

TITLE:

Supply Chain Quality Relationship Management (SCQRM): A Step Forward

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Summary

The main focus of this paper is to highlight the importance of efficient implementation of quality management systems throughout the whole supply network, through Strategic Supplier Relationship Management (SSRM) and the establishment of adequate relationships portfolio. To achieve this, a literature review is proposed analyzing the evolution of relationship management literature towards the consideration of a broader network. From this, main gaps in operations management literature and research are identified. To address these gaps, a new concept is developed entitled *Supply Chain Quality Relationship Management (SCQRM)*. Providing future research paths, SCQRM is suggested as a means to clarify the suggested literature links between the different triadic relationships, *Supply Chain Quality Management (SCQM)* systems and supply chain performance.

INTRODUCTION

The increased proliferation of studies under the network and the collaborative perspectives made *Supplier Relationship Management* (SRM) the latest buzzword. This occurred as a consequence of the *Global Supply Chain* phenomenon which increased competition, effectiveness and efficiency pressures (Cousins and Spekman, 2003:20). Moreover, due to *supply base rationalization* (Cousins, 1999), Relationship Management (RM) gained greater relevance, amplifying the need to manage closer relationships (Child and Faulkner, 1998:125; Trent, 2005:56). Thus, instead of just expecting price concessions (Day *et al.*, 2008:40) or that suppliers provided solely products according to specifications, the literature and research on partnership sourcing and collaboration has shown that, through the development of closer relationships, suppliers can offer much more benefits than increased specialization and economies of scale (Ford *et al.*, 2003:91). Examples of these benefits are innovation, knowledge, resources, extended social capital and greater quality integration (e.g., Ganesan, 1994; Larson, Carr and Dhariwal, 2005; Kalwani and Narayandas, 1995; Daugherty *et al.*, 2006; cited by Whipple, Lynch and Nyaga, 2010:507). Therefore, the whole point of SRM research should be precisely the understanding of how to attain these enhanced supply chain performance (SCP) benefits.

Consequently, operations management (OM) research has recently focused specifically on the enhanced quality benefits that can be obtained through the development of closer relationships. Combining quality management (QM) and supply chain management (SCM), authors argue for the urgency in implementing *Supply Chain Quality Management* (SCQM) strategies, discussing the increased SCP benefits of this approach as an overall process/system (e.g., Flynn and Flynn, 2005; Foster, 2008; Kuei, Madu and Lin, 2008; Lin *et al.*, 2005; Robinson and Malhotra, 2005). However, there is still a need for further conceptual clarification regarding the relationship types and further empirical research on how these relationships affect SCQM processes and performance.

As a result, in order to address these gaps, this paper intends to discuss *Supply Chain Quality Relationship Management* (SCQRM) (Soares and Soltani, 2010:6) as a step forward in OM research through the focus on RM and SCQM literature. For this purpose we shall start by providing a brief description of the RM literature, positioning relationships in OM research. Following this, an overview of Supplier Relationship Management (SRM) main issues and trends is provided, analysing different approaches to relationship management, typologies and suggesting a new conceptualization that incorporates buyer-supplier and supplier-supplier perspectives on RM. Finally, SCQM recent trends are reviewed, main gaps are identified and the new concept (SCQRM) is justified as a way to manage relationships towards improved quality performance, followed by a conclusion where further research suggestions are pointed.

RELATIONSHIP MANAGEMENT

Drawing from marketing and OM disciplines, RM reveals to be quite an eclectic field of research, grounded by different theoretical backgrounds such as: Transaction Cost Analysis, Relational Exchange Theory, Contingency Theory, Game Theory, Agency Theory, Social Exchange Theory, Social Network Theory, Resource-based View and Resource Dependency Theory amongst others. These theories are not further explored because the focus here is not theories review (which has already been provided by different authors), but instead a review of the concepts used in the field.

Additionally, confusion is added to RM studies by the two different levels of analysis: a customer relationship management (CRM) approach that broadly refers to the relationships with customers, and a supplier relationship management (SRM) approach, to indicate the focus on suppliers. While some authors consider CRM when talking about the supplier's view on the management of the relationships with their customers (e.g., Lambert, 2004:20), other, put more

emphasis on the choice of suppliers by the buyers and include all the established supplier relationships within SRM (e.g. Gradinger, 2009), leaving CRM for relationships with final consumers (subject of marketing research) and the relationships between buyers and suppliers for OM and SRM (Gradinger, 2009:6), the focus of the present review.

Therefore, for the purpose of summarizing the existing literature and research on relationships, Cousins (2002:72-76) suggests that it can be roughly categorized into three major viewpoints: the *behavioural or humanistic perspective*, where relationships between firms are analogous to individual interpersonal relationships (including trust, commitment communication and cooperation); the *economic perspective*, mostly based on Williamson (1975/1985) and Coase's (1937) work (cited by Cousins *et al.*, 2008:30), where inter-firm relationships are interpreted based on economic power exchanges (related to firm size and market position); and lastly, the *Industrial Marketing and Purchasing (IMP) group perspective*, that assumes an holistic and systematic approach by focusing on relationship networks mapping, but where the "rational network strategies are not feasible" (Harland, Lamming and Cousins, 1999:660).

Having these viewpoints as the background, most of the literature tends to focus on the distinction between *discrete transactions* (usually considered *low involvement*) and *relational exchanges* (commonly defined as *high involvement*) (Gadde and Håkansson, 2001:152; Schimmelpfennig, 2008:7), where a *discrete/transactional relationship* refers to "a buying-selling agreement where participants conduct business for a specific time period according to terms generally outlined in a standard contract," whereas *relational or collaborative exchanges* refer to "a long-term relationship where participants generally cooperate, share information, and work together to plan and even modify their business practices to improve joint performance" (Whipple, Lynch and Nyaga, 2010:507). Establishing one or the other type of exchanges is determined by the type of organisational management beliefs in place that tremendously affect how SC's are interpreted and defined. Nevertheless, relationships cannot be portrayed by this dichotomy given that different levels of involvement can be developed between partners according to their strategic importance (Day *et al.*, 2008; Ford *et al.*, 2003; Lambert, Knemeyer and Gardner, 2010; Whipple, Lynch and Nyaga, 2010).

As a result, relationship discussions are no longer about whether to remain transactional, as in the traditional view, or whether to become more relational and adaptive (Gradinger, 2009:10). Instead, they became a matter of being the adequate type to generate intended outcomes, fitting the extended portfolio of relationships established and about their contributions to future network development (Emmett and Crocker, 2006, 2009; Cousins, 2002; Gadde and Håkansson, 2001; Trent, 2005; Whipple, Lynch and Nyaga, 2010). This implies that companies develop, in different stages, different relationships with different nodes of the network (Bensaou, 1999; Lambert, Knemeyer and Gardner, 2010; Macbeth and Ferguson, 1994). Furthermore, these relationships can then be positioned within a '*continuum*' of varied involvement levels (Dwyer *et al.*, 1987:14; Robicheaux and Coleman, 1994:39; cited by Schimmelpfennig, 2008:7).

This assumption of the relationships portfolio implies not only the management of the level of involvement, nature, scope and performance of the established relationships (Ford *et al.*, 2003:85-86) but also particular attention to the product, industry and competitive pressures involved (Bensaou, 1999:43). Hence, the need for *Strategic Supplier Relationship Management (SSRM)* (Day *et al.*, 2008:40), a structured and proactive approach where companies intentionally and strategically manage their relationships, recognising the network structures complexity, possible benefits, problems and finally their potential impacts on overall performance (Cousins and Spekman, 2003:21; Gradinger, 2009:7). Reducing the supply base and selecting the *critical suppliers* (cf. Figure 1) with which is more appropriate to develop long-term relationships will naturally influence the remaining suppliers and ultimately the whole chain. They are called *critical* because they supply materials or services that are crucial to the company's success (Trent, 2005:55-56).

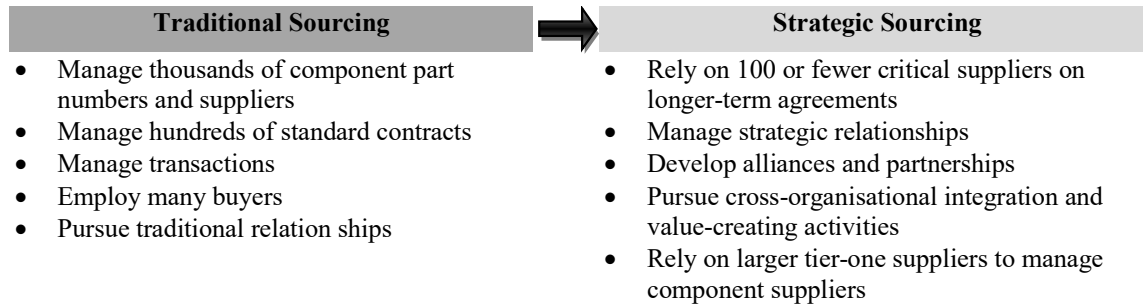


Figure 1: Supply Management's Changing Role: Main Characteristics (Source: Trent, 2005:56).

SUPPLIER RELATIONSHIP MANAGEMENT (SRM)

According to Emmett and Crocker (2009:77), SRM refers to “the management of the whole interface between supply and buying organizations through the whole life of the contract. The aim is to achieve maximum long-term contribution from the supplier that works towards achieving the buying organization’s strategic goals.” In other words, SRM requires that the network participants make the most out of the established relationships. This goes far beyond the establishment of a formal agreement or legal contract at the beginning of the outsourcing decision (Day *et al.*, 2008; Emmett and Crocker, 2009; Gradinger, 2009) and implies more than technological integration as perceived by the traditional approaches (Gradinger, 2009:7). SRM is then interpreted as “a broad based management methodology and set of practices that describe how a firm manages its supply base” providing “a philosophy, shared throughout an organization, that supplier relationships are important” (Trent, 2005:54).

The focus here is on *adding value* to the supply chain (SC) – *shared value* as Porter and Kramer (2011) would argue – where relationships are interpreted as processes that need to be managed to produce the desired outcome, which influences the type of established relationships (Cousins, 2002:78). Given this, several authors argue that added value can be obtained through the strengthening of mutually beneficial relationships that stimulate the development of trust, further commitment and stronger ties which make long-term relationships a profitable alternative (Cousins, 2002; Day *et al.*, 2008; Emmett and Crocker, 2006, 2009; Ford *et al.*, 2003; Gadde and Håkansson, 2001; Gradinger, 2009; Schimmelpfennig, 2008). This long term view on the relationship portfolio management requires the involvement of the whole organisation in the “proactive design” (Gradinger, 2009:7) of all supply relations in order to achieve both operational and strategic/competitive benefits (Webb, 2007:7; Trent, 2005).

SRM: the network approach

As suppliers increasingly reveal to be fundamental elements of the supply network (Trent, 2005:55), studies have moved forward, and instead of focusing solely buyer-supplier relationships, they are also considering supplier-supplier relationships focusing on the supplier’s perspective, perceptions and expectations and even focusing triadic arrangements where buyer-supplier-supplier relationships are analysed (cf. Figure 2). This move was possible especially due to the contribution of supply network theories that made easier for scholars to interpret SC as a system of interconnected nodes and links that ultimately influence each other’s performance (Harland, 1996; Harland, Lamming and Cousins, 1999).

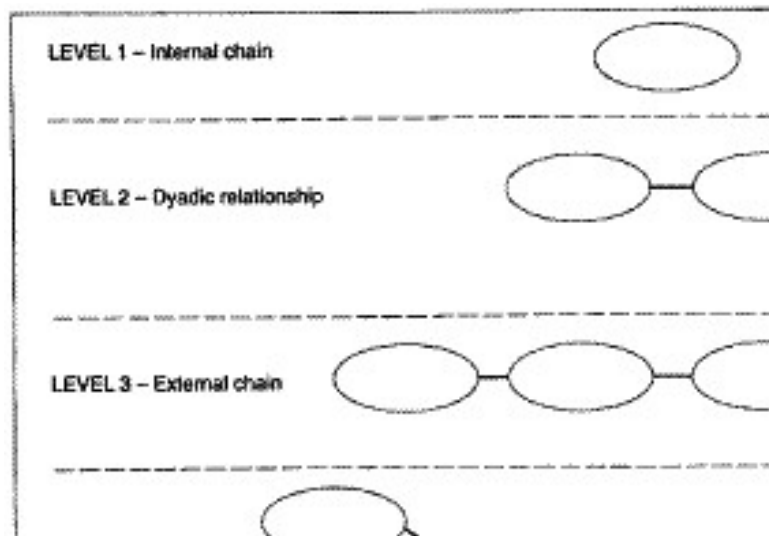


Figure 2: Supply thinking evolution: levels of research in SCM (Source: Harland, 1996:72)

The management of buyer-supplier relationships is far more complex than the traditionally adopted linear chain approach (Ford *et al.*, 2003:15) centred in the focal company and its links with upstream or downstream flows of information. Therefore, the overall SC is seen as a social network where the relationships extend beyond immediate suppliers to provide superior competitive advantage (Choi *et al.* 2001; cited by Choi and Wu, 2009:9). It is then assumed that prosperous SCM implies inter and intra-organizational processes that require both internal and external SC integration (usually through the establishment of cross functional teams) and also the management of the generated network relationships (Brewer and Speh, 2000:78; Gunasekaran, Patel and McGaughey, 2004:334) (cf. Figure 3). Thus, these *strategic networks* (Child and Faulkner, 1998:113) emerge for a variety of purposes such as to reduce uncertainty, provide flexibility, capacity, speed, information or access to tangible and intangible resources and skills (Child and Faulkner, 1998:114-115).

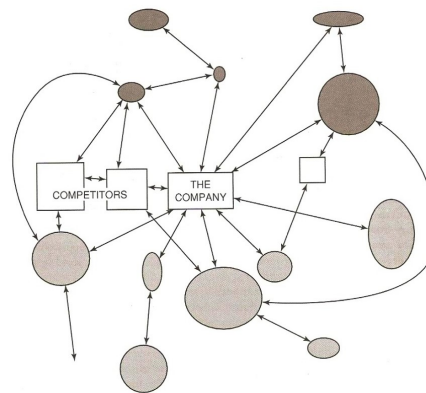


Figure 3: The network of SC relationships (Ford *et al.*, 2001:15).

Consequently, companies cannot ignore the effects that one relationship with one player in the chain will have in another player, since ultimately they will influence overall performance (Choi, 2007:51; Choi and Wu, 2009:8; Trent, 2005:56). For this reason, the study of SC relationships can be better understood within a network perspective that acknowledges the links and influences between all the elements in the system. Given this, any relationship (its costs or its benefits) cannot be fully understood without considering its broader context, its position within the network and its extent (Ford *et al.*, 2003:18).

Accepting this network perspective on SC's (Schimmelpfennig, 2008:8), implies taking the *continuum* approach and recognizing the portfolio of different relationships that needs to be established and matched in order to efficiently and effectively manage suppliers (Bensaou, 1999:37). This will naturally imply internal and external integration, managing closer relationships, sharing the relevant information, higher levels of visibility, transparency, flexibility (Emmet and Crocker, 2006:53) and having a *shared vision* (Vangen and Huxham, 2005) that focus always on customers (whether internal or external) and on a larger SC that extends further than 1st tier suppliers and direct customers.

Concurrently, it became obvious that the typical dyadic approach to the study of relationships (either by focusing buyer-supplier or supplier-supplier interactions) did not portray the complexity of the arrangements established within a SC (e.g., Choi and Wu, 2009). The study of dyads is limited because it does not consider the two players within the broader network and because by focusing on how nodes interact (e.g. how buyer influences supplier) it does not consider the influences between links (e.g. how buyer-supplier link affects supplier-supplier link) (Choi and Wu, 2009:10). By accepting the network perspective scholars are recognizing the need to extend the literature and research beyond dyads since it is argued that network relationships cannot be fully understood if a third-echelon is not considered (e.g., Bernardes, 2010; Choi *et al.*, 2002; Choi, 2007; Choi and Wu, 2009; Dubois, 2009; Wu and Choi, 2005; Wu and Choi, 2009; Wu, Choi and Rungtusanatham, 2010; Peng, *et al.*, 2010).

In turn, triadic relationships (buyer-supplier-supplier) refer to the possible connections and ties that can be established between three actors in the chain (Madhavan *et al.*, 2004; cited by Peng *et al.*, 2010:399). If we focus again on figure 3, and isolate only three elements of the network in detail, this triadic arrangement becomes obvious (as in figure 4). Furthermore, six different types of triad structures can be identified (cf. figure 5) (Wasserman and Faust, 1994; and Gulati and Gargiulo, 1999; cited by Peng, *et al.*, 2010:400) and will differently influence cooperative performance (Peng *et al.*, 2010:402).

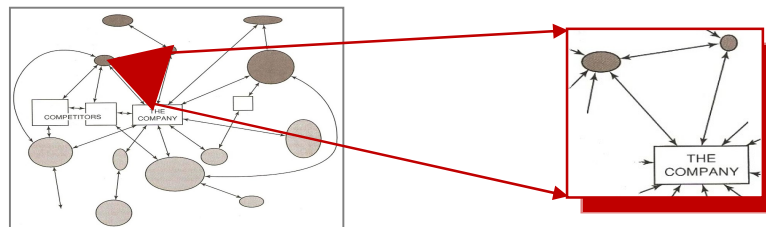


Figure 4: Detail of figure 9 to represent the triad within the network.

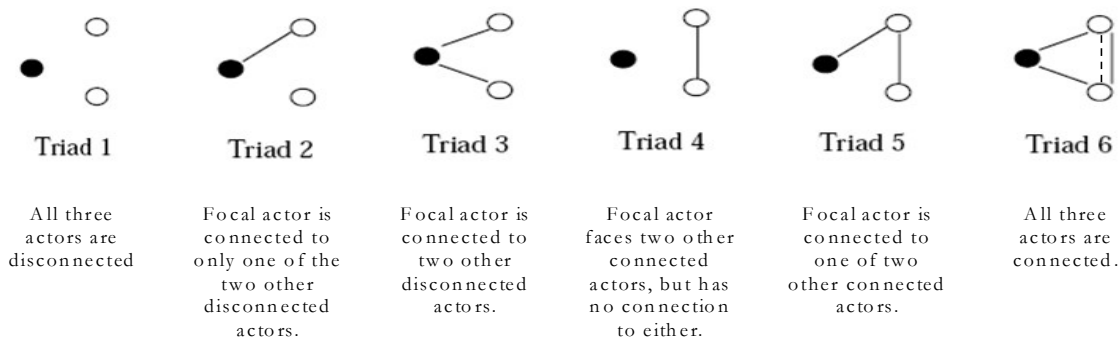


Figure 5: Six types of triads (Adapted from: Peng, et al., 2010:400).

Nevertheless, despite a growing trend, according to Peng *et al.* (2010:399), triads still require further research. Hence, for the purpose of this review, we shall focus triad type 6 where all

actors are directly or indirectly connected, where *co-opetition* is accepted, and where all ties contribute and affect the final performance outcomes (Wu, Choi and Rungtusanatham, 2010:116).

SRM models: an overview

As a result of this growing trend towards SRM, several models have been suggested to guide organisations through SRM such as the *Kraljic Matrix* (1983; cited by Cousins *et al.*, 2008), which represents the general strategies to adopt within a matrix, distinguishing suppliers as ‘bottlenecks’, ‘critical’, ‘routine’ or ‘leverage’; the *Maturity Grid* (Macbeth and Ferguson, 1994) used to guide partnership sourcing; the *Partnership Model* (Lambert, Emmelhainz and Gardner, 1996) that classifies these sourcing relationships into partnership types I, II or III, excluding legal combinations; a model of inter-firm relationships designated the *Dependency* (Historic, Economic, Technological and Political dependency) and *Certainty* (Risk VS Trust) matrix (Cousins, 2002) that suggests two forms of competition (*adversarial* and *opportunistic*) and two forms of collaboration (*tactical* and *strategic*); and the *Type of collaboration matrix*, where ‘market’, ‘operational’ or ‘strategic collaboration’ are identified (Cousins, 2005; cited by Cousins *et al.*, 2008).

As Macbeth and Ferguson (1994:106) that suggest a relationships continuum (from vertical integration to the pure market) in the frequently cited book *Partnership Sourcing*, Lambert, Emmelhainz and Gardner (1996) focus on the importance of partnerships presenting a continuum of partnership degrees (cf. Figure 6 and 7).

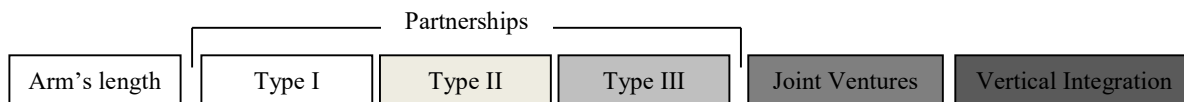


Figure 6: Types of relationships (Source: Lambert, Emmelhainz, Gardner, 1996:2).

Type I	<i>The organisations involved recognise each other as partners and, on a limited basis, coordinate activities and planning. Usually, the partnership is focused more on short-term objectives and has less cross-functional and cross-division involvement.</i>
Type II	<i>The organisations involved progress beyond coordination of activities to integration activities. Although not expected to last “forever” the partnership has a long-term horizon. Multiple divisions and functions within the firm are involved in the partnership.</i>
Type III	<i>The organisations share a significant level of strategic and operational integration. Each party views the other as an extension of their own firm. Typically no “end date” for the partnership exists.</i>

Figure 7: Partnership Types explained (Adapted from: Lambert, Knemeyer and Gardner, 2010:4).

From this, they were able to classify the company’s portfolio of relationships based on what they call the *Partnership Model* (cf. Figure 8), which was created from *The Global Supply Chain Forum* companies’ requests (Lambert, Emmelhainz, Gardner, 1996). These authors also propose a *Collaboration Framework* (cf. Figure 9) to use when “the conditions for successfully using the partnership model have not been met: a new relationship with high potential or an important relationship to each side that is not balanced” (Lambert, Knemeyer and Gardner, 2010:88).

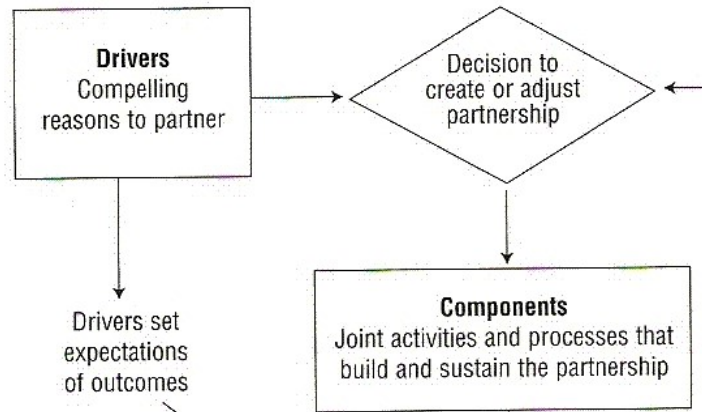


Figure 8: Partnership Model (source: Lambert, Emmelhainz, Gardner, 1996:4).

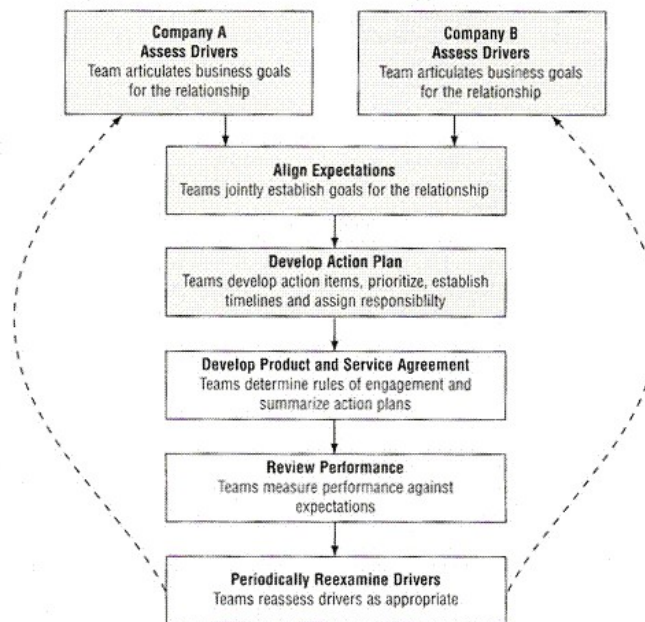


Figure 9: The Collaboration Framework (Lambert, Knemeyer and Gardner, 2010:79).

Following the portfolio approach, Cousins (2002:78) also suggested a matrix for thinking about the management of inter-firm relationships based on the levels of Dependency (Historic, Economic, Technological and Political dependency) and Certainty (Risk VS Trust) (cf. figure 10).

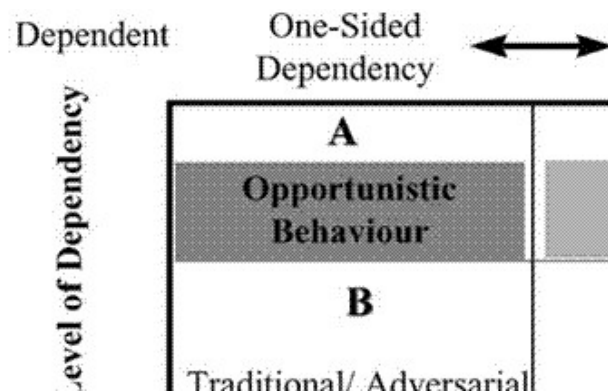


Figure 10: A dependency and certainty conceptual model of inter-firm relationships (Cousins, 2002:78).

In broad terms, the author proposes two forms of competition (adversarial and opportunistic) and two forms of collaboration (*tactical* and *strategic*) (Cousins, 2002:80). On the one hand, *adversarial relationships* refer here to the traditional arm's length arrangements previously described, whilst *opportunistic relationships* focus immediate price concessions in short-term transactional exchanges (Cousins and Spekman, 2003:23). On the other hand, in *tactical collaboration* players focus mainly on assured relationships and related process improvements, such as quality, inventory management, etc. (Cousins, 2002:80) – probably closer to the previous definition of cooperation – whilst in '*Strategic Collaboration*' players are expected to develop very close and long-term relationships that are mutually dependant and beneficial (Cousins, 2002:80).

Nonetheless, besides the *Partnership Model* (Lambert, Emmelhainz, Gardner, 1996) or Macbeth and Ferguson's (1994) *Maturity Grid* (both focusing partnership dyads), a consistent approach to SRM and network relationship development seems to be absent both in the literature and in practice, where suppliers are categorized according to individual and random criteria (Gradinger, 2009:3; Ford *et al.*, 2003:84) or where supplier selection tools (based on risk and dependency) are used as SSRM models (e.g. cf. Figure 11).

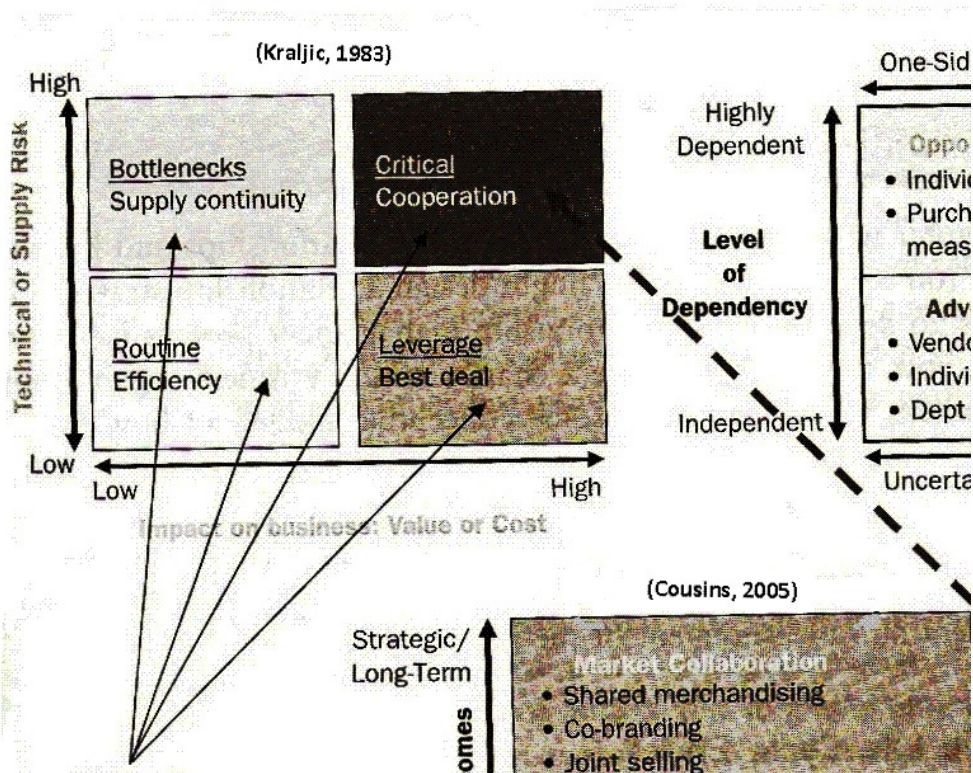


Figure 11: Alignment of strategies, relationships and skills (combination of Kraljic matrix, Cousins 2002 and 2005, following the Strategic Supply Wheel framework) (Source: Cousins, 2008).

Moreover, even though different types of relationships and levels of involvement are recognised, there is still a huge confusion over the terms used to identify them such as between partnerships, collaboration and co-operation, that are sometimes used as synonymous and other times considered different stages of relational involvement.

The *Partnership Model*, as the other previously described SRM models, reveals to be limited given that they focus solely on partnerships and do not seem to discuss collaboration in a wider sense. Besides, they are based on dyadic relationships (buyer-supplier) and buyer-supplier-supplier or co-opetition is not even considered. Relationships are established within a network of interconnected and interdependent elements so triads and the effects of each relationship on the next “partner” should also be measured. Additionally, what the authors refer to as partnership type III

seems to be referring to collaborative arrangements and even though they suggest an alternative *Collaboration Framework*, the place for collaboration in their typology remains unclear as well as its definition since the suggested Collaboration Framework seems to be more appropriate for cooperative arrangements instead. Given this, a distinction between the different definitions shall be provided in the following section.

SRM: Typologies

Recognising the portfolio approach implies assuming that different network contexts require different buyer-supplier (e.g., cf. Figure 12) and supplier-supplier relationships (e.g., cf. Figure 13), where a *counterproductive relationship* refers to the traditional arm's length, adversarial relationships where each player is solely concerned with his own profitability and works against others to achieve superior benefits; in a *competitive relationship*, players also focus their own profitability, competing for the same market share and establishing win-lose transactional exchanges where little or no information is exchanged and where "competitive bidding or price comparisons, shorter-term contracting, regular market testing, and reverse Internet auctions" are common (Trent, 2005:54); a *cooperative relationship* recognizes the value of closer relationships where players exchange and share information, co-operating towards the achievement of common goals such as new product development, product innovation and SC performance improvements (such as cost, quality, delivery, inventory management and service) through the establishment of longer-term contracts (Trent, 2005:54-55); a *collaborative relationship* that refers to the most "sophisticated and intensive" form of relationships, including "executive-to-executive interaction, joint strategy-development sessions, and an intense sharing of resources", where only *critical suppliers* are considered and players work together to enhance overall network profitability through the development of strategic alliances and longer-term partnerships (Trent, 2005:55); and finally, a *co-opetitive relationship* (Nalebuff and Brandenburger, 2002) referring to the "cooperative behavioral actions which two competing suppliers (of a given buyer) engage in" (Wu, Choi and Rungtusanatham, 2010:116), recognizing that "suppliers themselves have relationships with each other"(Choi, 2007:51), where they simultaneously compete and cooperate towards the achievement of the goals of a larger network (Choi *et al.*, 2002; Choi, 2007; Nalebuff and Brandenburger, 2002; Wu, Choi and Rungtusanatham, 2010).

Counterproductive (lose-lose)	Also called antagonistic relationships	Work actively against each other's needs	Neither party takes responsibility for what happens in a relationship	Destructive conflict occurs
Competitive (win-lose)	Also called adversarial or distributive relationships	Engage in a competitive struggle to divide a fixed amount of value	Attempt to maximize value for each side	Minimal sharing of information
Cooperative (win-win)	Also called integrative relationships	Longer-term relationships result from mutual goals	Supplier involvement during product development increases	Open sharing of information occurs, including sharing of cost data
Collaborative (win-win)	Also called integrative or creative relationships	Congruence of goals and co-destiny exists	Jointly identify new market opportunities	Jointly identify creative solutions to problems.

Figure 12: The four C's of supply relationships (Source: Trent, 2005: 54).

Competitive	Leverage over suppliers Information control	Loss of potential synergy High cost of management
Cooperative	Knowledge sharing Capacity sharing	Potential confusion Risk of forward integration
Co-opetitive	Possible attainment of advantages of both competitive and cooperative relationships	Possible risk of disadvantages of both competitive and cooperative relationships

Figure 13: Advantages and disadvantages of the 3 main relationship archetypes (Source: Choi, 2007:55).

SRM: a new typology

From the previous literature it became clear that while some authors refer to buyer-supplier relationships or supplier-supplier relationships (dyads) to classify B2B relationships, others argue the need to focus on buyer-supplier-supplier arrangements (triads) to understand the complex network of established interactions (e.g. Choi and Wu, 2009). Moreover, some distinguish between collaborative and cooperative relationships (as Trent, 2005), while others use both concepts as synonymous (e.g. Choi, 2007). Additionally, other authors accept the idea that companies both compete and collaborate (e.g. Cousins, 2002; Gradinger, 2009), hence the concept of *co-opetition* (Noorda, 1993; cited by Nalebuff and Brandenburger, 2002:4), whilst others still reinforce the traditional dichotomy, following Williamson’s (1985) legacy.

To avoid confusion, a new typology is suggested, based on the previous literature, as a way to conciliate the different definitions available and representing also the evolution of relationship studies and practice (cf. Figure 14). In this new typology we assume that “partnerships do not exist”, but instead a variety of collaborative arrangements are considered (as in Cousins, 2002:71) that go from co-opetition to collaboration. Also, both levels of dyadic relationships are considered in the continuum: buyer-supplier and supplier-supplier relationship categorizations.

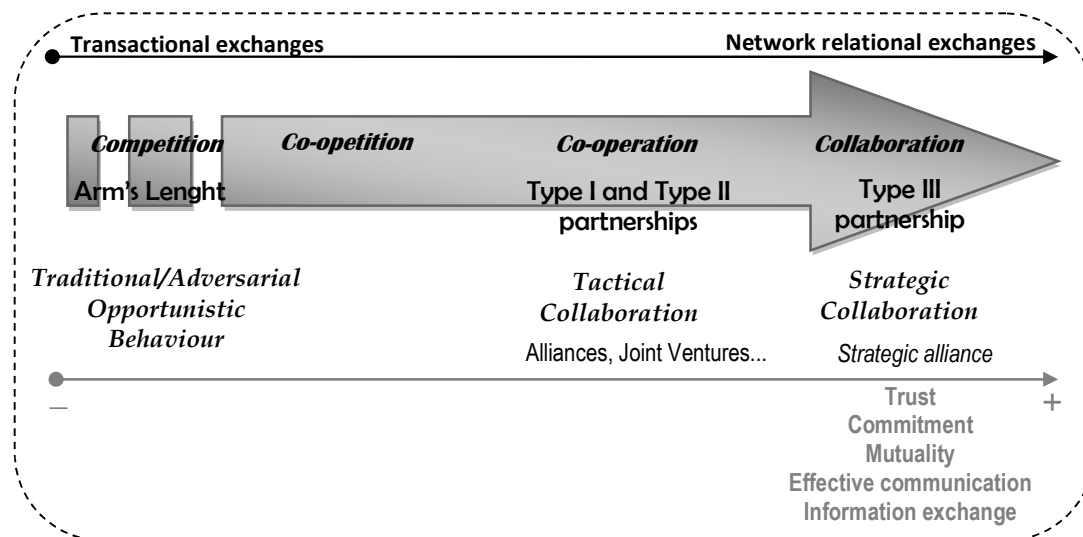


Figure 14: Relationship Typology and Evolution of RM research (Based on: Barratt, 2004; Bensaou, 1999; Choi, 2007; Cousins, 2002; Lambert, Emmelhainz and Gardner, 1996; Liao, Hong and Rao, 2010; Spekman, Kamauff and Myhr, 1998; Trent, 2005).

Moreover, even though cooperation and collaboration are possible through different relationship arrangements that, according to Child and Faulkner (1998: 120-124), are usually some form of formal (legal contracts: *joint venture*...) or informal alliances, here collaboration is defined as *strategic* (Cousins, 2002; Liao, Hong and Rao, 2010), benefiting the whole SC as in McClellan's (2003:160) Toyota analysis. In this context, collaboration is then seen as a *strategic alliance* (according to Liao, Hong and Rao, 2010:7) and as a completely new approach of "doing business" (McClellan, 2003:i) that enhances commitment (in terms of tangible and intangible resources) and trust levels, allows greater information, communication, cost and benefits sharing (Whipple, Lynch and Nyaga, 2010:514). This distinction is important since the idea of *network collaboration* that we are trying to explore implies "close but non-exclusive relationships" under the umbrella of the 'strategic network' concept, whilst cooperation can imply solely "the creation of a joint enterprise over a limited domain" (Child and Faulkner, 1998:113). Under this assumption, companies are expected to maintain their own goals and convictions but simultaneously considering counterpart opinions and contributions to favour strategic opportunities (Ford *et al.*, 2003:117; Nalebuff and Brandenburger, 2002:15; Narasimhan and Mahapatra, 2004:21).

SRM: The Collaborative Imperative

The relevance of collaboration between companies in the SC has been advocated since the 1980s (Choi and Wu, 2009:9). Even if some companies refuse to move forward, most have embraced fully SCM approaches that evolved from a functional compartmented perspective of organisations towards what is recognised as the future school of thought in SCM: the "collaboration school" (Hieber, 2002:34-35; cited by Gradinger, 2009:5) (cf. Figure 15), recognising the importance of relational factors in SCM (Schimmelpfennig, 2008:3-4) and assuming the collaborative and win-win partnership orientation (Gradinger, 2009:5) previously mentioned.

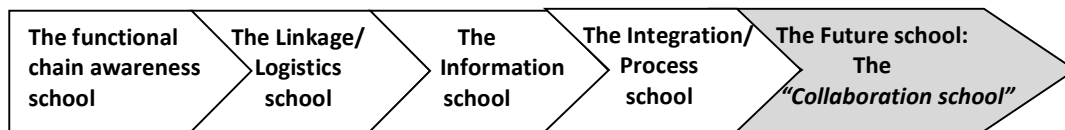


Figure 15: Supply Chain Management Schools of Thought: an Evolution (based on: Betchel and Jayaram, 1997).

This discussion of the need for closer relationships evolved from Deming's (1986; cited by MacBeth and Ferguson, 1994:62; Cousins, 2002:74) fourteen points on quality where he emphasized that the synergy of closer relationships with fewer suppliers would generate greater benefits and enable sustainable competitive advantage. This *collaboration culture* (McClellan, 2003; Quinn, 2000) here advocated, implies a change in corporate values and supporting activities, a focus in the end product user (independently of the company's position in the network), (Chapman *et al.*, 2001; cited by McClellan, 2003:42) and finally, a move towards the "true" collaboration approach or "strategic collaboration" (as defined by Cousins, 2002:80), where a holistic network perspective is adopted.

However, as McClellan (2003:2) pointed out, this *collaboration school* cannot be considered a *real paradigm shift*, since successful examples can be identified for long across industries such as automotive, electronics, airline and telecommunications, and within companies such as Dell, Toyota and even Daimen-Chrysler with the concept of *Extended Enterprise* (Dyer, 2000; Iyer, Seshadri and Vasher, 2009; McClellan, 2003; Wu, Choi and Rungtusanatham, 2010). These commonly cited examples show that successful collaboration is possible. Nevertheless, they tend to do it as case studies in a very strategic, focused and sometimes narrow manner, that looks into particular cooperative arrangements (as IT or knowledge sharing), instead of analysing true collaborative arrangements and their performance contributions.

Nowadays companies compete in more than one feature and they will remain competitive only if they manage to establish sustainable SC advantages. As a consequence of this *Collaborative Advantage* imperative (e.g., Cao and Zhang, 2010; Dyer, 2000) and fuelled by the need to extend efficiency to other operational objectives besides cost, which were traditionally interpreted as a *trade-off* (Flynn and Flynn, 2005:3423), a new concept emerged: *Supply Chain Quality Management* (SCQM) (cf. Figure 16). Given this, quality is no longer seen as an adding cost element, but as the base for the achievement of all the remaining SC performance objectives (such as cost, speed, delivery and dependability – as in the *Sand Cone Model* by Ferdows and DeMeyer, 1990) (Flynn and Flynn, 2005:3424).

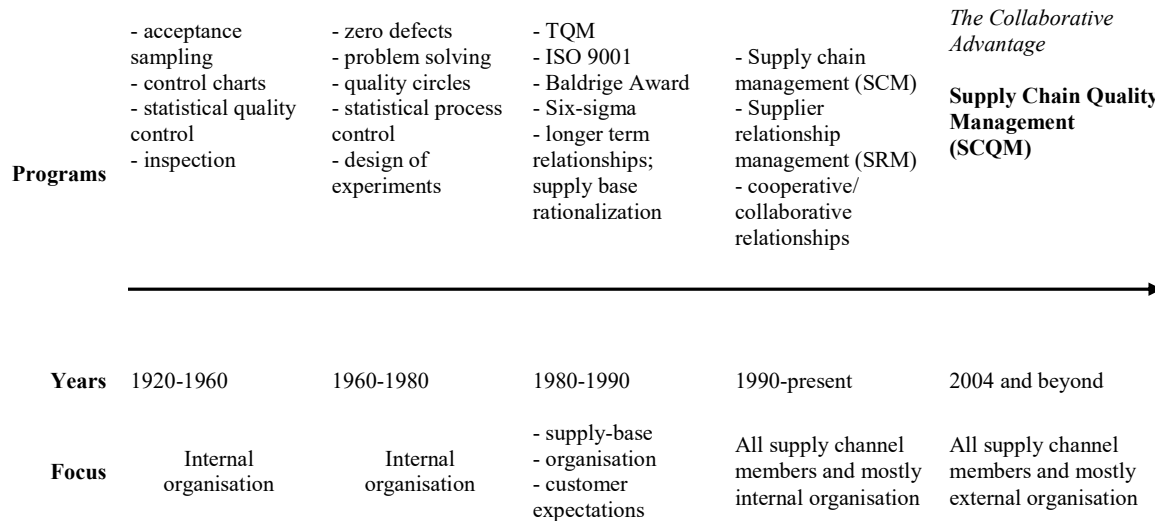


Figure 16: Evolutionary timeline and focus of SCQM (Adapted from: Robinson and Malhotra, 2005:331).

SUPPLY CHAIN QUALITY MANAGEMENT (SCQM)

Following the trends towards the collaborative network approach on SRM, SCM and QM literature (e.g., Choi and Wu, 2009; Flynn and Flynn, 2005), SCQM aims at extending quality practices throughout the SC (Robinson and Malhotra, 2005:315) suggesting the implementation of coherent QM strategies throughout the network where quality is interpreted as an overall interdependent system. This idea of combining QM and SCM in a unified and synchronized network approach is relatively recent and has received limited research attention as summarized in following table (cf. Table I).

Authors, year	Purpose of research	Type of article	Methodology	Main findings
Flynn and Flynn, 2005	Empirical evidence of emerging implications of the relationship between supply chain management and quality management; RDT; Cumulative capabilities; co-makership.	Empirical	Survey	4 streams of literature identified; The results provide evidence to support the need for integration of quality management with supply chain management; organizations with stronger quality management practices achieved better supply chain performance

Foster Jr, Wallin and Ogden, 2011	Comparative study of quality tools and methods adoption by operations and supply chain managers.	Empirical	Survey	Defining SCQM field; operations and supply chain managers approach quality management differently.
Fynes, Búrca and Voss, 2005	Supply Chain Relationship Quality (SCRQ); Competitive environment as a moderator; contingency theory; SC Performance.	Empirical	Survey	the impact of SC relationship quality on SC performance has received less attention in the literature; competitive environment moderates this relationship; SC relationship quality has a positive impact on SC performance; More rigorous empirical research is needed on why/why not supply chain interactions can impact performance;
Fynes, Voss and Búrca, 2005	Supply Chain Relationship Quality (SCRQ); multi-dimensional nature of SC relationships; measurement; effect of SC relationships on quality performance.	Empirical	Survey	conceptual framework incorporating dimensions of SC relationships and quality performance; SCRQ has a positive impact on design quality (H3) but not on conformance quality (H2); Empirical support for the argument that an understanding of quality performance requires consideration of factors above and beyond quality practices: management of SC relationships and the role of the marketing function.
Kahnali and Taghavi, 2010	TQM dimensions; SCQM Practices; Effects on Organisational Performance;	Empirical	Survey	Conceptual model development and tested; organizational performance could be enhanced through improved SCQM; 121 indicators are identified to measure the supply chain quality management practices
Kuei, Madu and Lin, 2001	relationship between SCQM practices and organizational performance; focus on perceived improvements	Empirical	Survey	middle managers' perceptions on the association between SCQM practices and organizational performance; organizational performance could be enhanced through improved supply chain quality management; further research is needed in SCQM specific practices and their influence in SC performance.
Kuei, Madu and Lin, 2008	Implementing SCQM	Empirical	Survey	Development of a strategic framework for SCQM development (a gap model is provided); Supply chain quality drivers/dimensions are identified: supply chain competence, critical success factors (CSF), strategic components, and SCQ practices/activities/programmes; SC partners have different perceptions.
Lin <i>et al.</i> , 2005	structural equation model of SCQM and organizational performance;	Empirical	Survey	QM practices are significantly correlated with the supplier participation strategy and this influences tangible business results, and customer satisfaction levels. QM practices (T1) have no direct influence on organizational performance (F1); The demand for SCQM is the same irrespective of the environment; More research is needed before generalization to other countries or regions;
Lo and	supply quality	Empirical	in-depth	Ten critical factors for describing a SQM

Yeung, 2006	management (SQM); Critical SQM practices conducted in Hong Kong.		industrial interviews;	system were identified; These factors could be clustered into three major groups: supplier selection, supplier development and supplier integration; a reliable and valid research instrument was developed; Future research: consider interrelation among supply quality management, supplier quality and buyer quality.
Robinson and Malhotra, 2005	Defining SCQM and its relevance to academic and industrial practice	Review paper	Literature review and case study illustration; interviews	comprehensively reviewing prior quality and SCM literature in major journals and inductively identifying the themes that emerge within; a taxonomy of main SCQM literature is provided; research questions for further research are proposed;
Ross, 1998		Book Chapter		SCQM processes, implementation and channel quality contribution to create superior customer service value.
Sila, Ebrahimpour and Birkholz, 2006	Quality in SCM; SC partners knowledge; SC Quality specifications development determining factors; SCQM activities effect on product quality.	Empirical	Survey	Companies believed that SCQM would have a positive impact on the quality of the final product, but they did not fully implement this concept; Companies included their major customers in their quality initiatives, but they did not include their major suppliers; Future studies: determine QM practices effects on SC performance using performance measures such as product quality, efficiency, and cost.
Soltani <i>et al.</i> , 2011	SCQM; Quality performance in a global SC;	Empirical	qualitative study; 2 case studies;	dynamics of SCM and QM practices and the resultant implications for the end customer in terms of product/service quality at a global level; collaborative mode of inter-firm relations; need on the part of operations management scholars to explore global SCQM practices through the lens of organisational theories.

Table I: an overview of the SCQM literature.

As a result, Foster (2008:461) defined SCQM as the “systems-based approach to performance improvement that leverages opportunities created by upstream and downstream linkages with suppliers and customers”. In turn, Robinson and Malhotra (2005:319) focus on SC processes arguing that SCQM refers to “the formal coordination and integration of business processes involving all partner organizations in the supply channel to measure, analyze and continually improve products, services, and processes in order to create value and achieve satisfaction of intermediate and final customers in the marketplace.”

As recommended by Foster (2008:461), if we deconstruct the acronym we understand that SCQM encompasses three simple equations as suggested by Kuei and Madu (2001; cited by Kuei et al., 2008:1127) where “SC = a production–distribution network; Q = meeting market demands correctly, and achieving customer satisfaction rapidly and profitably; and M = enabling conditions and enhancing trust for supply chain quality.”

Additionally, Kuei *et al.* (2008:1129) proposed a conceptual model for critical factors for SCQM implementation (cf. Figure 17) and Chen and Paulraj (2004:121), emphasizing the development of collaborative advantage, suggest the need to efficiently manage some SC factors in order to positively influence SC performance (cf. Figure 18).

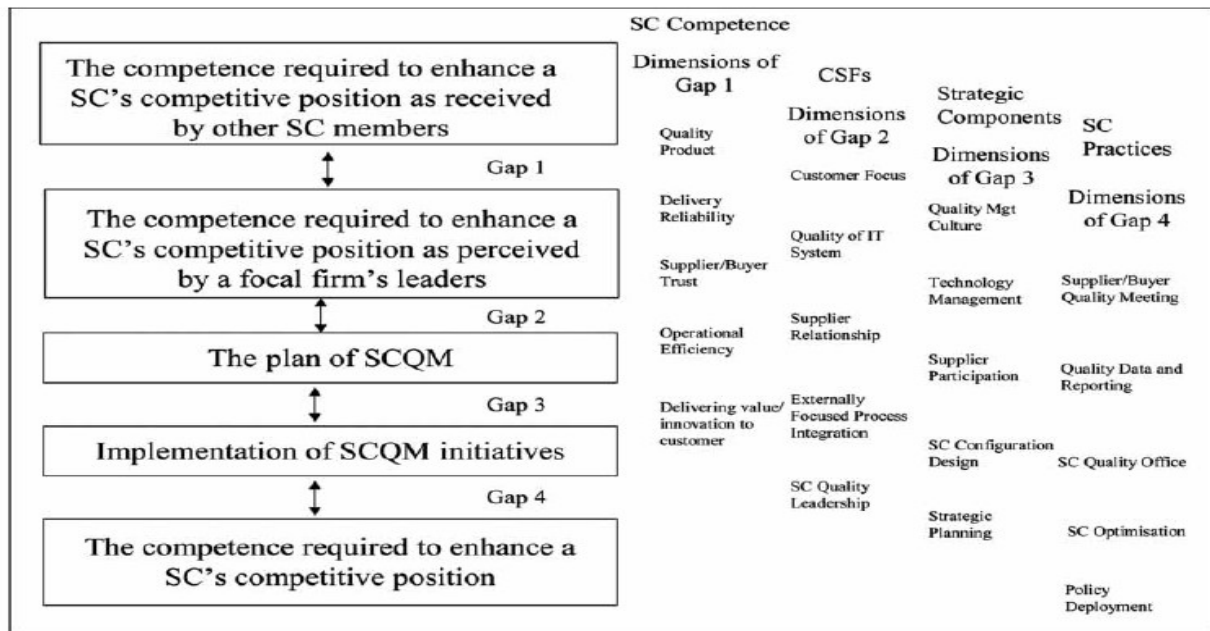


Figure 17: SCQM implementation gaps (Kuei *et al.*, 2008:1130).

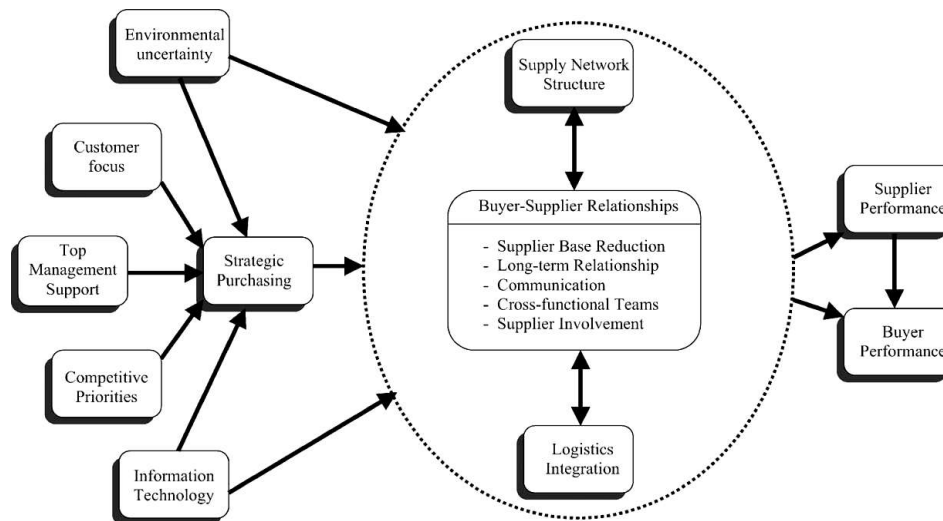


Figure 18: A research framework of supply chain management Chen and Paulraj (2004:121).

From a SCQM perspective, and even though most studies still focus dyads, it is generally argued that collaborative relationships provide greater advantages than transactional relationships enabling both quality and cost improvements (Larson, Carr, & Dhariwal, 2005; cited by Whipple, Lynch and Nyaga, 2010:507) through the involvement of players from a larger network (Lin *et al.*, 2005; Kahnali and Taghavi, 2010:46) and positively influencing SC performance (measured by variables like quality, delivery, cost and flexibility) (Fynes *et al.*, 2005).

Nevertheless, though some studies have supported the relationship between SCQM practices and their positive effect on organisational performance (e.g., Kahnali and Taghavi, 2010:45), their

effects on SC performance remain ambiguous and controversial (Lin et al., 2005:357; Kaynak and Hartely, 2007; Kanji and Wong, 1999, cited by Kahnali and Taghavi, 2010:47). Thus, empirical research is still needed to support the suggested links (Flynn and Flynn, 2005; Foster, 2008; Lin et al., 2005; Madu, Kuei and Jacob, 1996; Soltani, et al., 2011).

GAPS

Companies cannot perpetuate the assumption and myth that collaboration is always the best alternative (Lambert, Knemeyer and Gardner, 2010; Whipple, Lynch and Nyaga, 2010) given that in reality organisations develop a variety of relationships (Bensaou, 1999), that depend on finding an equally interested partner (Child and Faulkner, 1998; Gadde and Håkansson, 2001; Lambert, Knemeyer and Gardner, 2010). Moreover, managing the portfolio requires the evaluation of the economic consequences of these relationships, the avoidance of developing high or low involvement relationships with the wrong partners and the management of the generated interdependencies (Gadde and Håkansson, 2001:152-153).

Given this, scholars need to further discuss SRM from an OM perspective that focus buyer-supplier relationships, supplier-supplier relationships and also the triads as a reflex of the increasingly supported network perspective on SCM (e.g., Borgatti and Foster, 2003; Borgatti and Li, 2009; Choi and Dooley, 2009; Choi and Wu, 2009; Gadde and Håkansson, 2001; Ford et al., 2003). Nevertheless, given its nature, relationships are considered as part of a “soft” approach which is usually not well accepted within the community (Borgatti and Li, 2009; Harland, Lamming and Cousins, 1999:661). Moreover, models based on other disciplines and that do not fit the mathematical, “hard” type of models and diagrammatic representations typically used in this discipline are not well accepted or even understood (Dooley, 2009; Meredith, 2009; Sanders, 2009).

However, for a better understanding of SRM and network relationships, multidisciplinary theory and research is needed (e.g., Harland, 1996:79; Soltani et al., 2011) as well as the acceptance of “softer” conceptualizations that allow the discussion of variables that go beyond cost and quality trade-offs simulations or supplier bids. The point here is that relationships are most of the time measured based on the perceptions of the SC participants, therefore it is something that is not easily mathematically explainable or quantifiable (Child and Faulkner, 1998:116; Ford et al., 2003:84), but nevertheless still relevant for OM (e.g., Peng et al., 2010:399).

As a result, even though all these issues have been widely discussed and recognised in the literature, three major gaps can still be identified in the OM field. First, there is still a need for empirical research on triadic arrangements (e.g., Peng et al., 2010:399); second, on the relationship effects on performance (e.g., Cousins, 2002); and finally, on SCQM suggested links between collaborative arrangements and SC performance (e.g., Foster, 2008; Madu, Kuei and Jacob, 1996; Soltani et al., 2011). Finally, because it is believed that other relationships also affect the implementation of quality, the present authors put forward the term *Supply Chain Quality Relationship Management* (SCQRM) (Soares and Soltani, 2010:6) to consider a broader approach to the effects of relationships in SCQM and specifically refer to the portfolio relationship management towards the consistent network implementation of quality systems.

SUPPLY CHAIN QUALITY RELATIONSHIP MANAGEMENT (SCQRM): *New Name, Old Clothes?*

From the previously stated it became clear that, neither is the topic of collaboration new nor the topic of SCQM and the benefits of closer, longer-term relationships. Therefore, the contributions of SCQRM to theory and practice remain unclear and one wonders if it is just a new name for the same old topics and discussions.

Nevertheless, given the current gaps in research and particularly the association of SCQM solely to collaborative arrangements, there is a need to create a broader term hence SCQRM is not just a “new name in old clothes”. It reflects the need to go beyond RM and SRM as it is, considering quality performance in the relationship arrangements established, instead of focusing solely major cost reduction elements or innovation. Plus, instead of randomly included into one of the operational benefits, this concept reflects the previously identified need for suppliers and quality to be strategically addressed, implemented and managed. This means that suppliers need to be selected according to quality instead of price (Galt and Dale, 1991; cited by Kahnali and Taghavi, 2010:52) and that collaboration needs to go the extra mile from information sharing, from being seen as an IT tool (e.g. Angerhofer and Angelides, 2006) to being seen as a broader approach in which technology is solely an enabler. Additionally, this does not mean that all companies need to develop ‘strategic collaboration’ with all network elements. Nevertheless, because SCQM is perceived as only possible due to collaborative arrangements – *co-makership* (Flynn and Flynn, 2005) – instead they need to know with which players they would want and need to develop higher involvement and closer developed relationships in order to achieve the so fashionably discussed *Collaborative Advantage* (e.g., Cao and Zhang, 2010; Dyer, 2000).

As a result, adding on to SCQM definitions, SCQRM “encompasses generating and strengthening trust and commitment through effective communication and information sharing throughout the whole chain, increasing visibility, transparency and sharing benefits as a means to improve overall performance” (in Soares and Soltani, 2010:6), therefore requiring that the network partners make the most out of the portfolio of established relationships in what concerns QM performance. Focus on the word portfolio and not collaboration exclusively.

Supply Chain Quality Relationship Management (SCQRM) concerns therefore, buyers and suppliers’ perceptions and the ability of companies, not only to understand them, but also to strategically manage them in order to develop valuable relationships with their partners, engaging in different types of relationships that, as a whole, make the network efficient (e.g., Day *et al.*, 2008; Ford *et al.*, 2003; Gradinger, 2009; Soares and Soltani, 2010; Trent, 2005). Consequently, this should be an area of interest for OM and the consequences of the different relationship arrangements towards the achievement of intended performance objectives (speed, cost, quality, dependability and flexibility) should be further studied, not only as a means of understanding better the network relationships returns (Child and Faulkner, 1998:116; Ford *et al.*, 2003:83) but also the variety of possible forms of value obtained (Cousins, 2002:78).

CONCLUSION

The concept of SCQRM is not just a new name for previous processes, implying that different network relationship arrangements can enhance the implementation of a quality philosophy alongside SCM strategies and that companies are willing to cooperate to achieve common quality goals as well as profit maximization and cost reduction, where quality is no longer seen as a trade-off with costs (Flynn and Flynn, 2005). Because suppliers are fundamental to the value chain (Trent, 2005:55), the fundamental aspect here is the existence of an effective SRM strategy focusing the long term objectives of the overall SC, and not a random approach determined by short-term objectives focusing cost and solely the focal company immediate benefits. Based on the literature, we argue that some form of collaboration must exist in order to sustain QM since the more you know about your supplier and the more he knows about your product/service and processes, the more you can jointly reduce costs and enhance quality performance (e.g., Soltani *et al.*, 2011).

But there is still a long way to go on what concerns RM in OM research and there is still a generalized confusion on partnership and collaboration definitions. Therefore some questions remain unexplored such as: what are the effects of the *Partnership Model* and of the different types

of partnerships established on performance? How can this model be extended to the rest of the network? Where would SCQRM fit within this model? Does SCQM means that in non-collaborative environments QM will not succeed? How will we quantify SCQ performance (Cousins et al., 2008:151; Robinson and Malhotra, 2005:332)?

We hope we had shed some light on some of the identified gaps, but besides conceptual clarification, a SCQRM research framework and more OM based research is needed to understand if and how the SSRM will contribute to enhanced SCQ performance (financial and operational), exploring the array of variables that might influence these processes at a network level (instead of individual or organisational levels).

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