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Reviewing interfirm relationship quality from a supply chain management perspective

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Abstract

With the overlap of the interfirm relationship quality and supply chain management research in mind, this paper reviewed 100 recent, scientific, English-language papers on interfirm relationship quality based on a categorisation schema derived from a conceptual framework of supply chain management. We aim to contribute to the existing supply chain management literature by providing an insight into the connections of supply chain performance with buyer–supplier relationship quality from the relationship quality scholars' perspective. Through content analysis, frequency and contingency analysis, we evaluated how the three relationship quality dimensions—information, operational, and relational dimensions—and the three types of supply chain performance—financial and market, operational, and relational performance have been reflected in the current interfirm relationship quality papers and how the scholars have tended to link them to each other. The results reveal that relational dimension plays a key role in SC relationship management and influences performance significantly. Information dimension will affect performance indirectly through relational dimension. However, the impact of the operational dimension on performance varies. In addition, buyers' and suppliers' perspectives on the relational drivers of their financial performance may differ. Based on the findings, we suggest promising avenues for future investigation of supply chain relationship and performance.

Keywords Relationship quality · Supply chain management · Supply chain performance · Buyer–supplier relationship · Literature review

JEL Classification M110 · M310

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1 Introduction

Since the beginning of the 20th century, interorganizational relationships between SC partners have become a topic of great importance in the supply chain management (SCM) research (Ricciotti 2019). In a modern approach, supply chain (SC) is defined as "a network of interdependent relationships developed and fostered through strategic collaboration" of SC partners "with the goal of deriving mutual benefits" (Chen and Paulraj 2004, p. 121). Based on this, a highly accepted definition of SCM describes this as the management of a network of relationships within and between interdependent organizations (Stock and Boyer 2009; Hochrein et al. 2015). Dyer and Singh (1998) first introduced the relational view to integrate the concept of relationship quality (RQ) into the analysis of SCs' competitiveness. Subsequently, the quality of the relationships formed among SC parties has been considered a critical factor, as firms strive to improve performance and develop a sustainable competitive advantage (Nyaga and Whipple 2011).

On the other side, the marketing scholars have considered RQ an established construct of relationship marketing, which roots in Business-to-Business (B2B) marketing (e.g., Palmatier et al. 2006). They defined RQ in the B2B settings as a composite measure of the strength of the relationships between two organizations, which include factors such as trust, commitment, long-term orientation, communication, and cooperation (e.g., Palmatier 2008). Reviewing the RQ literature shows that many contributions to contemporary knowledge are derived by challenging interorganizational RQ between business buyers and suppliers—in other words, by considering the SC context (Qian et al. 2020). The RQ scholars have strived to examine various advantages in developing and maintaining high quality business relationships for both selling and buying companies in an SC relationship. For example, they have investigated which RQ characteristics have a positive impact on the operational and/or financial performance of sellers and buyers, and which RQ characteristics would engender greater customer retention or supplier loyalty (e.g., Caceres and Paparoidamis 2007; Fynes et al. 2008; Nyaga and Whipple 2011; Sarmento et al. 2015).

Upon consideration of the interorganizational relationship topics discussed in the RQ and SCM research, while their overlap is obvious, it is hardly reflected in scholarly research. Researchers from both domains widely failed to read out of their silos and to adopt the results already published in the other domain for enhancing the own research progress. Therefore, this paper attempts to combine the research perspectives of RQ and SCM on one and the same "basic unit of investigation"—interorganizational RQ in the SC contexts. More specifically, we aim to embed the RQ construct and its consequences that are well established by previous marketing research in a broader theoretical framework taken from SCM research, and thus adopt the results published in the RQ research for enhancing the SCM research progress.

For this purpose, we review the published scientific literature on interfirm RQ guided by a framework derived from Leuschner et al.'s (2013) research

framework of SC integration. Leuschner et al. (2013) synthesized and categorised different factors and constructs used to measure integration between SC partners in three dimensions: information, operational and relational dimension and analysed the relationships between these dimensions and SC performance based on a review of SCM literature. These three dimensions also cover the major factors and constructs used to measure interfirm RQ in the SC context. Consequently, we use Leuschner et al.'s framework to build a categorisation scheme that includes three RQ dimensions—information, operational, and relational dimension—and three types of SC performance outcomes—financial and market, operational, and relational performance—from perspectives of both buyers and suppliers involved in the SC relationships. This categorisation scheme enables a systematic assessment of the RQ papers. Through the literature review, the scope of the three RQ dimensions and the three types of SC performance outcomes reflected in the interfirm RQ papers will be mapped and the ways how scholars linked RQ dimensions to SC performance outcomes will be evaluated and discussed. Based on the literature review, avenues for future researchers to investigate SC relationships will be suggested.

Three research questions will be answered: (1) How the information, operational, and relational dimension of RQ have been reflected in the current literature on interfirm RQ in the SC settings? (2) Which SC performances—financial and market, operational, and relational performances have been addressed as the consequence of RQ in the current literature on interfirm RQ in the SC settings? (3) How are the RQ dimensions and the SC performances linked to each other from the RQ scholars' perspective? So far, there has yet to be a review integrating the RQ and SCM research streams. SCM researchers reviewed papers published in journals within the area of logistics, operations and SCM and ignored the research results published in marketing-related journals (e.g., Terpend et al. 2008; van der Vaart and van Donk 2008; Flynn et al. 2010; Leuschner et al. 2013; Chang et al. 2016). This paper seeks to contribute to the SCM literature by providing insight into (1) the connections of SC performance with buyer–supplier relationships from the RQ scholars' perspective, (2) the role of different RQ dimensions in affecting firm performance, (3) the similarities and differences of the buyers' and suppliers' perspectives on RQ and performance.

The remainder of this paper is structured as follows: In the next section, the conceptualization of interfirm RQ and its linkages to SCM is elaborated. Then, the categories for a systematic analysis of the RQ papers are deductively derived from a developed conceptual framework based on the SCM theory. Subsequently, the research methodology is explained. Thereafter, the results of the data analysis are presented and discussed. Based on this, the results are discussed and the suggestions for future research are provided. In addition, the limitations of the paper are elaborated. Finally, the paper concludes with the contributions and the main findings of this study.

2 Interfirm relationship quality from a supply chain management perspective

Applying the concept of RQ to interfirm relationships in the SC context, scholars introduced the concept of SCRQ and defined this as an overall measure of the strength of the relationship between two firms involved in an SC (e.g., Fynes et al. 2008; Su et al. 2008). By focusing on different types of interfirm relationships in SCs (e.g., supplier-manufacturer relationships, manufacturer-distributor relationships, service buyer-service provider relationships, and exporter-importer relationships) and different relationship members' perspectives (i.e., buyers/suppliers' perspectives), scholars and practitioners have defined and measured RQ in various ways. Despite the variety of conceptualization and operationalization of RQ, scholars are consistent in arguing that interfirm RQ is a second-order and holistic construct composed of several first-order dimensions capturing the different but related facets of a relationship (e.g., Palmatier et al. 2006; Naudé et al. 2007; Nyaga and Whipple 2011; Jiang et al. 2016). The first-order dimensions include trust, commitment, communication, cooperation, collaboration, long-term orientation, coordination, integration (e.g., Su et al. 2008; Čater and Čater 2010; Obadia and Vida 2011; Nyaga et al. 2013; Jiang et al. 2016). These dimensions refer to some major SCM factors discussed in the SC literature.

Some SCM scholars have applied trust, commitment and long-term orientation to characterize "the adoption of a strategic connection between firms in the supply chain" (Leuschner et al. 2013, p. 49). They describe the attitude of a firm towards its relationship partner. *Trust* is generally described "as existing when one party has confidence in an exchange partner's reliability and integrity" (e.g., Morgan and Hunt 1994, p. 23). It can be defined as "the extent to which relationship partners perceive each other as credible and benevolent" (Nyaga and Whipple 2011, p. 347). Studies have confirmed that interfirm trust is central to SC relationships (e.g., Delbufalo 2012). *Commitment* is conceptualized as "an enduring desire to maintain a valued relationship" (Moorman et al. 1992, p. 316). Scholars characterized a committed relationship by the relationship partner's intention to maintain long-term relationships, which implies the partner's willingness to make short-term sacrifices and looking forward to achieving long-term benefits (e.g., Chu and Wang 2012). Associated with commitment, *long-term orientation* refers to the "expectation of relationship continuity" (Jiang et al. 2016, p. 301) and the "focus on long-term goals in the relationship" (p. 306). Jiang et al. (2016) emphasized the relevance of long-term orientation for achieving mutual benefits and a competitive advantage in SC relationships and noted that "whereas the emphasis on short-term business performance reflects transactional qualities, the building of good RQ is oriented toward the long run" (p. 303). This is in concordance with the SCM theory shaped by Chen and Paulraj (2004), who identified that long-term orientation is a central factor for managing buyer–supplier relationships in SCs.

In addition to trust, commitment and long-term orientation, communication has been considered an important dimension for constituting interfirm RQ (e.g.,

Fynes et al. 2008; Su et al. 2008). Scholars have generally defined communication as "the formal as well as informal sharing of meaningful and timely information between firms" (Anderson and Narus 1990, p. 44, see also Nyaga et al. 2013, Sjoerdsma and van Weele 2015, Su et al. 2008). They emphasized that effective exchange of information should take place bi-directionally, frequently, informally, and in a timely manner between SC partners (e.g., Cambra-Fierro and Polo-Redondo 2008; Fynes et al. 2008; Su et al. 2008). Chen and Paulraj (2004) pointed out that communication is one of the key aspects of managing buyer–supplier relationship in SCs. Moreover, Leuschner et al. (2013) have considered information sharing and collaborative communication as the first stage of integration with SC partners.

Further, some constructs that describe "the collaborative joint activity development, work processes and coordination decision making among firms in the supply chain" (Leuschner et al. 2013, p. 49) have also been considered the important RQ characteristics. For example, RQ scholars have frequently considered cooperation as one of the important dimensions of RQ (e.g., Čater and Čater 2010; Fynes et al. 2008; Obadia and Vida 2011; Sjoerdsma and van Weele 2015; Su et al. 2008). They described *cooperation* as "an orientation that reflects a spirit of willingness by one organization to work with another organization" (Payan et al. 2010, p. 549) and "all activities undertaken jointly or in collaboration with others, which is directed towards common interests or achieving rewards" (Su et al. 2008, p. 266). Fynes et al. (2008) considered cooperation in "product design", "process design", "forecasting and production planning", and "quality practices" (p. 66) the important activities for SC partners to work jointly. Some RQ scholars also used the construct *collaboration* for similar activities. Nyaga et al. (2013) cited a range of firm's collaborative activities including "joint planning, cost control, quality improvement, developing cross-functional processes, goal setting, performance measurement" (p. 46). Besides, coordination and integration have also been regarded as one of the RQ dimensions (e.g., Kühne et al. 2013; Mysen and Svensson 2010; Sjoerdsma and van Weele 2015). *Coordination* emphasises the synchronisation of activities and flows (e.g., Barnes et al. 2011). *Integration* focusses on the degree to which a firm can collaboratively manage tasks and activities across the SC (e.g., Lai et al. 2013).

Noticeably, in the SCM literature, collaboration and integration have usually been considered the concepts that are broader than operational level. For example, Kache and Seuring (2014) linked the strategic collaboration and integration to risk and performance in SCs. Van der Vaart and van Donk (2008) considered integration a concept that comprises not only collaborative communication and activities but also firms' attitude towards SC partners. In contrast, the RQ scholars normally focused on firms' behaviors when addressing collaboration and integration (e.g., Nyaga et al. 2013). They considered them alongside trust, commitment, communication the first-order constructs of interfirm RQ (Kühne et al. 2013; Mysen and Svensson 2010). This paper uses the definitions and operationalizations cited in the RQ papers and refers to the joint activities performed by the SC partners when addressing collaboration and integration. Thus, we clustered the constructs cooperation, collaboration, coordination, and integration under an overarching dimension labelled "operational dimension of RQ".

To sum up, interfirm RQ in an SC refers to a composite measure of the strength of the interfirm relationships between SC partners. The RQ dimensions, i.e., trust, commitment, long-term orientation, communication, cooperation, collaboration, coordination and integration represent the major SCM factors that affect the performance of the collaborating partners and thus their competitive advantage.

3 Analytic category building from SCM theory

For deriving analytic categories to be applied in the analysis of the RQ papers, we introduce the research framework proposed by Leuschner et al. (2013). Derived from this, we developed the conceptual framework (see Fig. 1) adopted to guide our systematic assessment. The framework of Leuschner et al. (2013) was selected, because it sheds light on the overlap between RQ constructs and SCM, which was elaborated in Sect. 2.

Leuschner et al. (2013) synthesized and categorised different factors and constructs used to measure integration between SC partners in three dimensions: information, operational and relational dimensions. Relational dimension refers to "the adoption of a strategic connection between firms in the supply chain characterized by trust, commitment and long-term orientation" (Leuschner et al. 2013, p. 49). Operational dimension refers to "the collaborative joint activity development, work processes and coordination decision making among firms in the supply chain" (p. 49). Information dimension refers to "the coordination of information transfer, collaborative communication and supporting technology among firms in the supply chain" (p. 49). These three dimensions are mutually dependent and affect performance resulting from the individual relationship between the collaborating SC partners. As discussed in Sect. 2, the major first-order dimensions of RQ relate to these three dimensions of SCM factors.

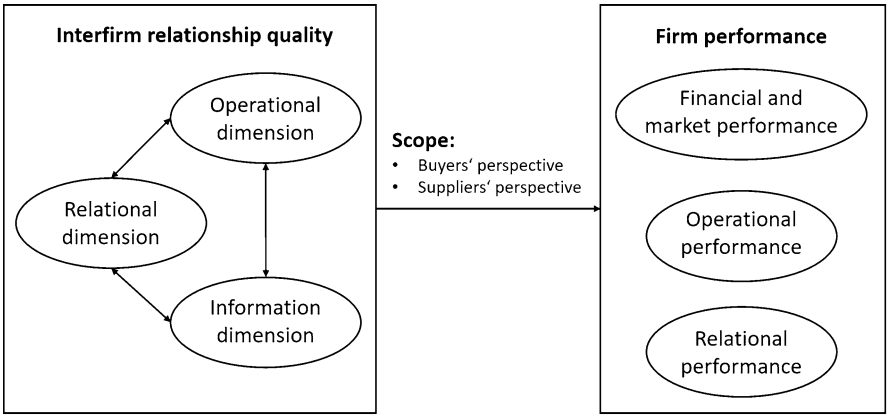

Fig. 1 Conceptual framework based on Leuschner et al. (2013) for deriving analytic categories

In addition, Leuschner et al. (2013) categorized different types of performances into three groups of performance outcomes. Financial and market performance is usually measured by, for example, profitability, return on investment, sales, market share or growth in sales and market share. Operational performance comprises a firm's improvements in key competitive capabilities, including cost, quality, delivery, flexibility and innovation. Relational performance consists of measures related to improvements in partner satisfaction and loyalty or closely related constructs such as relationship retention or enhancement (Leuschner et al. 2013). To distinguish buyers' and suppliers' perceptions of relationships and performance, buyers' and suppliers' perspectives are separately considered.

Based on the developed conceptual framework presented in Fig. 1, we list the six main analytic categories and their descriptions for our analysis in Table 1. Within each main category, two subcategories that correspond to the supplier's and the buyer's perspectives were considered. In other words, we distinguish between buyers' perceptions of RQ with suppliers and suppliers' perceptions of RQ with buyers in regard to the information, operational and relational dimension. In respect to SC performance, the buyer and the supplier performance are analysed. According to these categories, we analysed the content of the selected papers on inter-firm RQ. By this means, we mapped the scope of the SCM factors and performance reflected in interfirm RQ studies, and explored their association patterns from the RQ scholars' perspective.

Table 1 Analytic categories and their description

Main categories and subcategories	Description of categories
Information dimension IDS: Information dimension of RQ with suppliers IDB: Information dimension of RQ with buyers	Refers to the coordination of information transfer, collaborative communication and supporting technology among firms in the SC
Operational dimension ODS: Operational dimension of RQ with suppliers ODB: Operational dimension of RQ with buyers	Refers to cooperation in joint activities, work processes and coordination decision-making among firms in the SC
Relational dimension RDS: Relational dimension of RQ with suppliers RDB: Relational dimension of RQ with buyers	Focusses on attitudes and refers to the adoption of a strategic connection between firms in the SC and is characterized by trust, commitment and long-term orientation
Financial and market performance FPB: Financial and market performance of buyers FPS: Financial and market performance of suppliers	The exhibition of monetary and market performances of a firm in terms of profitability, return on investment, sales, market share, growth in sales and market share, etc.
Operational performance OPB: Operational performance of buyers OPS: Operational performance of suppliers	Comprises performance in key competitive capabilities, including cost, quality, delivery, flexibility and innovation
Relational performance RPB: Relational performance of buyers RPS: Relational performance of suppliers	Consists of measures related to an improvement in the buying or selling company's satisfaction and loyalty or closely related constructs, such as relationship retention or enhancement

Own table based on Leuschner et al. (2013)

4 Research method

To analyze the interfirm RQ papers according to the analytic categories predefined (see Table 1), a structured literature review (Tranfield et al. 2003) using a content analysis approach is employed. Content analysis "encompasses the analysis of a set of systematically identified literature by means of content analysis and allows a rule-governed combination of quantitative and qualitative arguments and reproducibility" (Sauer and Seuring 2017, p. 237). Its relevance to supply chain and operations management research has been noted (Seuring and Gold 2012). Following the process model for content analysis (Mayring 2010) as explained by Seuring and Gold (2012), four steps were undertaken in our study: (1) material collection, (2) descriptive analysis, (3) category selection, and (4) material evaluation, which are specified in the following sections.

4.1 Material collection

The material collection was based on a systematic search, which was started with the identification of the appropriate search terms. As the aim of this paper is to review the papers on interfirm RQ in the SC context, we applied two classes of search terms:

(1) "relationship quality,"
(2) "supply chain," "suppl*," "inter-firm," "interfirm," "inter-organizational," "inter-organizational," "B2B," and "business-to-business."

The former class uses the term "relationship quality", since this is an established construct in the relationship marketing research and represents the major theme of this study. Though this study defined RQ as a second-order construct composed of a wide variety of first-order constructs such as "trust", "commitment", "long-term orientation", "cooperation", "collaboration", "coordination", "integration", and "communication", we did not use these constructs as the search terms, in order to have a clear focus on the main theme of the research—RQ. Using all of the first-order constructs as search terms would result in an ambiguous research scope. The latter class encompasses several phrases, to take into account both the inter-firm setting and the SC context for covering all of the related articles on interfirm RQ in the SC context.

The search was conducted by using the "title, abstract, keywords" search for all combinations between these two classes of search terms. The databases selected for the systematic search were Web of Science (WOS) (www.webofknowledge.com), Elsevier (www.sciencedirect.com), and Emerald (www.emeraldinsight.com). WOS was selected, as it is regarded as having "probably widest range of high-quality scientific journals of all databases" (Sauer and Seuring 2017, p. 238). Its advantage has been stated in comparison with Scopus and Google Scholar, as it "performed the best with total coverage of the journal sample population and also retrieved the most unique items" (Adriaanse and Rensleigh 2013, p. 727). Elsevier and Emerald were

added to include materials which were not found by using WOS. The final result of the material collection shows that an extra 13 papers (13% of the total number of papers of the sample) were identified for further analysis by employing the Elsevier and Emerald databases. The search covers the years from 2006 to 2015, representing a decade of research. During our research, we found that the topic of interfirm RQ in the SC context has only gained the attention for increased relevance in recent year. This was also affirmed by the literature review conducted by Athanasopoulou (2009), who found only 38 papers on business-to-business RQ published in marketing-related journals in the twenty years leading up to 2007. Thus, our approach aims at determining the current status of interfirm RQ.

The initial search results in a total of 210 papers. Afterwards, the search results were successively refined by manual reviewing the abstract and occasionally the substantial main part of each article, in order to select the relevant papers for further review. To ensure reliable quality research, the review focuses on papers published in peer-reviewed journals written in English. In addition, the review focuses on interfirm relationships in the SC context. Publications involving intra-organizational or horizontal inter-organizational relationships, e.g., franchising, licensing, and sponsorship, were excluded. Furthermore, papers that also investigate B2C relationships were excluded. Upon application of these delimitations, a total of 100 papers remain for further analysis.

4.2 Descriptive analysis

After the material collection, the formal aspect of the papers selected are assessed. Due to reduction reasons, we briefly explain the distribution of the papers across the source journals and the applied research methods. Over half of the papers analyzed (51) have been published in marketing related journals, whereas SC related journals have contained 12 articles. The remaining papers (37) have been identified in various journals with different backgrounds that range from international or regional business management, specialized industry business management, environmental and social science, information management, quality management etc. The research is strongly dominated by survey papers (92). Seven in a total of 100 papers used the case studies. Only one paper is of conceptual nature (i.e. Dorai and Varshney 2012).

4.3 Material evaluation

The analytic categories (see Table 1) to be applied in the content analysis were built deductively from the research framework of Leuschner et al. (2013), which was explained in detail in Sect. 3. The set of selected papers was evaluated according to these analytic categories predefined. Then, the results of the evaluation were further analyzed in two ways: First, the scope of the three RQ dimensions and three types of performance outcomes presented in the interfirm RQ papers selected were mapped by counting the frequency of occurrence of all the analytic categories in the papers analyzed (frequency analysis). The occurrence of a category was counted once for a paper

analyzed if it was discussed in this paper. Thus, we consolidate what has been studied in the past and evaluate the presence and absence of topics or constructs.

Second, a contingency analysis was conducted. A contingency analysis aims at identifying association patterns, "i.e., pairs of categories which occur relatively more frequently together in one study than the product of their single probabilities" (Gold et al. 2010, p. 129). Based on the coding frequencies of the categories compiled in the material evaluation, the phi coefficient (φ) of each pair of categories was calculated by conducting a Chi square test. We used SPSS 24 for calculation. The phi coefficient indicates the strength of the association between two categories. A positive association with φ exceeding 0.3 is deemed non-trivial (Hair Jr et al. 2013). This statistically positive association means that scholars often investigated two categories in one study. The higher the phi-value, the higher the probability of that the two categories were studies in one paper. However, a high phi-value does not mean there is definitely a semantically positive correlation or causality between these two categories in a paper's argumentation. After we identify the positive associations between two categories based on the phi-value, we will justify their connection against the related literature analyzed (Sauer and Seuring 2017). Accordingly, the contingencies offer insights into the use of relevant constructs in the individual papers. The contingency analysis can contribute to excavate how scholars link the constructs or tested the model within the literature sample, which provides a second level of analysis based on the content analysis. The results of the frequency and contingency analyses were interpreted and discussed against the background of the relationships formed between SC partners as a source to develop firms' competitive advantage.

4.4 Methodological rigor

To ensure the production of high-quality research, validity, reliability and repeatability issues related to the content analysis were considered following Seuring and Gold (2012). In order to ensure construct validity, the main analytic categories were deductively built from the extant research framework selected from related literature. Each paper was coded according to all categories, which provides internal validity in the subsequent data analysis. The external validity is ensured as the research process is followed in a rigorous manner and transparently described here. Regarding repeatability, the transparency is guaranteed by detailed documentation of the method applied and recording all the steps taken during the research process. To carry out the coding, MAXQDA 12 was used. All data taken from the papers were recorded, thereby allowing for validation and replication. SPSS 24 was used for calculating contingencies.

5 Analysis and results

5.1 Frequency analysis regarding the analytic categories

According to the analytic categories (including the main categories and subcategories) listed in Table 1, the occurrence frequencies of all categories were calculated

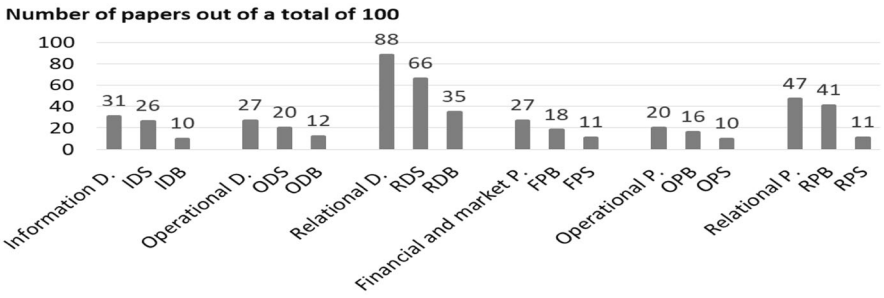

Fig. 2 Frequency of category occurrence in the interfirm RQ literature. Notes: D: dimension, IDS: information dimension of RQ with suppliers, IDB: information dimension of RQ with buyers, ODS: operational dimension of RQ with suppliers, ODB: operational dimension of RQ with buyers, RDS: relational dimension of RQ with suppliers, RDB: relational dimension of RQ with buyers, P.: performance, FPB: financial and market performance of buyers, FPS: financial and market performance of suppliers, OPB: operational performance of buyers, OPS: operational performance of suppliers, RPB: relational performance of buyers, RPS: relational performance of suppliers

and are illustrated in Fig. 2. The individual papers assigned to each of the categories are presented in "Appendix".

5.1.1 Information, operational and relational dimension

The results of the frequency analysis indicate that more than 90% of the analysed RQ studies (91 out of 100) address at least one of the three RQ dimensions considered in the framework (see Fig. 1). As can be seen in Fig. 2, the number of the studies that analysed buyers' perceptions of RQ with suppliers are much higher than that of the studies analysing suppliers' perceptions of RQ with buyers. This demonstrates that the RQ studies are dominated by the buyers' perspective. Moreover, relational dimension of RQ (88) that focusses on the attitude of a firm towards its SC partners and is characterised by trust, commitment and long-term orientation has gained the most attentions of the RQ scholars. In line with the commitment-trust theory by Morgan and Hunt (1994), the RQ scholars have considered trust and commitment the central constituents of interfirm RQ that influence SC performances. However, long-term orientation has been considered a constituent of interfirm RQ by only a few scholars (e.g., Jiang et al. 2011; Han and Sung 2008; Kim et al. 2011). Information (31) and operational dimension (27) of RQ have also frequently been addressed; however, have gained much less attentions than relational dimension. The information dimension refers to the quality of communication, information sharing, information exchange or information transfer between SC partners. The operational dimension represents the extent to which firms cooperate and collaborate with SC partners in joint activities (e.g., Fynes et al. 2008; Su et al. 2008), or the degree to which firms coordinate decision-makings (Barnes et al. 2011; Mysen and Svensson 2010) and integrate with SC partners (Ashnai et al. 2009; Kühne et al. 2013). While most of

the papers used the construct "cooperation" to measure operational dimension of RQ, constructs such as "collaboration", "coordination", and "integration" have less frequently been adopted in the analysed RQ papers.

5.1.2 Operational, relational and financial and market performance

Concerning the performance outcomes of RQ, 67 papers discussed at least one of the three types of performances considered in the framework (see Fig. 1). Among those studies, roughly one in three studies measured firms' financial and market performance (27) or operational performance (20), while more than 70% of the studies assessed relational performance (47). The metrics used for measuring financial and market performance include sales, profit, return on investment, market share, etc. Operational performance was measured by cost (e.g., transaction cost, inventory cost, total cost), quality (e.g., product or service quality, customer complaints, order processing accuracy, forecast accuracy), delivery (e.g., on-time delivery, customer response time, manufacturing lead time, order cycle time), flexibility (e.g., volume, delivery, product-mix or new product flexibility), innovation and know-how development. Relational performance normally concerns a firm's propensity to continue or leave an extant relationship (e.g., relationship persistence and continuity, loyalty), a firm's propensity to enhance or undermine an extant relationship (e.g., transaction frequency, relationship diversity and the extent to which a firm will or intends to make relation-specific investments, to share and transfer knowledge, to jointly act, to integrate) or the satisfaction of the two relationship parties. Assessing the relationship member's perspective, the buyer performance outcomes have more frequently been analysed in the RQ studies than the supplier performance outcomes. In addition, the buyer relational performance (41)—in other words, the buyers' satisfaction or loyalty—is the biggest concern of the RQ scholars.

5.2 Contingency analysis

In order to assess how the RQ scholars tend to link the various RQ dimensions and the different types of performance to each other, a contingency analysis was conducted. We conducted the contingency analysis among the papers, which address at least one of the three dimensions (information, operational and relational dimension) along with at least one of the three types of performance (operational, relational and financial and market performance). A total of 65 papers were included (see "Appendix"). Table 2 lists all category pairs with $\varphi > 0.3$ (Hair Jr et al. 2013), which means that two categories in a pair have often been investigated in one study. In addition, the observed relative occurrence and the calculated relative probability of occurrence of category pairs are reported. Based on these results, we assessed the semantic relationships between categories against the related literature analyzed. In the following sections, we will explain the findings in respect to buyers and suppliers in detail.

Table 2 Results of the contingency analysis ($n = 65$)

Associations	Phi coefficient[a]	Approximate significance[b]	Exact significance (one-sided)[c]	Observed frequency (%)[d]	Expected frequency (%)[e]
Supplier's perspective					
(1) IDB-RDB	0.358	0.004	0.011	6.2	2.2
(2) ODB-RDB	0.404	0.001	0.003	7.7	2.6
(3) RDB-FPS	0.596	0.000	0.000	15.4	5.2
(4) RDB-OPS	0.596	0.000	0.000	15.4	5.2
(5) RDB-RPS	0.665	0.000	0.000	18.5	6.3
(6) ODB-OPS	0.517	0.000	0.001	6.2	1.2
(7) ODB-FPS	0.357	0.004	0.023	4.6	1.2
(8) FPS-OPS	0.645	0.000	0.000	10.8	2.3
Buyer's perspective					
(9) IDS-RDS	0.348	0.005	0.004	33.8	26.6
(10) RDS-RPB	0.554	0.000	0.000	56.9	45.2
(11) FPB-OPB	0.462	0.000	0.000	16.9	7.7

[a]Phi coefficient: Measure of the association within category pairs, ranging from 0 (no association) to 1 (complete association) or − 1 (complete inverse association). Phi > 0.3: a non-trivial relation

[b]Approximate significance: Statistical significance of phi, with $p \leq 0.001$ (highly significant), $p \leq 0.01$ (very significant) and $p \leq 0.05$ (significant)

[c]Exact significance (one-sided): Statistical significance of association within category pairs, with $p \leq 0.001$ (highly significant), $p \leq 0.01$ (very significant) and $p \leq 0.05$ (significant)

[d]Observed frequency (%): Observed relative occurrence of category pairs (in %)

[e]Expected frequency (%): Calculated relative probability of occurrence of category pairs (in %) by multiplying the observed single relative occurrence of category pairs (in %)

5.2.1 The suppliers' perspective

Eight pairs of categories have frequently been analysed in one study by the RQ scholars using the suppliers' perspective. Firstly, the relational dimension (RDB) frequently occurs in combination with the information dimension (IDB) ($\varphi = 0.358$) and the operational dimension (ODB) ($\varphi = 0.404$) respectively. Reviewing the content of the related papers, we found that some RQ scholars measured the relational dimensions along with the information or operational dimensions, when investigating suppliers' perceptions of RQ with buyers (e.g., Duffy 2008; Kim et al. 2011; Nyaga et al. 2013; Richard et al. 2007; Obadia and Vida 2011). A few scholars have also examined the relationships between the different dimensions of RQ. For example, Wu et al. (2012) have empirically confirmed that communication is an antecedent of trust and commitment. Nyaga et al. (2013) supported that trust and communication positively affect collaborative behaviours.

Further, five significant contingencies were identified between the RQ dimensions and performance outcomes. First, the degree of a supplier's perception of

the relational dimension of RQ with a customer (RDB) frequently occurs alongside this supplier's performance resulting from this relationship across all three aspects (financial and market performance (FPS) $\varphi = 0.596$, operational performance (OPS) $\varphi = 0.596$ and relational performance (RPS) $\varphi = 0.665$). In addition, the level of a supplier's perception of the operational dimension of RQ with a customer (ODB) frequently occurs in combination with this supplier's operational (OPS) ($\varphi = 0.486$) and financial and market performance (FPS) ($\varphi = 0.357$) resulting from this relationship.

Assessing the content of the papers relating to the contingencies presented above, we found that the papers have generally confirmed that suppliers' relational, operational, and financial and market performances are positively correlated to suppliers' perceptions of relational dimension of RQ with buyers (e.g., Baxter 2012; Fang et al. 2011; Fu et al. 2013; Gounaris and Tzempelikos 2014; Lai et al. 2008; Nyaga and Whipple 2011; Tzempelikos 2015; Wu et al. 2012; Zaefarian et al. 2015).

However, the effect of operational dimension of RQ on performance is controversial. For example, Duffy's study (2008) supported that suppliers' perceptions of their financial performance were significantly higher in highly integrated and coordinated relationships then they were in relationships with limited coordination. Fynes et al. (2008) have also confirmed that cooperation in joint activities is a constituent of RQ that positively affects suppliers' quality, delivery, cost and flexibility performance. On the contrary, Nyaga et al. (2013) found that collaborative behaviour do not significantly affect operational performance in the presence of power and RQ factors (trust, communication, uncertainty). Obadia and Vida (2011) also discussed the negative effect of RQ that is composed of trust, cooperation and continuity expectations on financial performance in the exporter—importer relationships.

Few scholars from the suppliers' view have linked information dimension of RQ to performance directly. For example, Wu et al. (2012) observed the indirect relationship and found that communication affects propensity to leave through trust and commitment. Fynes et al. (2008) considered communication one of second-order constructs of RQ that has a positive impact on suppliers' operational performance.

In addition, we found that the RQ scholars often measured suppliers' financial and market performance outcomes (FPS) in combination with their operational performance outcomes (OPS) when investigating the outcomes of suppliers' perception of their RQ with buyers ($\varphi = 0.645$) (e.g., Fang et al. 2011; Fu et al. 2013; Gounaris and Tzempelikos 2014; Nyaga and Whipple 2011). Some scholars have also confirmed the positive relationships between operational and financial performance resulting from the buyer–supplier relationships (Kim et al. 2011; Nyaga and Whipple 2011).

5.2.2 The buyers' perspective

Three significant contingencies between categories were identified from the buyers' perspective. First, there is a frequent co-occurrence of the information and relational dimensions ($\varphi = 0.348$). This implies that the RQ scholars have often measured buyers' perceptions of RQ with suppliers by combining indicators such as trust, commitment or long-term orientation with communication, information sharing or

information exchange. Some studies have also empirically confirmed the positive relationship between information and relational dimension of RQ. For example, Chu and Wang (2012) and Sarmento et al. (2015) considered information exchange and sharing to be an antecedent of trust and commitment.

Regarding the association between RQ dimensions and performance, buyers' perception of relational dimension of RQ with suppliers (RDS) frequently occurs alongside buyers' relational performance (RPB) ($\varphi = 0.554$). Reviewing the related papers, we can confirm that the RQ scholars often linked relational performance of a buying firm (for example, its loyalty or satisfaction) with the degree of trust, commitment or long-term orientation that this firm perceived from its supplier (e.g., Čater and Čater 2010; Hutchinson et al. 2011; Leonidou et al. 2013; Rauyruen and Miller 2007; Sarmento et al. 2015; Ulaga and Eggert 2006; Wu et al. 2015).

No other significant frequent co-occurrence of RQ dimension and performance was found in the sample of the papers from the buyers' view. This reveals that the other associations between RQ dimensions and performance have been discussed relatively less frequently; however, we can still find the papers that discuss these issues. Some studies have analysed and confirmed the positive impact of buyers' perception of relational dimension of RQ with suppliers on buyers' operational performance measured by quality and delivery performance (e.g., Nyaga and Whipple 2011), innovation performance (e.g., Chang et al. 2012b; Fang et al. 2011), and cost (e.g., Han and Sung 2008).

Furthermore, some scholars have analysed and confirmed that buyers' financial and market performance is positively correlated to their perception of RQ with suppliers, which is composed of relational and/or operational dimension (e.g., Barnes et al. 2015; Chu and Wang 2012; Han and Sung 2008; Lai et al. 2013; Song et al. 2012). However, some scholars have also pointed to counterexamples. Alejandro et al. (2011) found that neither RQ with supplying firms nor RQ with account managers in the supplying firms affect buyers' financial performance significantly. Barnes et al.'s study (2011) demonstrates that a cooperative relationship with suppliers does not directly affect but indirectly affects buyers' financial performance through buyers' satisfaction with suppliers. In addition, Chang et al. (2012b) found that trust, commitment and information exchange does not affect buyers' financial performance directly.

Few scholars discussed the direct impact of information or operational dimension of RQ on buyers' performance. For example, Chang et al. (2012b) found that higher degree of information exchange leads to higher innovation. Remarkably, some scholars linked information exchange or sharing to performance mediated by relational dimension of RQ measured by trust and commitment (e.g., Chu and Wang 2012; Sarmento et al. 2015). In addition, a great deal of the papers analysed RQ and performance using a second-order model. This means that these papers examined the aggregate effect of interfirm RQ as composed of several RQ dimensions. For example, Fynes et al. (2008) confirmed the positive relationship between RQ (measured by trust, communication, cooperation and adaptation) and buyers' operational performance. Leonidou et al. (2013), Su et al. (2008), and Mysen and Svensson (2010) found that RQ (measured by relational, operational and information dimensions) has a positive impact on buyers' relational performance. Barnes et al. (2015)

observed that RQ (measured by commitment and cooperation) positively affects buyers' financial performance. In such cases, the effect of an individual RQ dimension on performance is vague.

Finally, a significant frequent co-occurrence exists between a buyer's financial and market performance (FPB) and its operational performance (OPB) as a result of buyers' perceptions of RQ with suppliers ($\varphi = 0.462$). We found that the RQ scholars often combined these two types performance when measuring performance outcomes of RQ (e.g., Fang et al. 2011; Richey Jr et al. 2010).

6 Discussion

6.1 Discussion of the results

This paper analyses the interfirm RQ studies published in a wide range of and particularly in marketing-related journals, based on a categorisation scheme derived from a theoretical framework taken from SCM research, and therefore it embeds the RQ constructs and its consequences in a broader SCM framework. It contributes to the SCM research by (1) revealing the role of various dimensions of buyer–supplier RQ in affecting SC performance from the RQ scholars' perspective, (2) discussing the differences between the studies using the buyers' and suppliers' perspective.

The RQ scholars paid great attention to relational dimension, which focuses on firms' attitude towards relationship partners and characterizes the strategic connection between firms in SCs. This seems to be in accordance with the finding by van der Vaart and van Donk (2008), who found that attitudes dominated in the items used to measure the integration between SC partners. While relationships formed between SC partners are critical factors for firms to improve performance and develop a sustainable competitive advantage, the establishment of trustful, committed and long-term oriented relationships with the relationship partners play the central role for firms in managing their SC relationships.

The RQ studies have generally confirmed that a SC party's perception of relational dimension of RQ with its SC partner positively affects its relational performance, such as intentions of relationship continuity. This finding supports the study by Leuschner et al. (2013), who found that the relational dimension has most frequently been considered the driver of customer-oriented performance, such as customer satisfaction and customer loyalty. Our study adds to this by reinforcing the importance of relational dimension of RQ for facilitating both buyers' and suppliers' loyalty and intentions to maintain the relationships. In addition, the RQ studies have provided evidence that a SC party' operational performance such as quality, delivery, cost, and innovation is connected to its perception of relational dimension of RQ with its SC partners. This result strengthens the significance of relational dimension, namely the strategic connection between SC partners for firms' operational performance improvement.

Furthermore, our study shows that the RQ scholars tended to emphasize the indirect impact of information dimension of RQ on performance, through relational dimension in particular. For instance, information exchange and sharing has been

connected to firms' relational or financial performance mediated by trust and commitment (e.g., Chu and Wang 2012; Sarmento et al. 2015; Wu et al. 2012). This may support the notion of Leuschner et al. (2013), who considered information integration the first stage of integration between SC partners. The RQ studies provides strong supporting evidence that high-quality communication is the antecedent of the adoption of a strategic connection between firms.

Besides, the results of the RQ studies on the impact of operational dimension of RQ on performance are inconsistent. Especially, the significant and positive effect of operational dimension on firms' financial performance is controversial. This can be attributed to the behavioural nature of operational dimension. For example, cooperation in joint activities such as product and process development, planning and quality management are normally based on firms' investment in personal, equipment, and supporting systems. If the benefits from the cooperative activities cannot compensate for the cost of investment, cooperation can even negatively affect the financial performance (e.g., Barnes et al. 2011). The fact that the operational dimension can have varying results is in line with the finding of Leuschner et al. (2013).

Finally, our research also reveals the difference between the RQ studies using the buyers view and the suppliers view. We found that the RQ scholars have generally confirmed the positive impact of suppliers' perception of relational dimension of RQ with buyers on the level of all three types of suppliers' performance (relational, operational, and financial performance); however, the relationship between relational dimension of RQ and financial performance is controversial from the buyers' perspective. This seems to be in line with Van der Vaart and van Donk's (2008) notion. They believed that there is more face validity for a relationship between improved performance and integration with buyers than integration with suppliers. They argued that "it seems rather optimistic to try to establish relationship between the attitude of a firm towards its suppliers and its financial performance" (p. 50). A reason for this difference might be that financial and market performance is taken as an indicator for potential revenue and profit generation (Lahiri and Kedia 2011). Thus, a good financial and market performance is more likely to be the direct outcome of making business with trustworthy customers via suppliers' efforts to develop a high-committed and long-term oriented customer relationship. Based on this finding, we argued that buyers' and suppliers' perspective on the relational drivers of their financial performance may be different.

6.2 Suggestions for future research

Based on the results of the study and the discussion above, some suggestions for future researchers are provided. As far as the present state of RQ studies is concerned, research that untangles the relationships between different dimensions of RQ is lacking. The majority of the studies used a second-order model to measure interfirm RQ (e.g., Fynes et al. 2008; Nyaga and Whipple 2011). In these studies, the relationships between the individual RQ dimensions remain unclear. Moreover, as a second-order model investigates the aggregate effect of RQ, the relationships between the individual dimensions and performance seem vague. Consequently,

more research is needed to clarify the relationships between the individual underlying relationship dimensions and their specific effect on SC performance. Providing an insight into these issues would help managers improve their understandings of how SC relationships work and how to enhance performance and thus achieve a competitive advantage by effectively using these relationships. As Palmatier et al. (2006) pointed out, promoting understanding of the key relational drivers of firms' performance can enhance returns on firms' relationship investment dramatically.

Furthermore, we noticed that the buyers' and suppliers' perspectives on the relational drivers of their performance may be different. Consequently, an area of interest for future study would be collecting and comparing data from buyers and suppliers, aiming at providing multiple-channel perspectives of SC relationships and clarifying their similarities and differences. This is particularly important for examining whether the buyer and supplier involved in a relationship could achieve mutual benefit through developing and maintaining a good relationship.

In addition, to examine the buyer–supplier relationship embedded in the SC, combining the dyadic view and SC perspective is suggested. While interfirm RQ studies primarily focus on dyadic buyer–supplier relationships and adopt perspectives of suppliers and/or buyers to investigate dyadic relationships, SCM studies have strived to take more entities into account to extend beyond the dyad. By combining the dyadic and SC approaches, an SC-focussed investigation of dyadic relationships embedded in the chain would be useful. It would be particularly interesting to illustrate how buyer–supplier relationships embedded in the chain and the buyer–supplier relationship management decisions affect the SC as a whole and in turn affected by it (Foerstl et al. 2017). A good example was provided by Kühne et al. (2013). They examined the influence of the chain RQ on the SC innovation capacity by collecting data from direct vertical chains composed of a triplet of firms, including a manufacturer, a supplier and a customer, and by analysing two dyadic buyer–supplier relationships (supplier-manufacturer relationships and manufacturer-customer relationships) embedded in the chain.

6.3 Limitations

The following aspects should be considered limitations of this paper. First, this paper adopted a contingency analysis aimed at examining how researchers tended to link the constructs instead of '[confirming] relationships between predetermined constructs or [quantifying] effect sizes between these constructs' (Terpend et al. 2008, p. 29). It is less sensitive at detecting a positivism bias than a meta-analysis (Sobh and Perry 2006). Nevertheless, a meta-analysis, which can quantify effect sizes between constructs, would be of interest for future researchers.

Second, we reviewed a sample of papers on interfirm RQ guided by a categorisation scheme derived from Leuschner et al.'s (2013) research framework, as the three dimensions considered in their framework cover the major RQ constructs such as trust, commitment, long-term orientation, communication, and cooperative activities. However, Leuschner et al. (2013) focuses on SC integration and performance, which is one of the relevant SCM topics. Connections of RQ to other SCM issues,

for instance, supplier development, risk management, in which buyer–supplier-relationships play considerable roles, can be explored.

Third, the most challenging issue in content analysis is reliably coding during the material evaluation step, which would ideally be ensured by joint coding by several researchers (Seuring and Gold 2012). This was done for a subset of the sample (42 papers), which was separately coded by two coders. To minimise potential bias, after joint coding in the first phase, all cases for which different judgments were made were discussed and resolved. Based on this, a sound coding routine was established and used to analyse the remaining papers in the sample by the single researcher; nevertheless, this is regarded as a limitation of this study.

7 Conclusion

In summary, with the overlaps of the interfirm RQ and SCM research in mind, this paper analysed interfirm RQ papers based on analytic categories derived from an SCM framework. It contributes to the existing SCM literature by providing novel insights into the connections of SC performance with the quality of buyer–supplier relationships from the RQ scholars' perspective. Our study shows that firms' perceptions of a strategic connection with SC partners characterised by trust, commitment and long-term orientation generally has a positive impact on firm's relationship retention and loyalty as well as operational performance such as quality, delivery, and innovation. Information transfer and communication can facilitate the strategic connection between firms in SCs, which further lead to firm performance. However, the impact of operational dimension of RQ on firms' performance varies. In addition, the buyers' and suppliers' perspectives on the relational drivers of their financial performance may be different. This suggests future researchers to analyse SC relationships and performance matching the buyers' and suppliers' perspectives.

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Appendix

Referenced papers for each categories (n = 100)

Categories and subcategories	Reference number of assigned paper	No. of papers analysed in contingency analysis (n = 65)
Information dimension	See individual subcategories	23
IDS	2, 4, 9, 10, 13, 14, 15, 16, 29, 35*, 36*, 37, 38, 48, 49, 59, 60*, 61, 68, 73, 74, 79, 82, 89, 90, 96	5
IDB	2, 11*, 12*, 24, 28*, 46*, 60*, 61, 73, 96	
Operational dimension	See individual subcategories	14
ODS	3*, 4, 5, 11*, 13, 41, 48, 49, 57, 60*, 61, 69*, 76, 79, 81, 82, 83*, 84, 90, 100*	6
ODB	3*, 12*, 20, 24, 39, 41, 46*, 60*, 61, 63*, 64, 100*	
Relational dimension	See individual subcategories	48
RDS	1, 2, 3*, 4, 6, 9, 10, 13, 14, 15, 16, 17, 18*, 21, 22, 25, 29, 30*, 32, 33, 34, 35*, 36*, 37, 38, 40, 41, 43, 44, 48, 49, 51*, 57, 58*, 59, 60*, 61, 62, 65, 66, 67*, 69*, 72, 73, 74, 75*, 76, 77*, 78*, 79, 80*, 82, 83*, 84, 85*, 86, 88, 89, 90, 91, 92*, 93, 95, 96, 97*, 98	23
RDB	2, 3*, 7, 8, 11*, 12*, 20, 22, 23, 24, 26, 27*, 28*, 39, 41, 43, 45, 46*, 47, 51*, 52, 54, 60*, 61, 62, 63*, 64, 71*, 73, 87, 95, 96, 97*, 99, 100*	
Financial and market performance	See individual subcategories	18
FPB	1, 2, 4, 5, 9, 15, 16, 25, 29, 33, 44, 59, 62, 66, 76, 81, 84, 86	10
FPS	2, 20, 23, 26, 39, 47, 55*, 62, 64, 87, 99	
Operational performance	See individual subcategories	16
OPB	2, 9, 15, 22, 25, 29, 41, 49, 59, 61, 62, 76, 79, 84, 98	10
OPS	2, 22, 23, 24, 26, 39, 41, 47, 61, 62	
Relational performance	See individual subcategories	40
RPB	1, 2, 5, 6, 10, 13, 14, 17, 19*, 21, 22, 32, 33, 34, 37, 38, 40, 43, 44, 48, 49, 57, 59, 65, 66, 68, 72, 73, 74, 79, 82, 86, 88, 89, 90, 91, 93, 95, 96, 98	11
RPS	2, 7, 8, 22, 23, 26, 43, 45, 52, 54, 96	

*The papers that were not considered in the contingency analysis, because they do not meet the requirement that the paper addresses at least one of the three dimensions of RQ (information, operational, and relational dimension) along with at least one of the three types of performance outcomes (operational, relational, and financial and market performance)

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The 100 papers contained in the review sample are numbered in squared brackets

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