recently been introduced to the PSM field (e.g., Karatzas et al., 2016; Timmer and Kaufmann, 2017). At its core, a neo-configurational perspective differs from conventional correlation-based approaches (e.g., multiple regression analysis) because it embraces *causal complexity*, which is characterized by three features: 1) conjunctural causation, 2) equifinality, and 3) causal asymmetry (Misangyi et al., 2017; Ragin, 2000, 2008). These features are described in the following paragraphs.

First, *conjunctural causation* means that combinations of interdependent factors (rather than the net effects of individual variables as in correlation-based approaches) cause the outcome of interest (Misangyi et al., 2017). This view of causality implies that outcomes rarely have a single cause but instead result from multiple, interdependent explanatory factors. For example, Timmer and Kaufmann (2017) use a configurational approach to investigate which combinations of factors lead to high levels of conflict minerals traceability at buying firms. They find that one of the configurations linked with high traceability – labeled "customer driven" – results from high demands from customers *and* the absence of brand equity *and* the use of conflict minerals governance (e.g., codes of conduct, third-party audits). This configuration shows that buying firms achieve high levels of conflict