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Purchasing management and the role of uncertainty

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Abstract

Purpose – The purpose of this paper is to analyze the role of uncertainty in purchasing and supply management, and the changes of this role over time.

Design/methodology/approach – The paper is based on a literature review of the development of purchasing and supply management over time and how these issues have been related to uncertainty and dependence. This examination also required analysis of the impact of other concepts from behavioral sciences: interdependence, power and control.

Findings – The paper shows that the relationship between purchasing management and uncertainty has changed substantially over time. Traditionally, uncertainty was avoided, while firms today are engaged in efforts of handling the consequences of uncertainty. This modification affected the features of buyer-supplier relationships, as well as the perspectives and the exploitation of power, control and dependence.

Originality/value – The paper demonstrates both positive and negative consequences of uncertainty, depending on the approach applied in purchasing. Moreover, the analysis shows that uncertainty cannot be avoided. Modifications of purchasing management will reduce certain types of uncertainty. But the same modification also results in increases of other forms of uncertainty.

Keywords Uncertainty, Interdependence, Supply management, Purchasing

Paper type Research paper

1. Introduction

Uncertainty has always been a salient feature of purchasing and supply management. From a general management perspective, Cyert and March (1963, p. 119), in their behavioral theory of the firm, claimed that firms are faced with uncertainty "regarding deliveries of suppliers." In relation to purchasing management, Webster and Wind (1972) pointed out the significance of uncertainty in one of the first conceptualizations of organizational buying behavior. The authors identified three dimensions of this uncertainty: uncertainty about available supply alternatives, uncertainty regarding the consequences of these alternatives and uncertainty related to the ways other firms will react. For these reasons, Farmer (1972) argued that the decisions taken by executives responsible for purchasing and supply do involve considerable risk and uncertainty.

Over time, the magnitude of these uncertainties and their potential consequences multiplied. Through the outsourcing boom, supply costs increased substantially. Today, invoices from suppliers account for the major portion of the expenditures of firms, often amounting to more than two-thirds of the total costs. These conditions make the supply situation more uncertain, also because purchasing nowadays is a global operation, even involving risky low-cost country sourcing. Furthermore, supply in the form of products and services features increasing technological content, for example through system sourcing. These conditions make purchasing more complex, thus adding to uncertainty. Altogether this means that purchasing and supply management has become a strategic company function with associated consequences for uncertainty.

Zsidisin (2003) explored the role of risk and uncertainty in contemporary purchasing and supply management and identified the following three aspects: outcome uncertainty, outcome

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expectations and outcome potential. In relation to our paper, the most important concept is outcome uncertainty, which is explained as "the variability of outcomes, lack of knowledge about the distribution of potential outcomes, and uncontrollability of outcome attainment" (Zsidisin, 2003, p. 217). In the empirical study, one of the informants argued that "supply risk is the uncertainty associated with supplier activities, obligations, and in general, supplier relationships" (Zsidisin, 2003, p. 221). The definitions of uncertainty provided by Webster and Wind (1972) and Zsidisin (2003) follow the same line of argumentation. However, as will be shown in this paper, the interpretations and perceptions of uncertainty have been modified considerably over the 30 years. These changes occurred because of reorientation in the views on and the execution of purchasing and supply management.

Therefore, the overall objective of this paper is to analyze the relationship between purchasing management and uncertainty over time. Our particular interest pertains to the ways in which uncertainty has been interpreted and handled. Similar to the informant in the study by Zsidisin (2003), we focus on the uncertainty related to suppliers and supplier relationships. Support for this choice is provided by a review of the literature on supply chain risk management that concluded that risk and uncertainty is affected by the involvement with suppliers (Ho *et al.*, 2015). Therefore, enhanced understanding of the dynamics of the relationship between purchasing management in terms of buyer-supplier involvement and uncertainty would benefit both academics and practitioners in the field of purchasing and supply management.

2. The starting point of the paper

According to many authors, the general conditions for purchasing and supply management changed considerably from the mid-1970s. At that time, the relationships to suppliers became increasingly important owing to specialization and outsourcing (e.g. Carlisle and Parker, 1989; Davis, 1993; Lamming, 1993; Lewis, 1995; Gadde and Håkansson, 2001; Araujo *et al.*, 2016). Van Weele and Rozemeijer (1996) even described this reorientation as a "revolution in purchasing." Farmer (1997, pp. 4-5) concluded that buying firms were involved in "proactive purchasing" implying that they sought to influence the manner in which suppliers operated, through closer collaboration. The buyer behaviors required in managing these relationships "were far away from the hard-nosed buyer" featuring in the era before the reorientation. Farmer (1972, p. 12) characterized the purchasing approach in that earlier period as emphasizing "short run reaction to short run feedback."

Bensaou (1999, p. 35) described the contemporary view of the reorientation as a "move away from arm's length relationships and move toward longer-term collaborative strategic partnerships with external business partners." In a similar vein, Giunipero *et al.* (2008) explained the modified behavior as a shift away from simple transactions where minimization of price represented the main approach. Instead, buying firms now increasingly applied a long-term orientation toward costs and returns for several simultaneous transactions, as well as for series of transactions over time (e.g. Gadde and Håkansson, 2001).

In this paper, we identify and analyze the role of uncertainty under these two conditions, which we now and then label "before" and "after" the reorientation of purchasing. In reality, however, the modified approach to purchasing management has been a process over time, where the long-term approach has gained in importance but not completely replaced short-term approaches. Some firms were pioneers in going in this direction, while others continued to focus on the previous behavior. In reality, most firms tend to rely on a mixed approach, by applying close relationships for part of their supply and promoting standardized low-cost solutions for others. Therefore, "before" and "after" actually illustrate two basic approaches rather than a strict demarcation in time. However, since one of these approaches has become more significant at the expense of other, we refer to the notion of reorientation.

The new approach to purchasing management affected the view and the role of uncertainty in a significant way. For example, Dillforce (1986) argued that when price in the single transaction was the principal yardstick for supplier selection, the buying firm was uncertain whether the supplier would be able to perform in accordance with expectations regarding delivery and quality. These conditions changed through the reorientation of purchasing. When the transactional focus was replaced by business exchange in close and long-term relationships, uncertainty was impacted since these arrangements provided buying firms with "a more predictable and smoother flow of materials and components" (Dillforce, 1986, p. 13). However, as discussed in the current paper, the conditions created through the reorientation impose other forms of uncertainty.

The changing role of uncertainty is directly related to modified perceptions of the potential consequences of dependence on suppliers. Before the reorientation of purchasing management, the literature recommended buying firms to avoid too much involvement with individual suppliers because such conditions were assumed to imply unwanted dependence. Therefore, firms were striving toward "minimizing supplier dependence" (Spekman, 1985, p. 58). In today's business landscape, however, buying firms deliberately enter voluntary dependence situations through high-involvement relationships. They do so because such conditions enable the buyer to "access the stock of valuable knowledge residing within its alliance partners" (Dyer and Singh, 1998, p. 675).

The relationship between uncertainty and purchasing management is thus closely interlinked with perceptions and behavior regarding buyer-supplier dependence. In turn, increasing dependence between firms affects other behavioral conditions. In a bilateral relation, one firm's dependence is directly related to the power of the other firm (Emerson, 1962). These conditions provide the powerful company with opportunities to control the operations of the dependent firm (El-Ansary and Stern, 1972). Moreover, the potential to exploit power and control is constrained by increasing interdependencies among firms (Freytag *et al.*, 2017). Therefore, understanding the role of uncertainty in purchasing management requires further exploration of the relationships with power, control and interdependencies.

The paper begins with a presentation of some core features of purchasing management, uncertainty and dependence. We continue by describing the interplay between these three phenomena before the reorientation of purchasing, followed by similar analysis of the situation after the reorientation. We then explore the connections between uncertainty and dependence on the one hand, and interdependence, power and control on the other. In the final sections, we discuss the relationship between uncertainty and purchasing strategy and present our conclusions.

3. Core features of purchasing management, uncertainty and dependence

In this section, we introduce and define the notions of purchasing management, uncertainty and dependence: three of the central concepts in this paper. Interdependence, power and control will be presented later, since we relate these aspects primarily to the changing perceptions of dependence.

Central to any conceptualization of purchasing management is the process (at least as final objective) of acquiring inputs. As such, the economic transactions between actors are at the heart of purchasing and supply management. The actual definitions of purchasing management have shifted considerably over time. One of the early ones was presented by Webster and Wind (1972, p. 2): "The decision-making process by which formal organizations establish the need for purchased products and services and identify, evaluate and choose among alternative brands and suppliers." This perception of the task of purchasing focuses on management of processes for efficient undertaking of single business transactions, which illustrates the conditions before the purchasing reorientation.

Some decades later, this view had been broadened. One of the most widely used textbooks states that purchasing management can be defined as: "The management of the company's external resources in such a way that the supply of all goods, services, capabilities and knowledge which are necessary for running, maintaining and managing the company's primary and support activities is secured at the most favorable conditions" (Van Weele, 2005, p. 12). This extended perspective is representative of the conditions after the purchasing reorientation where it is claimed that purchasing management needs to consider the whole bundle of business transactions, in both the short and the long term. We refer to Gadde and Wynstra (2017) for a detailed discussion on how research and practice in purchasing and supply management have evolved over time.

Regarding uncertainty, the dictionary definition describes this condition as "something not certainly and exactly known" (*Webster*, 1980, p. 909). Cyert and March (1963) claimed that business firms are faced with uncertainty regarding "the behaviour of the market, the deliveries of suppliers, the attitudes of shareholders, the behaviour of competitors, the future actions of governmental agencies, and so on" (p. 119). These uncertainty aspects affect the behavior of firms by increasing the difficulty and variability of the work undertaken by an organizational unit (Van de Ven *et al.*, 1976). Pfeffer and Salancik (1978, p. 67) defined uncertainty as "the degree to which future states of the world cannot be anticipated and accurately predicted." However, Pfeffer and Salancik (1978) also claimed that uncertainty is not problematic in itself, but becomes troublesome "when it involves important interaction with other elements that are important for the organization" (p. 68). According to this statement, the broadened view of purchasing management increases perceived uncertainty, since the reorientation increases the interaction with other elements (actors) that are important to the organization.

While we use the word uncertainty, the literature on (organizational) decision making often refers to "ambiguity" (Anderson and Wynstra, 2010). Some researchers use the terms ambiguity and uncertainty interchangeably (e.g. Camerer and Weber, 1992), while others treat ambiguity as a specific form of uncertainty. Einhorn and Hogarth (1985), for instance, consider ambiguity to be an intermediate state between ignorance and risk. In their definition, risk is the lower bound of uncertainty, consistent with a common distinction: risk exists when the probabilities of possible outcomes can be objectively specified, whereas ambiguity exists when this is not the case (cf. Fox and Tversky, 1995).

Alternatively, researchers emphasize the concept of risk; the product of perceived uncertainty and the consequences associated with the uncertain events. This view is quite dominant in the early literature on purchasing and supply management, represented by, for example, Bauer (1960) and Cox (1967). In this perspective, uncertainty refers to the purchaser's inability to assess the extent to which different offerings fulfill performance requirements, while the consequences refer to the outcomes associated with the offerings and their salience for the buying organization. While most research on this perceived risk framework has been conducted with consumers, it has also been applied in research on purchasing managers' evaluation of suppliers and bids (Cardozo and Cagley, 1971; Håkansson and Wootz, 1975)[1]. In an extensive review of the organizational buying behavior literature, Johnston and Lewin (1996) concluded that perceived risk is one of the main determinants of variations in organizational buying behavior processes.

With regard to dependence, the dictionary definition states that this condition features "a state of being subject to the operation of any other cause" (*Webster*, 1980, p. 231). In relation to the perspectives on purchasing management, the definition expressed by Van Weele (2005) indicates greater dependence than the previous transactional orientation. According to Pfeffer and Salancik (1978, p. 19), organizations depend on their surrounding settings because they "import resources from their environments." Therefore, dependence implies that "no organization is completely self-contained or in complete control of the conditions of its own existence" (Pfeffer and Salancik, 1978, p. 19). Moreover, Pfeffer and Salancik (1978) claim that the level of dependence is determined by "the product of the importance of a given input or output to the organization and the extent to which it is controlled by a relatively few organizations" (p. 51). This specific definition of dependence bears striking parallels with the above definitions of purchase risk by Bauer (1960) and Cox (1967).

There is also an explicit relation between uncertainty and dependence within purchasing management. For example, Ragatz *et al.* (2002) investigated the role of technological uncertainty in product development in collaboration with suppliers. They concluded that close relationships, implying dependence, function as moderators of uncertainty, thus reducing the risks of technology failure. On the other hand, Gao *et al.* (2005) found that supplier dependence, as perceived by the buyer, increased the buyer's decision-making uncertainty. Obviously, further analysis is required of the interplay between purchasing management, uncertainty and dependence.

4. Purchasing, uncertainty, and dependence before the reorientation

Before the 1970s, the literature on purchasing focused primarily on techniques and procedures with the main mission to enhance transaction efficiency. These improvements were assumed to be attained through well-developed purchasing routines (e.g. Westing *et al.*, 1969). Among these practices can be mentioned: principles for making enquiries, how to handle tenders, calculation of economic order quantities, inventory management, contractual arrangements and supplier selection.

Conceptualizations and models of purchasing processes and operations began to evolve around 1970, under the label "organizational buying behavior" (e.g. Robinson *et al.*, 1967; Webster and Wind, 1972). Organizational buying behavior was typically illustrated as a decision-making process, ranging from what initiated a purchase to delivery from supplier. The model developed by Webster and Wind (1972) started with "identification of need"; a problem that had to be solved in the buying firm. On this basis, the following step resulted in "establishing objectives and specifications" where the perceived need was transformed to the features of an item to buy. Next came "identifying buying alternatives" through search of the market for potential vendors. Then these suppliers were compared with regard to established purchase criteria (price, quality, etc.) in the process of "evaluating alternative buying actions." The final step regarded "selecting supplier and order routine." This decision concerned whether to use one or several suppliers, and the distribution of purchase volumes over time. As described in the Introduction, the authors claimed that this process featured uncertainties with regard to the alternatives available, the outcomes of these alternatives and potential reactions from others.

One of the other early purchasing models addressed the role of risk in the buying process (Sheth, 1973). The author identified perceived risk as the magnitude of adverse consequences faced by the decision maker if a wrong choice is made, and the uncertainty under which the decision has to be taken. Sheth (1973) concluded that the greater the uncertainty in the buying situation, the greater the perceived risk. Neither Webster and Wind (1972) nor Sheth (1973) specified or defined any specific features of uncertainty; they used the concept in a general sense.

Most subsequent organizational buying behavior research studied how perceived risk and uncertainty associated with a purchase affects the characteristics of the buying process, such as buying group composition. Much of this work extended the original work of Robinson *et al.* (1967) and their buy-grid matrix based on buy-phases and buy-classes (straight rebuy, modified rebuy and new task). For example, McQuiston (1989) found evidence that purchase novelty and importance (such as impact on operations and overall profitability) are significant determinants of the participation of various company functions in a given purchase situation. Far fewer studies have focused on the impact of perceived risk on the selection of alternative items or vendors (Anderson and Wynstra, 2010).

Håkansson and Wootz (1975) identified three aspects of uncertainty in purchasing. First, buying firms are assumed to suffer from "need uncertainty" since there are always several alternatives available for solving a particular problem. One example would be to determine the appropriate level of corrosion resistance in the coating of steel. Too low a level would lead to unwanted rust, while too high a level would result in unnecessarily high cost. Second, "market uncertainty" is at hand since the buying firm is not aware of all potential suppliers. Even if all suppliers could be identified, substantial uncertainty would remain regarding their actual performance in relation to the criteria for supplier selection. Third, there is "transaction uncertainty" with regard to the selected supplier's ability to fulfill the requirements of the buyer in terms of timely delivery of quality assured items. The decision model of Webster and Wind and the purchasing uncertainties of Håkansson and Wootz can be combined as in Figure 1, where need uncertainty relates to the first two steps in the decision process; market uncertainty to the third and fourth step; and transaction uncertainty to the last step.

At the overall level of the firm, Cyert and March (1963) identified "uncertainty avoidance" as a significant feature of their behavioral theory of the firm. At the time, they found that firms in general prioritized the managing of short-term uncertainties rather than the long-term ones. This conclusion is highly valid also in relation to purchasing management before the reorientation, with regard to the perception and handling of dependence and uncertainties (e.g. Cardozo and Cagley, 1971; Puto *et al.*, 1985). At the level of the purchasing function, Lee and Dobler (1965, p. 53) recommended a purchasing approach with implications for the need uncertainty, in arguing that "care must be taken to be sure that specifications are not written around a specific product, so as to limit competition." Such an approach will favor exchange of standardized products and services, make suppliers interchangeable owing to buyer-supplier independence, promote a short-term perspective and reduce the type of uncertainty related to perceived dependence. A more long-term approach to handle need uncertainty would be to involve suppliers to collaborate in establishing objectives and specifications. However, this way of reducing the need uncertainty would be accompanied by increasing dependence on the specific supplier.

Market uncertainty is related to the identification and evaluation of prospective suppliers. One means of handling market uncertainty recommended in the literature was to extend the research of supplier markets. Lee and Dobler (1965) described a multitude of information sources of relevance for identification of potential vendors, as well as various means for evaluating the candidates with regard to their opportunities to satisfy the buyer's performance criteria. In this way, rigorous market research would enable identification of the most suitable supplier(s). Regarding the uncertainty related to fulfillment of the criteria, an alternative approach would be to rely on suppliers that have performed well in previous business transactions. However, such behavior would risk increasing other dimensions of

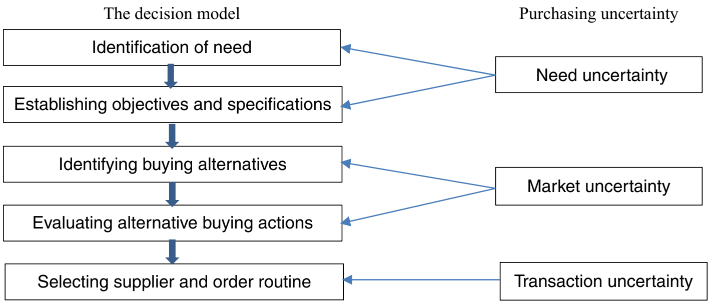

Figure 1.
Uncertainties in the buying decision process

market uncertainty. By sticking to the same supplier over time, the buying firm might miss emerging supplier opportunities.

In relation to transaction uncertainty, the prescription from Lee and Dobler (1965, p. 77) was that when the buying firm relies on "two or three suppliers it will be protected in times of shortage by having alternative sources of supply." According to Dillforce (1986, p. 13), a general principle applied over time had been to divide purchases among several suppliers, which would lead to the "greatest assurance of a secure flow of materials." Again, this points to a short-term approach to uncertainty avoidance. Dillforce (1986) himself suggested an alternative perspective based on close relationships as a foundation for more long-term joint buyer-supplier approaches to handle transaction uncertainty.

The short-term approach to uncertainty avoidance had particular consequences for the relationships with suppliers and favored "arm's length postures" (Shapiro, 1985). Such conditions imply low dependence on single suppliers, which was supposed to provide considerable benefits. Dependence in relation to individual business partners was perceived negative for several reasons. First, dependence on one source may lead to uncertainty as to whether or not the supplier will be able to fulfill the transaction. Second, dependence might lock a buying firm into the specific solution of a particular supplier, which might cause problems in the long run since the supplier's capabilities might take directions that are unfavorable for the buyer. A third argument for avoiding dependence is that promoting active competition among vendors may stimulate "suppliers to vigorous performance" in various dimensions (Lee and Dobler, 1965, p. 77). In particular, reliance on several vendors enables a buying firm to play-off suppliers against one another, which is assumed to provide economic advantages (Shapiro, 1985) and make it possible to "achieve the cheapest prices" (Dillforce, 1986, p. 13).

5. The situation after the reorientation

5.1 Purchasing management

One significant step in the renewed attention to purchasing was embodied in the important contribution by Kraljic (1983). The purchasing portfolio model launched in that paper became a useful tool in the attempts to make purchasing more strategic by promoting a supply management approach. The model was developed as a response to major uncertainties at the time in terms of "threats of resource depletion and raw materials scarcity, political turbulence and government intervention in supplier markets, intensified competition, and accelerating technological change" (Kraljic, 1983, p. 109). For these reasons, Kraljic claimed, firms "must learn to cope with uncertainties" and apply a strategic perspective to their activities in relation to suppliers. The need for this modified approach becomes increasingly significant "the greater the uncertainties of supplier relationships, technological developments, and/or physical availability" (Kraljic, 1983, p. 110). However, with regard to dependence, the main objective remained to avoid this state in relation to individual suppliers and, when possible, exploit the bargaining power.

Over time these conditions changed, illustrated in the textbook by Baily *et al.* (1998), where the authors describe the shifting attitudes to purchasing management. When the transaction-oriented approach ruled the game, the primary objective of buyers was "finding a supplier who is willing to exchange the goods or service for an agreed sum of money" (Baily *et al.*, 1998, p. 8). However, this price chasing resulted in limited impact on the economic performance of the buying firm. Moreover, the approach was insufficient with regard to leveraging opportunities for quality improvements, elimination of waste and reduction of total cost (Morgan, 1999). For these reasons, "more and more sourcing teams began working with preferred suppliers to assure the quality of purchased parts and systems" (Morgan, 1999, p. 90). Baily *et al.* (1998, p. 8) claimed that this new approach was based on "the benefits of doing business together" that arose from ideas of not only exchanging goods but also sharing values. Similarly, Carter and Narasimhan (1996, p. 24) argued that "partnering type alliances are more beneficial forms of relationships with suppliers than traditional arm's length relationships based on purchasing power and leverage."

The main reason for the evolving partnering arrangements was that the single firm was no longer able to rely on itself. The modern business enterprise (Chandler, 1977), illustrated by the Ford Motor Company, which was self-sufficient regarding strategic resources and in control of critical activities, was no longer the business ideal. Owing to rapid and broad technological development and the expansion of capable suppliers, increasing attention now was directed to "buy" rather than to "make." Through increasing outsourcing to suppliers, buying firms achieved three major benefits (Gadde and Håkansson, 2001). First, they were able to exploit the technological resources of these business partners. Second, they simplified their internal assembly operations by making first-tier suppliers responsible for assembly of sub-systems. Third, to secure delivery reliability, reduce inventories and thus improve the conditions for in-house manufacturing operations, suppliers were made responsible for establishing just-in-time deliveries. This means that activities that were previously conducted in-house by the buying firm, now demanded coordination across corporate boundaries, thus affecting the level and type of uncertainties and dependencies faced by buying firms.

5.2 Impact on uncertainty

We claimed above that before the reorientation, uncertainty was treated as quite a "general" phenomenon with only few attempts to distinguish various aspects of uncertainty. As part of the reorientation, Milliken (1987) emphasized the need for more refined conceptualizations by referring to Downey and Slocum (1975, p. 562) who noted that the word uncertainty is so commonly used that "it is all too easy to assume that one knows what he or she is talking about when using the term." Milliken's framing encompassed three forms of uncertainty. First, "state" uncertainty features incomplete understanding of the interrelationships between various elements in the environment and lack of knowledge about their changes. The second form is "effect" uncertainty, referring to lacking awareness of cause-effect relationships. This uncertainty relates to the ability to realize what impact environmental changes may have on the own organization. The third form – "response" uncertainty – is associated with understanding of what response options are available to the organization and what the consequences of various responses may be.

Several other attempts to categorize the sources of uncertainty can be observed. Wernerfelt and Karnani (1987) distinguished between demand uncertainty, supply uncertainty and competitive uncertainty. Davis (1993) analyzed uncertainty consequences due to changing supply chain management practices in terms of "shortening product life cycles, complex corporate joint ventures, and stiffening requirements for customer services" (p. 35). Davis concluded that there are three distinct sources of uncertainty that plague supply chains. These sources originate in suppliers, in customers and in manufacturing operations.

Fynes *et al.* (2004) relied on a slightly different categorization by keeping supply and demand as uncertainty sources while replacing manufacturing operations with uncertainty related to technology. Also Paulraj and Chen (2007) used the demand, supply and technology categories in their study of supply chain performance. Van der Vorst and Beulens (2002) applied a broader perspective by identifying three main sources of supply chain uncertainty. What they defined as inherent characteristics included the three categories defined above: supply, demand and various manufacturing processes. They added supply chain features as a main source of uncertainty involving the configuration of chains, control structure, information system and governance structure. Finally, exogenous factors contribute to uncertainty through changes in, among other things, markets, products, technology, competition and regulation.

Simangunsong *et al.* (2012) conducted a comprehensive review of the literature on supply chain uncertainty. The review identified 14 sources of uncertainty, representing refined aspects of the categories discussed above. Regarding the handling of uncertainty, the authors distinguished between strategies for reducing uncertainty and strategies for coping with uncertainty. The ten uncertainty-reducing strategies involved process modifications through redesign of supply chain configuration combined with improved planning and information procedures. A total of 11 strategies for coping with uncertainty were identified. Several of them were based on ambitions to maintain flexibility as recommended by Wernerfelt and Karnani (1987), as well as various managerial efforts related to lean management and inventory handling. Two strategic tools appeared as means of both reducing and coping with uncertainty: information technology and collaboration. Collaboration with business partners was assumed to reduce uncertainty through sharing of important supply chain information and as a means of coping with uncertainty when these conditions arise unexpectedly. Such increasing relationship involvement raises the buying organizations' dependence on suppliers.

5.3 Impact on dependence

The changing features of purchasing behavior and supplier relationships made buying firms increasingly dependent on suppliers. Previous recommendations for avoiding dependence have been toned down, and are no longer presented as universally applicable. In the evolving type of network structures, based on cross-corporate tying of resources and linking of activities, dependencies cannot be escaped (Gadde and Snehota, 2000). Similar views were expressed by Dyer and Singh (1998, p. 675) in the claim that buying firms "can increase profits by increasing their dependence."

Paulraj and Chen (2007) analyzed the connection between resource dependence and supply chain management. They concluded that strategic partnerships with suppliers can help firms in supply chains "to gain access to or acquire unique and valuable resources that they lack". In line with resource dependence theory, they argued that the expectations of such benefits are the main motives for engaging in arrangements that increase the dependence in relation to the business partner. The means of dealing with these conditions is to try to "manage dependence by purposefully structuring their exchange relationships" (Paulraj and Chen, 2007, p. 30).

Handfield (1993) found that buying firms use two principles to reduce uncertainty through close relationships featuring increased dependence. The first is to establish just-in-time deliveries with significant suppliers. In relation to the uncertainties discussed in the period before the reorientation, this approach is a way to decrease transaction uncertainty. The second, and related approach, is to reduce the supplier base and develop close relationships with remaining suppliers. Just-in-time deliveries require consolidation of the supplier base since such arrangements call for investments of both buyer and seller. Moreover, supply base reduction enhances the knowledge of those suppliers remaining, which decreases market uncertainty.

Gao *et al.* (2005) distinguished between relational and non-relational sources of uncertainty and associated means for their handling. The authors claimed that previous research had focused on non-relational factors like product attributes, technology and various aspects of the external environment, while relational aspects had been considered to a limited extent only. Among the relational aspects affecting uncertainty and dependence, the authors pointed out the role of trust and identified three dimensions of a buyer's trust in a supplier: competence, consistency and benevolence. The authors found that the buyer's trust in the supplier, attained through relationship involvement and increasing dependence, reduced the uncertainty experienced in relation to the supplier's offering.

Thus, in various ways, modifications of supplier relations and dependence have been recommended for the handling of uncertainty. Wernerfelt and Karnani (1987) suggested three approaches: wait, focus and flexibility. In facing uncertain situations, an organization can postpone its actions until uncertainty declines. The more risk averse a firm, the greater is the incentive for the firm to wait. If the organization decides to act, there is a choice between focus and flexibility. Focus, in terms of concentration of actions, is interpreted as the more risky approach, implying that the greater the uncertainty, the more risk-averse organizations have an incentive to maintain flexibility.

The evolution of purchasing and supply management over the last decades has thus brought some significant changes in relation to uncertainty and dependence. First, from being used as quite a "general" phenomenon, the perspective on uncertainty was broadened to feature various dimensions of uncertainty, the sources of uncertainty and approaches for handling of uncertainty. Second, from focusing on single transactions, the perspective changed toward efficiency in series of transactions undertaken simultaneously and/or over time. In turn, these changes modified the view of suppliers and supplier relationships from short-term arm's length features toward high-involvement and long-term partnerships. These conditions impacted on the perception and handling of dependence. Previous ambitions to avoid dependence were no longer applicable to the same extent as before, since dependence was required to exploit the resources of business partners.

6. The impact on interdependence, power and control

In this section, we relate the discussion on uncertainty and dependence to three other inter-organizational concepts. First, previous recommendations for avoiding dependence regarded one-sided dependence on suppliers. In current organizational arrangements, close buyer-supplier relations feature interdependence, because both parties have invested in a high-involvement relationship (Bensaou, 1999; Gadde and Håkansson, 2001). These conditions also affected the perception and utilization of power. Since the power of one party is derived from the dependence of the other party, the potential power of both parties is substantial. However, owing to their interdependence, firms cannot exploit power in the same way as before, which is the second point brought up for discussion. Third, the interdependence featuring in buyer-supplier relationships affects the perspective on control. While direct ownership control of resources used to be the main option, the evolution of purchasing management made access to resources more important, implying increased dependence, and highlighting forms of indirect control.

6.1 Interdependence

Van de Ven *et al.* (1976, p. 324) claimed that "interdependence is a very difficult concept to define, both theoretically and empirically." According to Pfeffer and Salancik (1978, p. 40) interdependence "is the reason why nothing comes out quite the way one wants it to." This definition expresses a slightly negative attitude to interdependence, which is reinforced by the comment that interdependence can create problems of uncertainty and unpredictability. Moreover, Pfeffer and Salancik (1978) argue that buyer and seller are always interdependent, implying that the single actor "does not entirely control all of the conditions necessary for the achievement of an action or for obtaining the outcome desired" (p. 40). There are thus clear linkages between both uncertainty and control on the one hand and uncertainty and interdependencies on the other. Interdependence affects uncertainty and reduces the direct control available to the single firm.

Despite the above-mentioned problems with interdependence brought up by Pfeffer and Salancik (1978), the same authors claim that the typical solution to perceived interdependence and uncertainty is to increase the joint coordination between the firms. This leads to mutual control over the operations of both parties, in turn "increasing their behavioral interdependence" (p. 43). Thus, interdependence is not only difficult to define, it is also difficult to clarify the effects of interdependence, since it is perceived both as a problem and a possible solution to the same conditions. This double-sided nature of interdependence calls for further exploration.

Traditional perspectives on interdependence seem to apply a "generalized" approach to the concept by focusing on the overall firm level (cf. the early view of uncertainty). The attention is then directed to discussing how these features contribute to generation and effects of control (or lack of control) and the forces that lead to these conditions, such as various sources of power. Freytag *et al.* (2017, p. 237) concluded that the IMP view of interdependence "shifts the perspective from the general to the specific; from a 'singular' emphasis on interdependence toward the 'plural' – interdependencies." Moreover, the authors claim that all firms are continuously confronted with the effects of interdependencies in business networks. These interdependencies are not of a general nature, but specific in relation to particular features in terms of activity links, resource ties and/or actor bonds. Interdependencies are highly significant because their impact "on the economic outcome of a company can hardly be overrated" (Håkansson and Snehota, 1995, p. 51). IMP researchers prescribe to the double-faced nature of interdependencies in the argument that these conditions simultaneously empower and constrain the individual firm (Håkansson *et al.*, 2009).

Current developments in the business landscape have increased the interdependencies among firms because of specialization, outsourcing, fragmentation, globalization and other changes. We argued above that the increasing impact of uncertainty calls for more fine-tuned analytical tools than the prevailing, generalized view. The same goes for the concept of interdependencies. Freytag *et al.* (2017) analyzed the prerequisites and consequences of interdependencies in networks and suggested analytical concepts related to the three network layers. First, interdependencies in the activity layer originate from the ways in which activities are connected. Efficient performance of activities is contingent on the level of integration among activities. Second, in the resource layer interdependencies occur through the ways resources are combined. These connections are identified as interfaces that are crucial for resource utilization and development. Finally, in the actor layer, interdependencies are present because actors are related through their embedding in the network. The features of interdependencies are formed through the interaction among actors. Therefore, Freytag *et al.* (2017) conclude that the interdependencies between two organizations are preferably analyzed through the interplay between these "three I": integration, interfaces and interaction.

Numerous studies have shown the advantages in terms of improved efficiency, enhanced performance, technological development and innovation that can be achieved through interfirm connections in terms of activity links, resource ties and actor bonds. The interdependencies accompanying this embeddedness are prerequisites for potential benefits and crucial for the performance of the individual firm. At the same time, however, these benefits come at a cost, since they constrain the freedom of the firms' actions, thus illustrating the Janus-faced nature of interdependencies. These conditions are created jointly by the two actors to improve performance through integration, interfaces and interaction. But the same conditions hamper the opportunities to develop other business solutions in relation to other business partners – now and in the future. In balancing these positive and negative effects of interdependencies, both power and control play important roles.

6.2 Power

The theoretical underpinnings of power were presented by Emerson (1962). The paper was written because "considerable confusion exists concerning the concept" (p. 31). Some of Emerson's clarifications are important for the discussion in this paper. First, Emerson (1962) claimed that "power resides implicitly in the other's dependency" (p. 32), Second, power is a property of a relationship; "it is not an attribute of the actor" (p. 32). Third, even if power is defined from a dyadic perspective "the internal features of one relation are nonetheless a function of the entire network" (p. 36). In its simplest form, this means that the dependence, and thus the power of firms, is affected by third parties, to which one or both of them are related.

The power concept originated from sociology where various authors have elaborated on its sources and consequences. For example, French and Raven (1959) identified two types of power bases. One of them regards "coercive" power, which relies on the threat of force to gain compliance from others. The other type represents non-coercive power (or reward power), exhibiting more collaborative features. Research on power before the reorientation of purchasing tended to be dominated by studies of coercive power, especially in research on marketing channels (Young and Wilkinson, 1989). One reason for this seems to be that for coercive power, both measurement scales and statistical techniques for analysis were available from the sociological field (Gadde, 2016). Young and Wilkinson (1989) concluded that owing to these conditions there was a disproportionate concern with studies in industries featuring tensions. They claimed that such approaches distorted the understanding of reality and implied that researchers tended to study "the unusual rather than the norm" (Young and Wilkinson, 1989, p. 109).

Also other researchers criticized the research on power. Gaski (1984) claimed that contemporary research on power showed considerable weaknesses with regard to both methodological and conceptual issues. Frazier and Rody (1991) analyzed the sources and consequences of coercive power. They found that coercive strategies had limited effect when the counterpart featured low dependence by having multiple partner alternatives. When the firms were highly dependent, they had few reasons to exert coercion because such approaches would negatively affect the benefits they received from the business partner and the investments undertaken. In a historical review, Hopkinson and Blois (2014) criticized the focus on coercive power and the simplification of a complex phenomenon, and concluded that new avenues for research have to be tried.

Alternative research directions have been suggested by several authors. A common perception is that the previous definition of power in relation to dependence is less appropriate than before. Since the dependence among actors is much stronger than it used to be, the potential power in relation to business partners has increased substantially. Despite these conditions, firms do not exploit their powerful positions to the same extent that they used to (e.g. Weitz and Jap, 1995; Kiyak *et al.*, 2001, Brito and Miguel, 2017; Huo *et al.*, 2017). These, somewhat paradoxical, conditions are explained by Frazier and Antia (1995) through the argument that a firm's possession of power must be kept separate from the way power is utilized. Power can not only be applied coercively, but also as a means of establishing shared norms and expectations between two parties with the aim of exploiting mutual gains (Gadde and Håkansson, 2001). Similarly, Frazier (1999, p. 227) concluded that strong power through prevailing interdependencies is supposed to promote "relational behavior because of the common interest, attention and support." On this basis, Frazier claimed that in situations where both parties possess a high level of power, these conditions are likely to generate trust and commitment. In a similar vein, Reimann and Ketchen (2017, p. 4) claimed that firms "refrain from using their power in the interest of collaborative relationships." Furthermore, Nevin (1995, p. 332) argued that dependence and power actually are the foundations of successful relational exchange, even claiming that they represent "the underlying roots of solidarity and trust." This view sharply contrasts with the conception of power before the reorientation of purchasing.

Irrespective of whether power is perceived an instrument for confrontation or for collaboration, the main role of this mechanism is about influencing others through various means of control.

6.3 Control

Emerson (1962) concluded that it should be clear to each party in a relationship that there are opportunities to control and influence the conduct of others owing to prevailing mutual dependency. The capability to influence resides in control of the things the counterpart values. There is a clear connection between power and control illustrated by El-Ansary and Stern (1972, p. 47) who defined power as the ability "to control the decision variables in the marketing strategy of another firm." Weitz and Jap (1995) discussed three mechanisms for achieving control. First, authoritative control is attained either through ownership or through exploitation of power. Second, contractual control is based on incentives and compensations, regulated in contracts. Third, normative control is rooted in shared visions, common norms and cultures. The authors claimed that the previous research focus on authoritative control was shifting toward contractual and normative mechanisms.

Regarding contractual control, it is important to note that different theoretical schools emphasize distinct functions of a contract. In transaction cost economics, safeguarding through control is the most prominent function, in order to protect investments and to minimize opportunism. Control can be implemented by assigning decision and termination rights, as well as by defining processes for dispute resolution (Schepker *et al.*, 2014). Transaction cost economics is one of the most dominant theoretical perspectives applied in purchasing and supply management research (Spina *et al.*, 2016). However, there are alternative perspectives on the role of contracts. In the resource-based view, contracts serve the goal of coordination (Mellewigt *et al.*, 2007; Schepker *et al.*, 2014). To this end, contracts may include clauses defining roles and responsibilities. This coordination function is particularly relevant when actions and tasks are uncertain and complex (Gulati and Singh, 1998). Agency theory, finally, views contracts primarily as devices to align incentives and to achieve risk sharing between parties, particularly in case of information asymmetries (Eisenhardt, 1989). Thus, besides enabling control and coordination, contracts can align incentives and thereby support cooperation (Nullmeier *et al.*, 2016).

However, research also shows that contracts may be less efficient as control mechanisms. First, explicit contracts might impact negatively on collaboration since they "signal distrust and are often complex, which reduces flexibility and may subsequently lower relationship performance" (Jap and Ganesan, 2000, p. 241). Second, Samaha *et al.* (2011, p. 99) concluded that "using contracts to manage a relationship represents a double-edge sword." Contracts may be beneficial because they can suppress the negative effects of conflict and opportunism. But contracts also affect cooperation negatively by creating a more formal and adversarial relationship environment. In many situations, therefore, the normative control mechanism identified by Weitz and Jap (1995) is more effective. For example, Frazier (1999) found that normative control facilitated relational exchange, which positively impacted performance.

Lusch and Brown (1996) concluded that the positive effects of normative control were associated with high bilateral dependency handled by governance through social and relational norms. Relational norms refer to shared expectations regarding the behavior of each party. These norms are formed by prior exchanges and mutual commitment and enhance cooperation in terms of information exchange and collaborative efforts, such as joint problem resolution and mutual strategic planning (Handley and Benton, 2009). Through such arrangements, it is possible for organizations to exploit "ways to develop mutual influence without the formal authority to command" (Cohen and Bradford, 1987, p. 7). This view is similar to the IMP perspective that informal mechanisms tend to be more important for performance, exemplified by the statement that what actually matters "is the interaction between the actors, rather than the plans or control of any one of them" (Håkansson *et al.*, 2009, p. 45).

To support governance through normative control, Frazier (1999) suggested a control system involving a set of agreements, programs and interactions to shape strategies and actions of related organizations. Such a system represents a means to influence an organization's relationships. Ford *et al.* (2011) argue that such influence is an intrinsic ambition of organizations. These control aspirations create a paradox related to the basic functioning of relationships and networks on the one hand and the idea of control on the other. Ford *et al.* (2011) conclude that one of the key forces in evolving networks is the ambition of companies to try to control the network around them. But the more the single company achieves this ambition of control, the less effective and innovative the network becomes. The reason is that the knowledge and economic effects of an actor are determined by the connections to other relationships in the network. These connections serve as sources of stimulus and change and make the network dynamic and evolving. Therefore, severe problems may appear since "the more the single actor becomes the sole source of wisdom in innovation in the network, the more likely it is that the network becomes fixed in its processes and unresponsive to wider changes" (Håkansson *et al.*, 2009, p. 193).

The discussion in this section illustrates the relationship between changes of purchasing management and interdependencies, power and control. These behavioral concepts enhance the understanding of the linkages between uncertainty and purchasing management, to which we return in the section below.

7. Discussion

Previous sections showed the significant interconnections between purchasing management and uncertainty. The evolution of purchasing management shifted the attention to other dimensions of uncertainty than the ones most visible before the reorientation of purchasing and supply management. In particular, the development from low involvement relationships with suppliers toward close relationships impacted on what features of uncertainty are the most salient. However, since most firms are faced with both types of supplier relationships, if not the full spectrum from mutual independence to mutual dependence (Bensaou, 1999), handling the multiple consequences of uncertainty is a complex challenge. In this section, we illustrate this challenge by discussing the role of uncertainty in relation to the purchasing strategy of companies. The dimensions of a firm's purchasing strategy can be expressed in various ways. Here, we rely on Gadde and Håkansson (2001) who distinguished three aspects: the decision whether to make or to buy, the nature of relationships with individual suppliers and the features and the organizing of the supplier base.

7.1 Make or buy

This choice is a classical issue in purchasing management and strategy, relating to where the boundary of the firm should be located: i.e. what to include and what to exclude. Historically, this decision could easily be reversed from one year to the next, depending on costs and capacities at hand internally and what was available externally. Owing to prevailing standardization and arm's length conditions, switching costs were low in relation to changes between make and buy, as well as between various external sources. These conditions caused low uncertainty in decision making regarding whether to make or to buy, as well as low need uncertainty since business exchange regarded standard products. The same conditions are still much the same with regard to procurement of standardized offerings requiring limited involvement with suppliers.

Regarding high-involvement relationships, the conditions are quite different. Business exchange with suppliers includes more complex offerings, implying increasing uncertainty with regard to the selection of supplier. Moreover, owing to enhanced buyer-supplier adaptations, the decision regarding make or buy is more difficult to reverse than before, which further enhances decision-making uncertainty. Another source of uncertainty related to boundary setting regards the feature of what is acquired from suppliers. Increasing attention is paid to issues related to the scope of what is outsourced with associated consequences for need uncertainty. For example, a firm has a choice between buying components or systems; in both cases, design and development may or may not be included. Such decisions feature several uncertainties related to the future development of technology, the skills and capabilities available at suppliers and the requirements on in-house competencies.

7.2 The nature of relationships with suppliers

The main change regarding the relationships with suppliers was the shift from a predominantly low involvement approach in transaction-based, arm's length relationships, toward more high involvement in long-term partnerships. In the pre-reorientation era, uncertainty on the relationship level was low because of interchangeable business partners, while the uncertainty in individual transactions was the most significant one. The same conditions characterize today's supplier relationships featuring low involvement, which still may be productive in certain contexts.

In high-involvement relationships, two main forms of uncertainty are present. First, the selection of business partner is crucial since this decision has more long-term consequences than it used to. Not only the current skills and capabilities of the supplier need to be taken into account, since the decision will have a long-term impact, it is necessary to also consider and evaluate the future potential of the competence of the supplier and its other network partners and the associated consequences for the interplay with in-house capabilities. It goes without saying that these issues feature substantial uncertainty.

The second type of uncertainty relates to the level of involvement with individual firms. The joint performance in a relationship can always be enhanced through increasing involvement. On the other hand, the investments in such relationships are substantial. Sometimes, therefore, these investments may outweigh the potential benefits. Therefore, determining the adequate level of involvement with specific business partners is a most uncertain decision. Such evaluations are crucial also in established relationship to adapt the level of involvement to changing conditions, by either increasing or decreasing involvement. In this way, the market uncertainty in Figure 1 has been transformed into uncertainty about the appropriate level of involvement.

7.3 The features and the organizing of the supplier base

One of the most significant outcomes of the evolution of purchasing and supply management is the substantial reduction of the supplier base of a buying firm. In the pre-reorientation era firms relied on multiple sourcing from competing suppliers. This approach promoted low-priced transactions and reduced the dependence on individual suppliers. Over time, however, buying firms realized that the total costs of maintaining a large supplier base were substantial, although the cost for handling an individual relationship was low. Moreover, enhanced involvement with suppliers required consolidation of the supplier base since such relationships represent resource-demanding alternative means of reducing uncertainty regarding supplier performance. Through increasing supplier collaboration, buying firms were able to reduce total landed cost, which provided more substantial financial benefits than the previous focus on chasing low price. Moreover, increasing reliance on system sourcing reduced the supplier base, since several vendors of components were replaced by one system supplier.

These changes affected uncertainty in two ways. On the one hand, uncertainty regarding perceived dependence on individual suppliers increased when single sourcing replaced multiple sourcing. On the other hand, the close relationships with the remaining suppliers reduced the need uncertainty as well as the transaction uncertainty in relation to delivery and quality. Moreover, the evolution of purchasing impacted on the organizational arrangements. Before the reorientation, the internal organization of the buying company was given most attention, while suppliers were only loosely coupled.

In the current post-evolution era, the organizational linkages to suppliers have come to the fore, in terms of activity links and resource ties. In today's business landscape, companies are closely connected through information systems which enable improved communication between firms as well as tracking and tracing of goods. These forms of inter-organizational information exchange and openness between business partners contribute to reducing supply and demand uncertainty.

8. Conclusions and implications

8.1 Contributions

The most important contribution of the paper is the illustration of the many facets of the interplay between uncertainty and purchasing management. The main conclusion of the analysis is that uncertainty in purchasing management has many different forms and cannot be avoided. As discussed, new approaches to purchasing management and the reconsideration of purchasing strategy led to the reduction of specific types of uncertainty. At the same time, however, these same modifications introduced or increased other forms of uncertainty. These conclusions are in line with observations from previous studies. Zsidisin (2003) showed that risk and uncertainty are multi-dimensional constructs, impacting on numerous intra- and inter-organizational issues. In a similar vein, Flynn *et al.* (2016) found three types of uncertainties, each one related to a specific supply chain level (micro, meso and macro). They concluded that uncertainty cannot be treated as a singular variable and that different types of uncertainty require differentiated levels of supply chain integration to function effectively.

The second contribution of the paper is the analysis of how the relationship between uncertainty and purchasing management is affected by, and affects, the behavioral concepts dependence, interdependence, power and control. For example, the level of dependence in relation to a supplier is contingent on the nature of the uncertainty featuring in the purchasing management approach applied by the buyer. Furthermore, changing interdependencies between buyer and supplier provide both problems and opportunities in a relationship and increase some uncertainties while others are reduced. Specifically, when dependence on individual suppliers is avoided, the actual impact of power and control in purchasing management is limited since the linkages between the business partners are weak. In high-involvement relationships, however, both parties are in possession of substantial power sources since buyer and seller are highly interdependent. However, in these relationships, power is not exploited in the primitive way recommended before the purchasing reorientation. In a similar way, mechanisms of control have shifted away from previous authoritarian and contractual aspects. This means that both power and control are now applied primarily as means of strengthening the collaborative aspects of a business relationship rather than the confrontational approach prioritized previously. As shown in the paper, these shifting perspectives provide particular consequences for uncertainty and purchasing management.

Finally, the analysis of uncertainty in relation to purchasing strategy pointed out some important interrelationships. The discussion revealed that different options with respect to strategic decisions regarding make or buy, relationship involvement and supplier base configuration impact on uncertainty in two ways. First, the strategic action that is employed determines what dimensions and aspects of uncertainty will appear most significant. Second, the resulting level of uncertainty is affected by the particular purchasing strategy applied. Third, this study provides support to the finding of Paulraj and Chen (2007, p. 37) that "environmental uncertainties lead to increased integration between supply partners." They also concluded that supply and technology uncertainty are drivers of strategic supplier management with associated positive effects for the performance of both buyer and supplier.

8.2 Managerial implications

The paper confirms the significant connections between purchasing management and uncertainty. As shown above, this uncertainty takes different forms and cannot be avoided since reducing one type of uncertainty will increase other types. These conditions create unwanted consequences and therefore uncertainty must in some way be handled managerially. In these efforts, firms are recommended to rely on some form of risk and uncertainty monitoring system (Hoffmann *et al.*, 2013). The authors make a distinction between environmental uncertainty and behavioral uncertainty. Environmental uncertainty regards unpredictable conditions and must therefore be dealt with through adaptations. Behavioral uncertainty originates from insufficiencies related to delivery and quality and can thus be monitored and handled actively.

As shown in this paper, uncertainty is related to the behavioral concepts of dependence, power, control and interdependence. Therefore, a monitoring system should take the point of departure in the occurrence of these conditions in the relationships with suppliers. Similar arguments have been put forward in other research. For example, Brito and Miguel (2017, p. 62) argue that "organizations need to periodically assess their interdependence and power position relative to their suppliers." One critical aspect in these respects concerns the level of involvement with suppliers since both interdependence and power is affected by the closeness in the relationship. Therefore, monitoring and adapting the level of involvement to changing conditions is one of the critical issues in purchasing management (Gadde and Håkansson, 2001). Such actions are required to avoid that the buyer ends up in over- or under-designed relationships which have been found to be paths to failure (Bensaou, 1999). Gadde and Snehota (2000), as well as Harland *et al.* (2003), recommend extending this monitoring to the network level. The latter authors developed a "supply network risk tool" and discuss the implementation of this tool.

Regarding managerial actions, the analysis above showed that current interdependencies make it central to apply power and control in other ways than previously. For example, Chae *et al.* (2017) point out the importance of using power to motivate suppliers rather than to force them to some form of desired behavior. In particular, they claim that coercive power used in isolation can severely hurt relationship commitment, while in combination with reward power, positive effects may be attained. In this respect, the authors argue that supply managers should consider the competence-enhancing role of power. In a similar vein, Zhao *et al.* (2008) suggested that by using power appropriately, buying firms may enhance the supplier's commitment in the relationship.

In relation to control, Brito and Miguel (2017) claim that strong and powerful firms should consider relaxing some contractual control features and recommend that interfirm interaction "is viewed as a source for learning and for the development of new capabilities" (p. 84). In a similar vein, Choi *et al.* (2001) warn against too much reliance on control. The underlying reason for this claim was that supply networks actually are emerging rather than resulting from purposeful design by a single entity. Thus, imposing too much control may constrain innovation and flexibility. On the other hand, allowing too much emergence can undermine managerial predictability and work routines. Buying firms are therefore involved in a delicate balancing act: to decide when to control the supply network and when to let it emerge.

Finally, such balancing is a central feature for most issues discussed in this paper. Not only do buying firms have to balance their control aspirations in their managerial decisions, they also need to balance the involvement with suppliers with regard to the opportunities and sacrifices featuring close relationships, as well as in relation to dependence and interdependence. Moreover, buying organizations have to balance their utilization of power in order to mobilize and motivate suppliers rather than commanding them. Finally, since uncertainty cannot be avoided in purchasing management, the managerial actions must be directed toward the balancing of various forms of uncertainty.

Note

1. Note that the popular purchasing portfolio by Kraljic (1983) segments purchase items on the basis of profit impact and supply risk. Strictly speaking, the latter parameter is better labeled "supply uncertainty."

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