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Eliciting and representing the supply chain strategy of a business unit

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Abstract

Purpose – The purpose of this paper is to propose a practical method to elicit – in a manner grounded in fact – the "as is" supply chain strategy that a business unit currently has in place. It also proposes a framework to represent the supply chain strategy of a business unit in a clear and actionable manner.
Design/methodology/approach – A framework to represent the supply chain strategy of a business unit was developed through inductive theory generation. A method to elicit the current, "as is" supply chain strategy of a business unit was developed through collaborative management research projects and validated by several third-party projects.
Findings – In different projects – many conducted by third parties – the method was found to be a useful approach to elicit the "as is" supply chain strategy of a business unit. Practitioners found value in representing a supply chain strategy as a conceptual system serving as a logical bridge between the overall strategy and the supply chain operations of the business units.
Research limitations/implications – The proposed framework may have limited scalability beyond a single business unit. The proposed method may be less useful when the supply chain strategy is undergoing a dramatic transformation, or when the participants from the company are either not fully engaged in the exercise or knowledgeable about the strategic rationale behind activities.
Originality/value – The paper provides an innovative approach to tap into the tacit knowledge of the organization to reveal the patterns of decisions underpinning its current supply chain strategy and to characterize the supply chain strategy of a business unit as a conceptual system.

Keywords North America, Europe, Supply chain strategy, South America, Conceptual research, Strategy elicitation, Strategy representation

Paper type Research paper

1. Introduction

Supply chain strategy is important for a business unit

Supply chain strategy has long been considered important. Three decades ago, Shapiro and Heskett (1985) described "strategy" as one of the two facets—in fact, the most important one—of what was then called logistics. A few years later, in a pioneering article on supply chain management, Stevens (1989) claimed that an integrated supply chain strategy is necessary for a supply chain[1] to realize its potential and provide the business with a competitive advantage.

Since the turn of the century, supply chain strategy has become "an increasingly important topic" (Morash, 2001, p. 50). Varma *et al.* (2006, p. 226) claimed that "top performers have a clear supply chain strategy aligned with overall business objectives and customer requirements." Narasimhan *et al.* (2008, p. 5234) asserted that "in the competitive global environment in which firms operate today, developing a successful supply



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chain strategy is critical to a firm's long-term competitive success." More recently, Roh *et al.* (2014) stated that "supply chain practices solidly built upon a supply chain strategy can enhance the firm's and its supply chain partners' business performance and thus their competitiveness."

Because of this, it is important for practitioners to be able to discuss their own supply chain strategy in a substantive and factual manner. Many events may move a business unit to discuss its supply chain strategy. Aitken *et al.* (2003), for example, argued that changes to the supply chain strategy are necessary as a product proceeds through its life cycle, in order to maintain competitiveness. Other motivators may be changes inside the business unit, such as the arrival of a new CEO with a different strategic vision for the company, or changes in the business environment, such as new regulations, new technologies, new competitors and entry to new markets.

Discussing a specific supply chain strategy is difficult

Despite its importance, discussing a specific supply chain strategy in a substantive and factual manner remains a difficult task for practitioners, and—as a consequence—"it is often the case that high-level discussions of supply chain strategy are completely void of facts" (Hicks, 1999, p. 27). Part of the difficulty of discussing the supply chain strategy of a business unit may stem from what Bakir and Bakir (2006) called the "elusiveness" of strategy. But it may also be that the difficulty of discussing supply chain strategies in a substantive manner results from the fact that "many questions remain unanswered about how best to characterize supply chain strategies" (Frohlich and Westbrook, 2001).

An important question is how to represent a supply chain strategy in a clear and actionable manner. To better understand what this question entails, imagine a scenario where a practitioner, for example the new head of supply chain in a business unit, wants to discuss with her staff a new supply chain strategy that she is considering. It will be assumed here that lack of information is not a problem: all the relevant aspects of the new supply chain strategy are known to her, since it is her creation. The question, then, is how can this practitioner articulate this supply chain strategy (i.e. express it distinctly), conceptualize it (i.e. represent it with concepts) or characterize it (i.e. define it in form or describe its distinctive features), so that her staff can understand it well enough to engage her in an intelligent and substantial discussion about its merits and flaws?

Supply chain strategy is not always well defined or explicit

Despite the availability of representational frameworks in the supply chain literature (e.g. Cigolini *et al.*, 2004; Frohlich and Westbrook, 2001; Perez-Franco, 2010, etc.), supply chain strategies are not always well defined in practice. Harrison and New (2002) conducted an international survey on supply chain strategy, targeting "senior managers with responsibility for supply chain operations" within "relatively large business units" "from all the major industrial sectors." A "major issue to be investigated in the survey was the current state of supply chain strategy" and its "relative importance" within the business unit. From the 258 usable responses they received, more than half (58 percent) of the respondents reported that their business units lacked a well-defined supply chain strategy. This percentage broke down as follows: 43 percent of all units reported having supply chain strategies that "lacked detail," with "only some elements defined," and 15 percent reported that their supply chain strategies were either "patchily defined with poor definition" or altogether "non-existent." This cannot be entirely explained as a lack of interest in supply chain strategy: a total of 180 business units reported that supply chain strategy was "an important or very important factor" for them, and almost half of these (47 percent) lacked a well-defined supply chain strategy.

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Additionally, supply chain strategies are not always made explicit. Perez-Franco (2010, p. 83) reported that out of 20 case studies about supply chain excellence prepared in 2005 for the MIT Supply Chain 2020 Project, only two (10 percent) made explicit reference to the firm's supply chain strategy, despite the fact that the cases were focused on the supply chain practices of world-class firms. In comparison, 18 of the 20 cases (90 percent) explicitly stated the firm's business strategy. Dittmann (2012) reported on a "survey on the state of supply chain strategy," conducted with his colleagues at a Supply Chain Forum meeting. "Overall, 62% of the respondents said that they have a supply chain strategy, but, upon further probing, only 30% of those respondents confirmed that their strategy was a documented, multiyear strategy. Thus only 18% of companies (30% of 62%) can produce an up-to-date supply chain strategy document with a detailed project road map that goes at least three years" (Dittmann, 2012, p. 4).

What is a supply chain strategy?

What about the other 70 percent of that 62 percent? As Dittmann pointed out, these firms are not able to produce a "documented, multiyear" supply chain strategy. But does this mean that these firms lack a supply chain strategy altogether? Could it be, instead, that what they understand as a supply chain strategy is something other than "a detailed project road map that goes out at least three years," as expressed by Dittmann (2012)?

Mintzberg (1978) warned against "the notion that strategies […] are deliberate plans conceived in advance of the making of specific decisions." By defining strategy, instead, as "a pattern in a stream of decisions," Mintzberg said, one is able to research strategy in a broader descriptive context and to "study both strategies that were intended and those that were realized despite intentions." Similarly, Andrews (1987) stated that "strategy is the pattern of decisions in a company" that "reveals" its goals, and Porter (1996) stated that "the essence of strategies is in the activities."

In this same vein, but in the supply chain realm, Narasimhan *et al.* (2008, p. 5234) stated that a "supply chain strategy can be viewed as the pattern of decisions related to sourcing products, capacity planning, conversion of raw materials, demand management, communication across the supply chain, and delivery of products and services." Cigolini *et al.* (2004, p. 12)—after conducting an extensive meta-analysis of over a 100 case studies in supply chain management—claimed that "what companies actually did, rather than what they claimed their strategic intent to be, is the best clue to reveal their very supply chain management strategies."

There is no consensus definition of supply chain strategy in the literature. However, for the purpose of this paper, the supply chain strategy of a business unit will be defined—following the advice of Mintzberg (1978)—as the patterns of decisions (Narasimhan *et al.*, 2008) related to the supply chain activities of the business unit (Cigolini *et al.*, 2004), as well as the supply chain's objectives and policies (Stevens, 1989). This definition of supply chain strategy as a set of both objectives and decisions, of both goals and actions, has a precedent in the literature in Brun and Castelli (2008).

This now leads to the research question that will be addressed in this paper:

RQ1. How to elicit an existing supply chain strategy, as is, based on facts.

To better understand this question, imagine a scenario where a practitioner, the head of a supply chain, wants to discuss with her staff the current supply chain strategy of her business unit. On the one hand, it may be the case that her business unit has what Harrison and New (2002) called a "clearly defined" supply chain strategy, but she has doubts about whether this strategy as it is stated corresponds to the strategy as it is executed in the pattern of decisions of the supply chain. On the other hand, it may be the case that her business unit has what Harrison and New (2002) called a "patchily defined" or "non-existent"

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(or, put another way, tacit) supply chain strategy. The question, then, is as follows: how can this practitioner elicit the current supply chain strategy of her business unit, in a manner that is grounded in fact?

2. Literature review

For decades, supply chain strategy has been presented as a topic in the specialized supply chain literature. Recent articles, for example, have examined supply chain strategies within particular industries—such as the food industry (Lyons and Ma'aram, 2014) and the fashion industry (Brun and Castelli, 2008; Kim, 2013)—and the relationship between supply chain strategy and other strategies of a company—such as the global financial strategy (Blackman *et al.*, 2013) and the environmental strategy (Wu *et al.*, 2014)—as well as the link between supply chain strategy and a product's life cycle (Aitken *et al.*, 2003; Patil *et al.*, 2010) or the quality of a cluster's information technology (Zhou *et al.*, 2014). However, only a handful of articles have addressed—even in passing—the questions of how to elicit and represent a supply chain strategy. The most relevant approaches found in the literature are discussed below.

Arcs of integration

Frohlich and Westbrook (2001) envisioned supply chain strategies as "arcs of integration" and proposed that "different supply chain strategies can be empirically classified into at least five valid types, defined by the direction (toward suppliers and/or customers) and degree of integration." Thus, for example, the supply chain strategy of a given firm could be characterized as having a narrow arc of integration with customers and a broad arc of integration with suppliers. This framework helps characterize an important quality of a firm's supply chain strategy, namely the degree of integration of a firm with its suppliers and customers. However, it fails to capture how the supply chain strategy relates to the firm's overall business strategy or to its supply chain operations in the field. It is also not clear how the characterization of a supply chain strategy as an arc of integration can serve as an actionable starting point for a substantial evaluation of a business unit's supply chain strategy.

Techniques–tools matrix

Also focusing on the interface between the firms in a supply chain, Cigolini *et al.* (2004) explicitly asked, "How can [a supply chain strategy] be operationally defined and represented?" They developed a partial catalog of "techniques" that operate at the interface between companies, and then identified in the literature the supply chain "tools" that support the implementation of these techniques. They proposed creating a "techniques–tools matrix," namely, a matrix with the supply chain techniques as row headers and the supply chain tools as column headers. The matrix contains a check mark in each cell where a tool provides support to a technique. Cigolini *et al.* (2004) stated that "perhaps the most promising usage of the techniques–tools matrix is in its inherent ability to synthesize and represent SCM strategies."

The techniques–tools matrix is significant as a pioneering effort to operationally define and represent a supply chain strategy. Nevertheless, it suffers from important limitations. The matrix fails to capture how the supply chain techniques and tools relate to the firm's overall strategy, and—by focusing solely on the interface between companies—it deliberately ignores the activities that take place inside the firm. Also, it does not make any provision for the tacit nature of some supply chain strategies: by relying on a catalog of predefined supply chain techniques, the matrix builder may be tempted to pick items that are appear similar to those practiced, even if not grounded on the activities of the firm.

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Segmentation tree

Brun and Castelli (2008) presented a framework to map the supply chain strategy of a single firm. Working on the problem of supply chain strategy in the fashion industry, they proposed a "model for [supply chain] strategy segmentation within a portfolio approach," which they called a "segmentation tree." This model is based upon the assumption that three elements, namely, product, brand and retail channel, suffice to provide "a complete overview of the fashion industry." By segmentation, the authors refered to whether a firm applies "the same strategy to all its business segments" or instead "segment[s] its strategy depending on [any of] the three proposed elements." The authors suggested that a supply chain strategy in the fashion industry would be sufficiently defined by knowing how this segmentation takes place on the basis of the three elements, and the order in which the elements were prioritized: "it can be supposed that the overall supply chain strategy of a company could be described by a segmentation tree" (Brun and Castelli, 2008). This framework provides guidance for mapping an important attribute of supply chains, namely segmentation (Anderson *et al.*, 2007).

However, segmentation based solely on the customer-focused attributes may not completely characterize the supply chain of an apparel firm: other activities, such as demand forecasting and sourcing, are also critical determinants of the performance of a fashion retailer's end-to-end supply chain (Phadnis and Fine, 2017). In addition, the framework also fails to capture how the supply chain strategy of a firm relates to its overall strategy or to its supply chain operations.

Customer–product–process–resource (CPPR) framework

Martinez-Olvera and Shunk (2006) proposes the CPPR framework, built upon the premise that there are six "business models" that a manufacturing firm may follow. The six models are engineer to order, make to order, make to order and assemble to order, assemble to order, make to stock, and make to forecast. Each one is associated with a series of specific values for what they called "supply chain structural elements," which in turn define a supply chain strategy. Martinez-Olvera and Shunk (2006, p. 4517) presented "a realignment methodology," which consists of four steps. Step 1 of this methodology, to "assess the *as-is* situation," is relevant to the research question of this study. They describe it as "establishing" the "current way of operation" of the company "using the configuration attributes" given by the CPPR framework. Even though the method seeks to characterize supply chain strategy as practiced, its reliance on a predetermined set of "supply chain structural elements," in predefined areas could lead one to overlook the variables in the areas not covered by CPPR that may be important to a given firm.

Conceptual system assessment and reformulation (CSAR)

Perez-Franco *et al.* (2016) presented CSAR as a "holistic approach to supply chain strategizing" that can be used to elicit and represent supply chain strategy. This framework allows one to map the supply chain strategy of a business unit, as practiced, by studying its supply chain activities, as well as to link the activities to the business unit's strategy. Because CSAR does not provide a catalog of predefined areas or activities to choose from, one is not constrained to define the supply chain strategy using a standard set of elements, but must instead map the as-is supply chain strategy based on the actual practices of the business unit, in the areas considered relevant. The trade off in this approach, then, is that the person(s) conducting the mapping exercise needs to articulate and label each supply chain activity, without a a catalog of common industrial activities to serve as reference.

In summary, a variety of frameworks are available in the extant literature for representing the supply chain strategy of a business unit. Among the ones reviewed here, the CSAR framework is best suited to answer the research question of this study, due to its

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focus on the supply chain strategy of a single business unit and ability to map the as-practiced supply chain strategy without being constrained by a standard set of elements. However, Perez-Franco *et al.* (2016) did not provide a detailed method for eliciting the supply chain strategy. The present study seeks to fill this gap by providing an actionable method for eliciting supply chain strategy of a business unit, in line with the CSAR framework.

A secondary contribution of the actionable method presented in this study is that the method's output (called functional strategy map) can be used as a measurement device in the empirical studies of strategy–structure–processes–performance (SSPP) in the supply chain management literature. The SSPP studies extend the strategy–structure–performance paradigm from the strategic management literature (e.g. Chandler, 1962; Rummelt, 1974) to the domain of supply chain management, to examine how structural choices in supply chain strategy and supply chain processes influence performance of the supply chain. The SSPP literature is vast but tangentially related to the present study, and hence is not reviewed here (e.g. Chen *et al.*, 2009; Chow *et al.*, 1995; Daugherty *et al.*, 1998; Defee and Stank, 2005; Nakano and Akikawa, 2014; Patel *et al.*, 2013; Rodrigues *et al.*, 2004, etc.).

In the following section, we describe the collaborative management research (CMR) projects that yielded the method for eliciting the supply chain strategy of a business unit presented in this work. The CSAR framework (Perez-Franco *et al.*, 2016), which provides theoretical foundation for the strategy elicitation method, is described after the research method. Even though we present the CSAR framework and the elicitation method in a linear fashion, the developments of the two were highly intertwined in our action research study. As a result, the research method described here has significant commonality with the method described in Perez-Franco *et al.* (2016, p. 387).

3. Research method

The research question of this study (*RQ1*) is practical in nature and requires to be studied in the context of a field setting. Given the relatively nascent nature of this topic, the method used to answer the research question needs to take an open-ended, qualitative approach that involves collecting qualitative data from "field sites relevant to the phenomena of interest" and analyzing it to identify patterns that can be formalized into a "suggestive theory" (Edmondson and McManus, 2007). Management scholars note that, for studying strategy processes and tools, "there is little substitute for spending time in the field watching organizational members use them" (Jarzabkowski and Kaplan, 2015, p. 552). Therefore, we designed the research study to be conducted in collaboration with supply chain executives that were interested understanding the supply chain strategy of their business unit. The goal of participating executives was to understand the specific supply chain strategy of their business unit, while our goal was to develop a theoretical understanding of what supply chain strategy means and how one can elicit the supply chain strategy being practiced by the firm. This research approach, in which practicing managers and management researchers can engage in joint reflection that clarifies the practice of supply chain strategy, is described as CMR (Pasmore *et al.*, 2008, p. 11).

CMR is defined as "an emergent and systematic inquiry process, embedded in an agreed-upon partnership between actors with an interest in influencing a certain system of action and researchers interested in understanding and explaining such systems" (Pasmore *et al.*, 2008). The origins of CMR can be traced back to the works of action research pioneers (Shani *et al.*, 2004). Action research, defined by Thorpe and Holt (2007) as "an informed investigation into a real management issue […] resulting in an actionable solution," is—according to Näslund (2002)—"especially suited for an applied field such as logistics," since it strives "to advance both science and practice."

The research study that is reported both in this paper and in Perez-Franco *et al.* (2016) started with an effort to develop what Yin (2013) called a preliminary "understanding—or

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theory—of what is being studied," which will be referred to here as a working framework of supply chain strategy. This effort included four stages: early exploratory interviews; the analysis of a pool of existing case studies; the development of an early framework through a first CMR project; and the testing and refinement of the framework through a second CMR project.

Early exploratory interviews

Five exploratory interviews were conducted with supply chain managers from multiple firms in different industries to explore their view of supply chain strategy and its role in their firms. The interviewees were senior and middle managers, with titles such as vice-president or plant manager. Their answers suggested that the purpose of the supply chain strategy was largely to support the business strategy. This perspective is consistent with the view in the seminal works in operations strategy, which consider the role of operations strategy is to support the company's competitive strategy (e.g. Garvin, 1992; Skinner, 1969).

Analysis of existing case studies

To provide a better understanding of how—if at all—the supply chain strategy and the business strategy are expressed in the setting of a supply chain function, a pool of 20 publicly available case studies on the subject of supply chain excellence, prepared in 2005 as part of the MIT Supply Chain 2020 Project, was analyzed. The analysis was performed using a variety of techniques borrowed from the toolkit of qualitative research, particularly from the grounded theory tradition (Easterby-Smith *et al.*, 2002, Glaser and Strauss, 1967). This included techniques such as open and categorical coding (Charmaz, 2014; Goulding, 2002) to remain close to the data and then identify deeper concepts, discourse analysis (Eriksson and Kovalainen, 2008) to interpret the meaning behind the strategy discourse, summary tables (Eisenhardt, 1989; Eisenhardt and Graebner, 2007) to compare and contrast key features of the cases and conceptual maps (Miles and Huberman, 1994) to summarize the emergent framework in a graphical form. The details about this analysis are extensively presented in Perez-Franco (2010).

The analysis revealed that in 18 out of 20 cases, an explicit business strategy was provided; in the remaining two cases, it could be inferred from the text. A qualitative analysis of the business strategy statements presented in these cases suggests that when the business strategy is given to the supply chain function as a strategic imperative, it includes concepts of two types: a brief statement of the central idea of the business strategy and several (typically three to five) statements that expand and elaborate upon it. These two are termed Core and Pillars, respectively, in the CSAR framework.

Although only 2 of the 20 cases made an explicit reference to a supply chain strategy, a careful examination of the remaining 18 cases revealed that—in the description of how a supply chain operates (i.e. in the description of its activities, choices or policies)—several interconnected, recurrent themes could be found regarding the supply chain and related functions, whose stated purpose was to make the business strategy possible and successful. A conceptual map was developed showing how general statements about the business strategy related to specific statements about operations in the field. An additional two layers of concepts were identified: guiding principles driving the functions and general statements about how operations are conducted. These two are termed Principles and Imperatives, respectively, in the CSAR framework.

Developing an early framework (2007–2009)

This emerging framework was applied in a CMR project with a specialty chemicals manufacturer, Unit-X (pseudonym), to understand how describing supply chain strategy in

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terms of Principles and Imperatives can help logically connect the business strategy and the operations in the field. The conceptual map developed from the interviews was validated in three panel discussions, each lasting approximately three hours, with a team of eight supply chain managers from the supply chain function of the business unit.

The close collaboration with the business unit facilitated the development of a conceptual map that was much richer in detail than the early ones made with secondary data. This highlighted the need for adding an extra layer in the framework that was not previously apparent: specific statements about policies and choices that are in place to support the Imperatives. These are termed Policies and Choices in the CSAR framework. The collaborative research project with Unit-X helped refine the framework to include five layers, as shown in Figure 1[2].

Testing and refining the framework

The above framework was tested and refined in a second CMR project conducted with Libica (pseudonym), a distribution company. The project lasted seven months, three of which were dedicated to building the conceptual map. Data collection for the map included 22 qualitative interviews, scheduled for one hour each, on the subject of the business unit's activities. Validation of the map was conducted during a panel discussion, scheduled for four hours, with a team of 24 managers, mostly from the supply chain function, but also including related functions.

The mapping exercise with Libica provided a deeper understanding of the most basic way in which the different layers relate to each other. These basic relationships are described in Figure 2.

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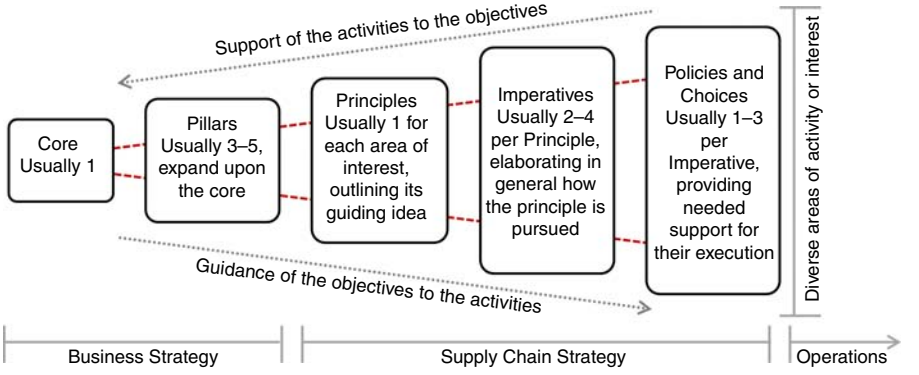

Figure 1.
Working framework of the supply chain strategy of a business unit

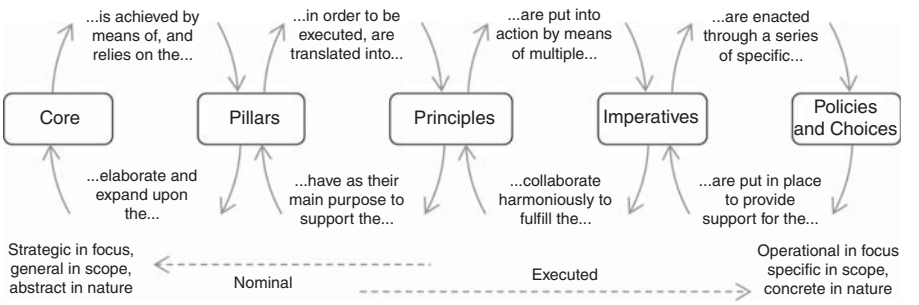

Figure 2.
Basic relationships between different layers of the framework

The second project also led to greater awareness of the distinction between two concepts, which we call nominal and executed (shown at the bottom of Figure 2). Nominal concepts come from the business unit's stated objectives; among them are the Core and the Pillars. Executed concepts are inferred from the activities of the business unit; among them are the Policies and Choices and the Imperatives. Principles can be of either type: in some instances, they are explicitly stated by the business unit as objectives (nominal), while in others, they have to be inferred from the activities of the business unit (executed). The nominal concepts will be referred to, collectively, as the nominal strategy and the collection of executed concepts as the executed strategy.

The above CMR studies produced two types of scholarly output. On one hand, they enriched our understanding of the concept of supply chain strategy and its relationship with the business strategy. This understanding is formalized into a theoretical framework of the CSAR by Perez-Franco *et al.* (2016). On the other hand, they helped delineate a detailed process for eliciting supply chain strategy by interviewing supply chain managers of a business unit. This process is presented in Section 4.

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4. A method for eliciting a supply chain strategy

Through careful examination of the activities that were undertaken to elicit the supply chain strategies and build the conceptual maps during the research projects, ten steps were distilled and articulated as actionable instructions to elicit the "as is" supply chain strategy of a business unit. The result is what will be called here the protocol of the functional strategy mapping (FSM) method. This protocol is presented as Appendix 1 (available online)[3], and a brief summary is provided below. This is the second scholarly output of the CMR projects, and the primary contribution of this study.

Step 1: define scope of the project

Identify which functions, beside the supply chain, will be included. Then identify individuals within these functions to be interviewed. Include individuals directly involved in crafting the business strategy, and others from the two closest hierarchical levels reporting to these.

Step 2: conduct qualitative interviews

Start the interviews by asking the individuals about the activities they perform, and later steer toward the supply chain activities of the business unit. The individual serves as vehicle to tap into the business unit's practices; specific activities serve as gateways to elicit the supply chain strategy.

Step 3: identify areas of activity and specific activities

Qualitatively analyze all the interviews to identify tentative areas of activity. Inside each area, look for references to specific supply chain activities of the business unit. For each activity, look for means or details that support its factuality. Retain only the activities for which specific details (such as policies or choices) are found. Likewise, retain only the areas of activity for which well-supported specific activities are found. Prepare a hierarchical summary for each area of activity.

Step 4: translate each hierarchical summary into a partial map

Develop a partial map, i.e., a diagram showing concepts and the relationships between them, based on the hierarchical summary for each area. Given the hierarchical structure of the summary prepared in Step 3, its translation into a partial map is straightforward.

Step 5: validate the partial maps through panel discussion
Confirm that the partial maps are a fair representation of what the business unit's supply chain strategy does, by presenting them to a panel of members of the business unit possessing in-depth knowledge of the relevant areas. Revise the partial maps based on the panel's feedback to improve their validity.

Step 6: combine the partial maps of strongly related areas
Examine the collection of partial maps to find strongly related areas. Combine the partial maps that deal with strongly related areas into a single partial map, with the objective of reducing the complexity of the final output.

Step 7: add a layer of sub-areas when needed for simplicity
If the number of items in the top two layers is unreasonably large, some consolidation is necessary. Create an intermediate layer between the areas and activities, and populate it with sub-areas, where each sub-area combines the ideas behind several activities grouped under it.

Step 8: create an abstract of the stated business strategy
Negotiate access to written documents stating the business unit's overall strategy. Identify in these documents both the central strategy statement (the Core) and the set of expanded strategic objectives (the Pillars) of the business unit. Map them conceptually.

Step 9: assemble the functional strategy map (FSM)
Assemble the FSM out of the elements prepared thus far to represent the conceptual system of business and supply chain strategy graphically, using a collection of statements written inside boxes with lines connecting the boxes of closely related ideas. A template for building an FSM is provided in Appendix 1. FSM can be built by placing the nominal map prepared in Step 8 on the left-hand side and the first two or three layers of the partial maps prepared in Steps 2 through 7 on the right-hand side.

Step 10: validate the FSM through panel discussion
Validate the FSM by seeking feedback from individuals knowledgeable about the business unit's supply chain activities. Discuss the individual feedback anonymously in a panel with the respondents and revise the FSM, as needed, to improve its validity.

Illustrative example
A sample of an FSM representing the supply chain strategy of Libica is presented in Figure 3, with all sensitive information duly disguised.

Figure 3 shows only four out of the five layers of the map; the fifth layer, consisting of the policies and choices, has been suppressed due to space constraints. A detailed discussion of how this FSM was created, following the steps of the protocol, is provided in Appendix 2 (see Foonote 3). A larger example, a six-level FSM representing the supply chain strategy of Zara circa 2002 (based on data from Ghemawat and Nueno, 2003), is provided online[4]. Notice that, in these examples, lines connecting Pillars and Imperatives are avoided. This is done for the sake of simplicity: there are usually so many relationships at the interface between nominal and executed strategies that making them explicit would result in too many criss-crossing lines.

5. Testing and validation in the field

To our knowledge, at least 14 field projects have applied the FSM method to date. This section gives a brief description of how these projects have contributed to the testing and validation of the method, and summarizes the feedback received.

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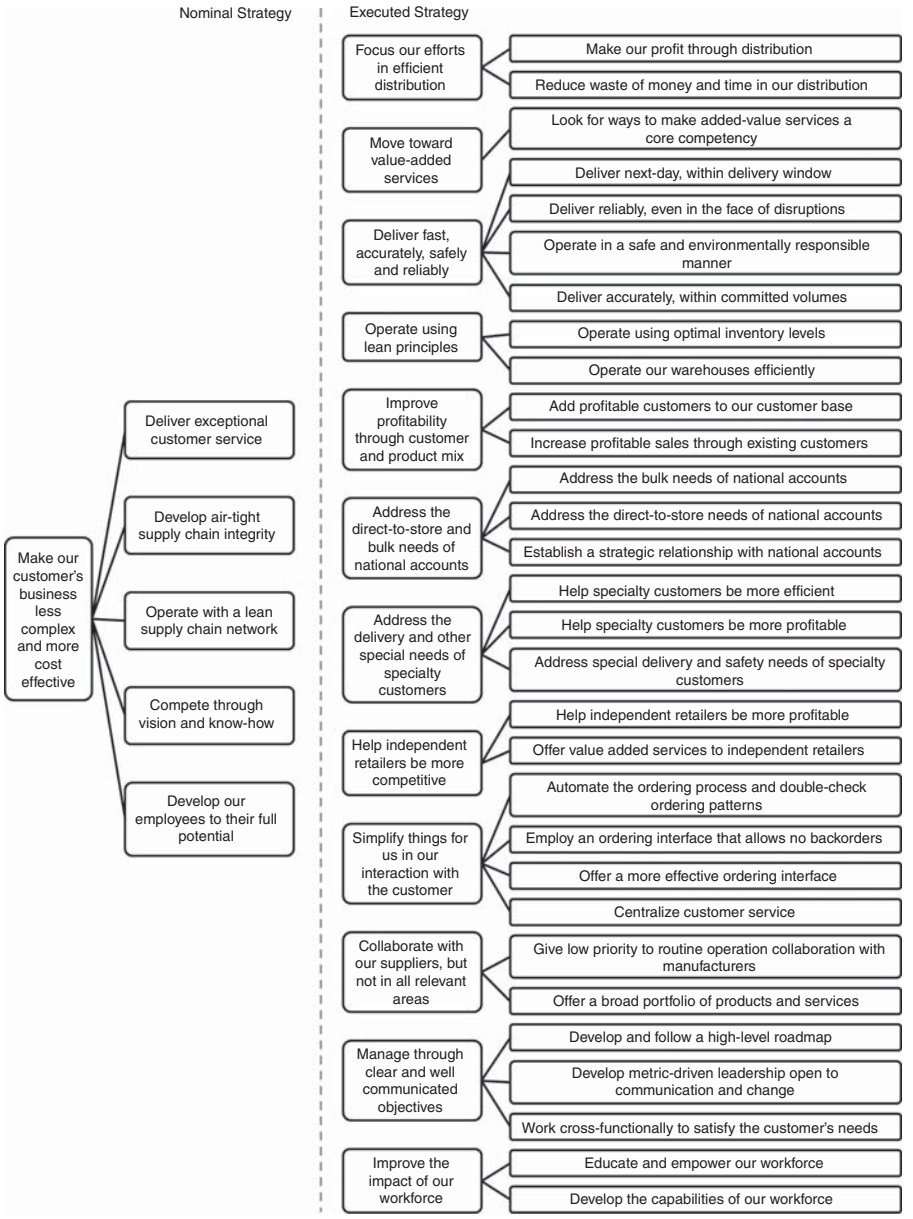

Figure 3.
Validated FSM for Libica (showing four levels)

First-hand testing and validation

The research projects with Unit-X and Libica allowed for early, first-hand tests of the FSM method as an approach to elicit and represent the supply chain strategy of a business unit. The results highlighted two important success factors of the new method: first, it managed to elicit the supply chain strategy of the business unit, not as it should be, but as it is; second, the

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FSM was deemed an actionable conceptualization of the supply chain strategy of the respective business units by the executives in charge. Both of these aspects are expanded upon and discussed below.

Eliciting the supply chain strategy "as it is"

That the FSM method was able to elicit the supply chain strategy of the business unit as it is, based on facts, became evident during the validation of the partial maps and the final FSM of both Unit-X and Libica. Across the table, while the teams were discussing the evolving map, it was a common occurrence to hear a question like: "Do we actually do this?" Sometimes the answer would be "Yes," other times it would be "No," and in yet others it would be "Well, kind of […]," almost always followed by a rich, nuanced conversation about what the business unit actually does, and why. The ideas and purposes behind the activities, as well as the factuality of the activities themselves, were the subject of clarifying and substantial discussion.

Actionability of the FSM

The actionability of the resulting FSM method became evident when both Unit-X and Libica used their firms' functional strategy maps as the basis for evaluating, and potentially reformulating, their respective supply chain strategies. Here are some reactions to the findings of the evaluation exercises conducted using the FSMs as their starting point.

Of the findings obtained through the analysis of Unit-X's FSM, their vice-president of supply chain said: "You've hit the nail in the head […] This is a very good crystallization of things." He said that the resulting report of the evaluation exercise (which was based on the FSM) "highlights the key issues" and "managed to find the key conflicts." He added: "Your system seems to be able to single out and capture the fundamental issues we're struggling with […] I think we have a foundation for moving forward." Likewise in the case of Libica, the vice-president of operations and supply chain—commenting on the findings obtained in the evaluation exercise based on Libica's FSM—described his reaction to being faced with the main finding as an epiphany: "To me, it was like a light bulb went off […]," he said, adding that the cause of the problem they were facing "was clear from the material."

The reactions to the findings of these evaluation exercises, done with the FSMs as their starting point, reveal the extent to which such a map is an actionable device. It serves as a foundation on which to conduct further analysis beyond the mere characterization of the supply chain strategy, which can produce useful insights, grounded in fact, about the supply chain strategy of a business unit.

Third-party projects

Beside the two projects that were conducted first-hand, the FSM method has been applied in at least 12 other projects, all conducted by third parties, who received varying degrees of guidance from the first author of the present paper. These projects are described below.

Projects by practitioners in Colombia

The first third-party to try the FSM method in the field was a group of practitioners based in Bogota, Colombia. These practitioners were not involved in the process of developing the FSM method, but they were aware of our work and requested a copy of the protocol to apply it in several projects. A total of three practitioners applied the FSM method's protocol step by step. Their progress was followed both online and through face-to-face meetings, and some general guidance was provided when needed. One of the projects was aborted, owing to a change in management in the business unit, when the project sponsor was promoted before the project was completed. The two other projects resulted in FSMs that were validated by teams from the respective firms as fair representations of the supply chain

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strategies in question. Both FSMs were then used as starting points for the evaluation of the supply chain strategies of these two business units.

On the protocol, one of the practitioners commented: "The method is well defined, clear and easy to follow," and reported that the supply chain director of the target business unit remarked that the partial maps managed to "capture in a clear form concepts that we are not capable of explaining inside the company." This director described the maps as "a useful tool to communicate across areas," and expressed surprise that "through such simple interviews it was possible to capture in a clear manner what the organization does and how it is done."

Project by graduate students in the USA

Another application of the FSM method was a master's thesis project advised by the first author and conducted by a team of two graduate students, Hung and Pierce (2011, pp. 47-50), regarding the supply chain strategy that an aerospace company used at the time for a specific project. The students were given the FSM protocol and some general guidance on the approach, but were afforded wide latitude in its implementation. The students decided on their own to expedite some of the steps in the protocol so that they would require less time, at the expense of some granularity. The resulting FSM was validated by the target business unit as representative of the supply chain strategy in question. In their conclusions, Hung and Pierce (2011, pp. 40-41) stated that the FSM method is "applicable to the aerospace industry;" it allowed them to "elicit the tacit supply chain strategy" of the project they were analyzing, which enabled them to "evaluate and diagnose how well the current supply chain strategy […] fits with the project's documented business strategy."

Projects by Barros et al. (2013) in Portugal

An academic researcher in Portugal, not involved with developing the FSM method but aware of it, applied the approach in her research. She neither requested nor received any significant guidance on the approach, beside a few cursory clarifications. Owing to time constraints, she also decided to adapt the protocol to speed up the process of creating the maps. She successfully completed four FSMs for as many case studies, which were validated by the target firms and published in Barros (2011, p. 37) and Barros *et al.* (2013, pp. 1063-1064). Barros *et al.* (2013) chose the FSM method for their research "because it captures practices that express the implemented supply chain strategy and allows an easy verification of the alignment between these practices and the firm's overall strategy."

The abbreviation of certain steps in the protocol in cases of Barros *et al.* (2013) and Hung and Pierce (2011) means that it cannot be claimed that these projects validate the exact protocol presented in Appendix 1. Yet the fact that these five projects completed FSMs that were then validated by the target companies as representative of their respective supply chain strategies is an evidence in favor of the applicability of the present framework to represent the supply chain strategy of a business unit.

Project by graduate students in Peru

Four teams of graduate students based in Peru, with a total of 12 students, applied the FSM method to capture the supply chain strategies of four different companies, as part of larger projects, under the supervision of a common academic advisor not involved in the development of the FSM method. All four projects were completed successfully, and are documented in Guardia *et al.* (2018), Lopez *et al.* (2018), Sakihara *et al.* (2018) and Coba *et al.* (2018).

After the projects were completed, the teams were asked for critical feedback on the FSM method and its application. One team pointed out that, because the method is eminently

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qualitative, it may lend itself to subjectivity. Another team pointed out that when there are too many concepts, or when the concepts are described using too many words, the resulting maps can be complex and dense, which makes it hard to assimilate the strategy being represented. A third team mentioned that the method seems flexible enough to be applicable to other departments of the company, beyond supply chain and logistics. The fourth team pointed out that the methodology relies heavily on interactions with people. Expanding upon the implications of this last piece of feedback, the academic advisor of the four projects mentioned that when the companies themselves lack a proper self-knowledge of their activities and policies, it takes more work to elicit their supply chain strategy. He also highlighted the importance of trust in the application of the FSM method: since the method relies heavily on interactions with people from the company, a lack of trust from them—which he attributed to local culture—resulted in little cooperation in the implementation of the FSM method in one of the projects, slowing it down considerably, and presumably affecting the depth of their research.

Project by graduate students in Uruguay

A team of four students based in Uruguay applied the FSM method as part of a larger supply chain strategy reformulation effort following the CSAR framework. Their project was not a strict application of the FSM method, in that—pressed by the company—the students acquiesced to capture the desired supply chain strategy of the company (instead of the current one), and the resulting FSM combined both actual and aspirational elements. Despite this, there is an important lesson from their experience that applies to the regular application of the FSM method.

The team discovered that, in this company, middle managers were not always fully briefed by the top managers about the strategic reasons behind certain activities. As a result of this, during the interviews, many middle managers had to guess when asked about the goals pursued by some activities. The team reported that, because of the inconsistent views they obtained in the interviews, assembling a coherent FSM was very challenging, "like trying to put together a puzzle where the pieces do not quite fit." Part of this inconsistency could be attributed to the inclusion of aspirational elements, but—in the student's opinion—the fact that top management had deliberately kept some elements of the overall strategy from the middle management was also a contributing factor.

This experience suggests that the application of the FSM method will take more time and effort in companies where the middle managers are not sufficiently informed by top managers about the strategic goals guiding their activities. Arguably, in these instances, the potential benefits of building a FSM, in terms of self-learning and opportunity for improvement, are also greater. The students later received guidance from the first author of this paper, and were able to complete the project satisfactorily (Castro *et al.*, 2018).

Another interesting aspect of this last project is that it captured the supply chain strategy of the whole company, spanning across multiple business units. Admittedly, the target company was an SME of a modest size. However, the fact that the FSM successfully captured its whole supply chain strategy, encompassing several business units, indicates that the FSM may be applicable to whole companies—as long as they are relatively small.

6. Comparison with extant literature

An "essential feature of theory building is the comparison of the emergent concepts, theory, or hypotheses with the extant literature" (Eisenhardt, 1989). In this section, we compare the present approach and the general ideas behind the steps of the FSM method with the extant literature, both within supply chain strategy and from other areas.

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Hierarchical nature of strategies

The FSM method aligns with the view of a functional strategy—such as an operations or supply chain strategy—as having the primary goal of supporting the business strategy (Garvin, 1992; Skinner, 1969). By moving from the Core toward the Policies and Choices and beyond, a functional strategy map can be used to describe how the objectives of a business strategy are achieved by the supply chain functions. However, the map can also be used in the reverse direction, to describe whether, and how, the supply chain practices support the business strategy. The hierarchical nature of the working framework shown in Figure 1 is in line with the proposition from Narasimhan *et al.* (2008) that supply chain strategy "could be viewed as part of a hierarchical chain of strategies" and as a "cascading strategy" that "serves to integrate the supply chain processes with the overall direction of the enterprise."

Supply chain organization design

The FSM method can also contribute to the research in organization design, which is described as the problem of creating "mechanisms that permit coordinated action across large numbers of interdependent roles" (Galbraith, 1974). Functional strategy maps can be used as the basis for evaluating the degree of coordination among various supply chain activities and with the business strategy. By linking business strategy to supply chain choices (and the resulting capabilities) and enabling assessment of coordination among different supply chain activities, functional strategy maps resemble the conceptual model of supply chain process integration (Chen *et al.*, 2009). Such use of functional strategy maps, depicting the logistics activities of one business unit or of supply chain partners in a channel, for assessing performance implications of supply chain strategy can aid empirical studies in the SSPP paradigm in the strategic supply chain management literature (Chow *et al.*, 1995; Daugherty *et al.*, 1998; Defee and Stank, 2005; Nakano and Akikawa, 2014; Patel *et al.*, 2013; Rodrigues *et al.*, 2004). More specifically, the functional strategy maps can be used as more detailed and less subjective measurement devices to assess the degree of integration among various supply chain processes, for evaluating its association with supply chain performance.

Activities as the essence of strategy

The evolutionary perspective on strategy considers the routine activities as the primary building blocks of an organization (Nelson and Winter, 1982). The idea that a firm's strategy can be found in its decisions and activities is well rooted in the literature (Mintzberg, 1978; Andrews, 1987; Porter, 1996), and has been extrapolated to supply chain strategy literature (Narasimhan *et al.*, 2008; Brun and Castelli, 2008). These ideas have also seen an increasing interest among management scholars, who study them under the aegis of a strategy subfield known as strategy as practice (Jarzabkowski, 2005; Johnson, 2007; Golsorkhi *et al.*, 2010). This literature provides scholarly foundation for Steps 3 through 7 of the FSM method, since these steps seek to reveal a business unit's executed strategy based on an analysis of its supply chain activities. The proposed FSM method itself can be seen as a "strategy tool-in-use," whose success could be evaluated not just by the performance outcome, but also by process outcomes such as "settlement on a decision, satisfaction with the outcome, contestation in the process" and so on (Jarzabkowski and Kaplan, 2015).

Tapping into tacit knowledge

Tacit knowledge is a prominent concept in the organizational literature (Baumard, 1999; Harrison, 2004; Tsoukas, 2004). Nonaka (1994), a foundational figure in popularizing the idea of tacit knowledge, stated that it involves both cognitive and technical elements: among the cognitive elements are the individual's images of reality; and among the technical

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elements is the concrete know-how of certain processes. Actual practices, it is claimed, "can diverge greatly from official descriptions of these practices. […] Nonetheless, through careful investigation, managers can often find gaps between official *mandates* […] and the actual *practices*" (Harrison, 2004, p. 92 emphasis added). While some authors (Baumard, 1999, p. 98) advocated "a long immersion in the organization being studied" of over half a year as the method of choice for investigating tacit knowledge, others (Harrison, 2004, p. 93) argued that "intensive interviews" are an equally valid means to access "the richest data on emergent practices." These interviews, to be useful, should be focused on specific activities: "Open or semi-structured interviews elicit the most useful and valid data when respondents provide explicit descriptions of how they act in a range of work situations, rather than giving generalizations or expressing attitudes" (Harrison, 2004, p. 93). This prescription for asking individuals about specific activities, as opposed to generalizations, in order to tap into the tacit knowledge of an organization, provides support to Step 2 of the FSM method.

Conceptualization and crystallization

Nonaka (1994) also defined four modes of knowledge conversion, two of which go across the tacit–explicit divide: the conversion of explicit knowledge into tacit knowledge is called "internalization," while the conversion of tacit knowledge into explicit knowledge is called "externalization." The latter is of particular importance, since, according to Nonaka, the "articulation of tacit perspectives" is "a key factor in the creation of new knowledge," by means of which "concepts become transferable."

As extensions to the ideas of externalization and internalization, Nonaka presented the ideas of "conceptualization" and "crystallization." In conceptualization, "tacit 'field-specific' perspectives are converted into explicit concepts that can be shared beyond the boundary of the team." In crystallization, the knowledge created by the team is "crystallized into some concrete 'form,'" such as a concept or system. Through crystallization, "various departments within the organization test the reality and applicability" of the concept or system created by a team. This is facilitated by "encouraging experimentation" and "usually leads to refinement of the concept" (Nonaka, 1994).

The FSM method includes steps to facilitate both conceptualization and crystallization of knowledge regarding the supply chain strategy. Steps 2 through 7 deal with conceptualization, namely making the supply chain strategy explicit, as it is executed in the activities of the firm, whereas Step 10 provides a first step toward crystallization.

FSM and the techniques–tools matrix

Although it is not its main purpose, a FSM can be used as a starting point to build the techniques–tools matrix proposed by Cigolini *et al.* (2004). To build a techniques–tools matrix based on the Principles and Imperatives of a FSM, for example, the Principles from the FSM are arranged as row headers of the matrix, and the Imperatives are arranged as column headers. For every instance where the team of experts agrees that an Imperative provides support to a Principle, a check mark is added to the matrix. A substantial difference between the matrix that results from this process and the one shown in Cigolini *et al.* (2004) is that our variant is not limited to concepts at the interface between firms, or to concepts chosen from a catalog.

Similarities with the SCDD of Schnetzler et al. (2007)

Finally, it is interesting to compare the FSM, which is mostly built from the ground up and based on knowledge of specific activities of the firm, with the graphical depiction of a "decomposed" supply chain strategy developed from the top down using the supply chain design decomposition (SCDD) approach proposed by Schnetzler *et al.* (2007). Both share a

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tree-like structure, but the SCDD uses fixed, predetermined categories for the "branches," whereas the FSM method allows these categories to emerge from the data collected in the interviews. Also, whereas the FSM is a factual representation of a current supply chain, the SCDD presents a desired supply chain strategy.

7. Further discussion

Learning curve of the FSM method

Our experience teaching the FSM method to graduate students and executives suggests that learning to build an FSM in principle takes a relatively short time. For example, students in a graduate level course taught at the USA on the subject of supply chain strategy were assigned the task of building an FSM as homework after attending a one-hour lecture on the subject. They were provided with a summary of the FSM method and were given a data-rich description of the strategic activities of a firm. The students worked in groups of three and were given one week to complete the assignment. Out of a total of eight groups, seven completed the task without any guidance from the class instructors, while one group required a one-hour clarification session in order to complete it. Another example comes from a seminar taught in Latin America to students in a graduate certificate program on supply chain management. The students were given three hours of instruction on the FSM method. This time, the assignment was more ambitious: students were instructed to select a firm, either from a list of preselected case studies or from their own work experience, and to build an FSM for it. The students were given the protocol of the FSM method and two weeks to complete the task. Nine students worked in groups of three each, while two students formed a group on their own and one student worked individually. Of the delivered assignments, three dealt with firms from case studies, while the other three were firms outside of the list of cases, chosen by the students. All groups completed the FSM satisfactorily without any guidance from the instructors.

These experiences in the classroom suggest it is relatively easy to learn how to prepare a simple FSM using predigested data. Learning to elicit concepts from scratch through interviews in the field, however, requires a different set of skills and can be difficult for individuals without field work experience. Our observations of the experience of third parties that have applied the FSM method real projects suggest that developing confidence in the application of the FSM method in the field may take more time and practice for individuals that are not familiar with qualitative methods such as interviewing, qualitative data analysis and group facilitation. These individuals will, therefore, face a steeper learning curve.

Limitations of the FSM method

Experience with the FSM method, both first-hand and by third-parties, suggests some instances where, in its current form, it faces particular challenges and limitations.

A first challenge is how to deal with the tensions that exist around areas of unresolved conflict within the organization, whose effects can be felt in the discourse of respondents: different members of the organization may have very different and strong views about these areas, views that are not easy to reconcile and to conceptualize in a form that can be accepted as a factual statement by the whole group.

Although its application in these instances is likely to require extra time and effort, it has been suggested that the FSM method could be a very powerful way to capture the different sides of these conflicts and may serve as a catalyst for leaders to address them, creating better strategic alignment. In other words, the potential conflicts identified and articulated through the FSM method can then be addressed by organizational leaders through constructive discussion with their team.

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A second challenge, related in its nature to the first, is how to capture in the FSM the activities of an organization that are undergoing a significant and rapid transformation. A firm that has already launched important changes to its activities, changes whose deployment has not yet been completed, will also reflect in its tacit knowledge a similar tension: some members of the organization may resist depicting it as an accomplished change, while others may resist depicting it as an unfinished change.

A third limitation is that the FSM method may not be well suited for eliciting into a single map the whole supply chain strategy of large, multi-business corporations. This limitation has become apparent both through direct experience and through reports from one of the Colombian third parties that applied the method. A potential approach for eliciting and representing the supply chain strategies of a large multi-business corporation may be: to develop a separate FSM for each business unit, to identify what supply chain functions and activities for different business are performed together through a centralized function and to assess the benefit of centralizing some supply chain activities against leaving them decentralized to the discretion of each business unit. Overall, this is a potentially promising area for future research.

A fourth limitation is that—to be effective—the FSM method depends heavily on people from the target organization, their willingness to engage and cooperate and their knowledge about the business unit's activities and goals. As indicated by some third parties that conducted projects in Peru and Uruguay, it may be harder to build a FSM when: companies lack a proper self-knowledge of their activities and policies, middle managers are not well informed by top management about the strategic rationale for activities or the members of the company are reticent participants that distrust the exercise or those conducting it. Similarly, it is harder for a person without experience in qualitative techniques (such as interviewing, qualitative data analysis, and group facilitation) to successfully deploy the FSM method in the field, since it is quintessentially a qualitative method.

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Areas for further research

The FSM method, presented in this study, opens several areas for scholarly research of both theoretical and practical interest. We describe seven potential areas below:

(1) An obvious area for scholarly inquiry is to assess the effectiveness of the FSM method as an organizational knowledge-creation process (Nonaka, 1994), used albeit to create or enhance self-knowledge about the business unit's supply chain strategy, as practiced. The FSM method can be seen as a means for knowledge "externalization" (Nonaka, 1994) as it translates the tacit knowledge of supply chain activities into an explicit functional strategy map. One can then assess the benefit of externalizing the supply chain strategy into a functional strategy map.

(2) The FSM method involves collecting individual descriptions of supply chain activities and synthesizing them to build a comprehensive picture of the business unit's supply chain strategy, as practiced, through panel discussions. This process of contestation is one of the potential "critical indicator of success" of FSM as a "strategy tool in use" (Jarzabkowski and Kaplan, 2015). An observational study of the FSM method in use can provide insights into how contestation in the FSM method in particular, and strategy tools in general, shapes the outcome of the process.

(3) As discussed earlier, the functional strategy maps could be used to measure the degree of integration among supply chain processes (Chen *et al.*, 2009) in the empirical studies of the SSPP in the supply chain literature (e.g. Chow *et al.*, 1995; Nakano and Akikawa, 2014). A potentially promising direction for advancing research in the present study is to evaluate such use of functional strategy maps and

to refine the FSM method as a measurement tool for the empirical inquiry of this important scholarly domain of the supply chain management literature.

(4) A comparison of FSM with other methods for eliciting and representing supply chain strategy, such as the ones reviewed in this study, could shed light on the relative strengths and weaknesses of each method. This can guide practitioners in choosing the most appropriate method for a given application.

(5) As the FSM method is applied to new projects, further refinements could be made to overcome some of the limitations identified above. One major limitation of the current version of the FSM method that seems to present a promising avenue for future research is to develop an extension of the method for eliciting and representing supply chain strategy of a multi-business corporation. As discussed in the previous section, this may require mapping the supply chain activities of multiple business units performed together through a centralized function and describing how the centralized activities relate to the business strategy of an individual business unit.

(6) The applicability of the FSM method to areas beyond supply chain management seems very promising, but is still largely unexplored. A supply chain strategy is a particular selection of functional strategies that addresses a particular problem. Whether the FSM method will be equally useful for other groups of functional strategies—unrelated to the supply chain—remains to be seen. However, since the theoretical basis of the FSM method, i.e., the CSAR framework (Perez-Franco *et al.*, 2016), is not specific to supply chain management, we anticipate that the method could be applied to other realms within management and strategy, especially at the level of functions.

(7) Finally, the performance of a supply chain strategy is influenced not only by its fit with the business strategy but also by its compatibility with the external environment. The present version of the FSM method maps the strategic relationship between supply chain activities and the business strategy, but not with its business environment. Further research is needed to assess whether the external environment of the business unit and the supply chain can and should be represented, too.

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8. Conclusion

In summary, the primary contribution of this study is the FSM Method, which is an approach to elicit and represent the "as is" supply chain strategy of a business unit. It has been shown here that there are multiple ways in which the FSM method ties back to the literature (Eisenhardt, 1989).

By allowing practitioners to reveal and express the supply chain strategy of a business unit in clear and realistic terms, the FSM method could encourage and facilitate the discussion of a firm's supply chain strategy in a grounded and meaningful manner.

The FSM method has been applied in at least 14 CMR projects, most of them with very little involvement of the authors of this study. The resulting FSMs have been deemed by the respective business units as fair representations of their supply chain strategies.

Furthermore, in about half of these projects, the FSMs served as starting points to conduct evaluation exercises that yielded important insights about these firms' supply chain strategies. Such insights were described by the heads of supply chain in some of these firms as both accurate and revealing, lending further weight to the validity of the FSM as a grounded depiction of a business unit's supply chain strategy.

In its current form, the FSM method is not without limitations. A successful application of the method relies on the qualitative skill of the person applying it, and the knowledge and collaboration of the members of the target company. Additionally, a single FSM does not lend itself well to representing the whole supply chain strategy of large multi-business corporations, or of a business unit undergoing dramatic transformation. It also does not explicitly relate a supply chain strategy to external factors in the business environment. These limitations could encourage further research.

Finally, we hope that firms will find the self-knowledge they derive from creating an FSM to be beneficial both as a device to communicate their supply chain strategy and as a meaningful starting point for their efforts to improve it.

Notes

1. In the present paper, the term supply chain is understood in its current sense (Mentzer *et al.*, 2001; Carter *et al.*, 2015), namely, as a group of entities directly involved in the flows of products, services, finances and information from a source to a customer.
2. The sole purpose of the working framework in Figure 1 is to provide a simple underlying structure to represent the supply chain strategy of a business unit. The basic relationships between its layers, as shown in Figure 2, are descriptive of what we observed. They are not meant to be normative or exhaustive. More sophisticated relationships may exist in some companies, i.e. a company could use the knowledge of its supply chain capabilities to inform the elaboration of the overall business strategy.
3. Appendices 1 and 2 are available at: http://perez-franco.com/fsm/protocol.pdf
4. Zara's FSM is available at: http://perez-franco.com/fsm/zara.pdf

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