

Outcomes of inter-organizational trust in supply chain relationships: a systematic literature review and a meta-analysis of the empirical evidence

Emanuela Delbufalo

Faculty of Economics, European University of Rome (Università Europea di Roma), Rome, Italy

Abstract

Purpose – This study's purpose is to improve the understanding of inter-organizational trust outcomes in supply chain relationships. It focuses on synthesizing the empirical research published from 1990 to May 2010 in order to establish both what we know and do not know about this topic, thereby identifying areas for future research.

Design/methodology/approach – The research methodology used is the systematic literature review. It differs from traditional narrative reviews by being more systematic and explicit in the selection of the studies and employing rigorous and reproducible evaluation methods. In total 56 were selected from three databases: Business Source Premier; ABI/Informs; Ingenta. A meta-analysis was conducted to examine the correlated outcomes of inter-organizational trust in supply chain relationships. A total of 33 outcome variables and 96 independent samples with an overall sample size of 69,452 were included in the meta-analytic process, providing insights for dissemination and discussion.

Findings – Three major themes emerge from the analysis: direct, indirect and relational outcomes. The review identifies a number of theoretical opportunities for future investigation as well as methodological challenges.

Research limitations/implications – Inherent limitations could appear with regard to the methodological approaches used. The main research challenges refer to the: conceptualization of inter-organizational trust; definition of supply chain relationship typologies; and availability of primary data for the meta-analytic synthesis.

Originality/value – This is the first study employing a combination of systematic literature review and meta-analytic methodologies to explore the supply chain literature on inter-organizational trust outcomes. The findings are of value to academics and practitioners alike.

Keywords Inter-organizational trust, Supply chain, Supply chain management, Trust, Empirical literature, Outcomes, Meta-analysis, Review, Channel relationships

Paper type Literature review

1. Introduction

The goal of this study is to provide a comprehensive and critical review on outcomes of inter-organizational trust in supply chain relationships by means of a systematic literature review methodology in combination with a meta-analytic approach. The review considers empirical works published in academic journals from 1990 to (May) 2010.

Issues associated with trust at various level of analysis have generated a great deal of broad scholarly interest in the field, as evidenced by the dozens of articles, reviews (e.g. Seppänen *et al.*, 2007) and special issues (e.g. Möllering *et al.*, 2004) of the leading journals that have been devoted to this theme. Trust is a valuable contributor to many forms of exchange (Doney *et al.*, 1998), and supply chain relationships are no exception (Kannan and Tan, 2006).

At the organizational level, trust refers to the extent to which organizational members have a collectively held trust orientation towards the partner firm (Zaheer *et al.*, 1998). This construct is regarded as more important than the other forms of trust (e.g. interpersonal trust) as a salient factor for the success of supply chain relationships (e.g. Fawcett *et al.*, 2004). In inter-firm exchanges, trust creates an environment where firms strive to exceed the minimum requirements of a relationship to increase the likelihood of mutual benefits (Panayides and Lun, 2009).

In surveying the empirical work on inter-organizational trust, individual findings tend to fall into one of the following areas of enquiry:

- the nature of inter-organizational trust;
- the development of inter-organizational trust;
- the role of inter-organizational trust; and
- the outcomes of inter-organizational trust (Zaheer and Harris, 2006).

The current issue and full text archive of this journal is available at www.emeraldinsight.com/1359-8546.htm



Supply Chain Management: An International Journal
17/4 (2012) 377–402
© Emerald Group Publishing Limited [ISSN 1359-8546]
[DOI 10.1108/13598541211246549]

Received: 1 October 2010
Revised: 15 March 2011
25 June 2011
4 November 2011
Accepted: 6 November 2011

These areas explore four questions with respect to inter-organizational trust in supply chain relationships:

- 1 What is it?
- 2 How is it created?
- 3 How does it work?
- 4 What does it lead to?

This study focuses on the fourth research question (i.e. What does inter-organizational trust lead to?) and aims to add further remarks to the literature synthesizing the empirical research in an effort to establish both what we know and what we do not know about inter-organizational trust outcomes in supply chain relationships, thereby identifying areas for future research.

The need for this review comes from the growing research interest regarding whether inter-organizational trust leads to desirable outcomes, and if so, what those are. Although some evidences of the relationship between inter-organizational trust and direct/indirect outcomes has proven inconclusive (e.g. Aulakh *et al.*, 1996), a variety of studies focuses on this connection with interesting results. Specifically, inter-firm trust has been shown to lower transaction costs and cycle time within the supply chain (Carson *et al.*, 2003), and to improve supply chain responsiveness (Handfield and Bechtel, 2002). Equally, the implementation of lean and agile supply chains requires increased levels of trust between organizations and this is also illustrated in a number of different industries (e.g. Svensson, 2001).

This systematic literature review of trust outcomes differs from the others developed before in the management literature (e.g. Geyskens *et al.*, 1998) in three different ways: first, it provides a more updated and comprehensive view of all the specific outcome variables that have been correlated to inter-firm trust; second, it specifically focuses on inter-organizational settings (i.e. supply chain relationships), avoiding confounding and inaccurate results due to multiple levels of analysis and to different conceptualizations of the trust construct; thirdly, it employs a methodology for the research synthesis resulting from the combination of the systematic literature review and meta-analytic approaches.

The paper proceeds as follows. The next section describes the research methodology. Section 3 provides descriptive statistics of the selected articles. Section 4 describes the meta-analytic approach and summarizes the relevant findings considering three different domains:

- 1 direct economic outcomes;
- 2 indirect outcomes; and
- 3 relational outcomes of inter-organizational trust in supply chain relationships.

The final sections contain conclusions as well as theoretical and methodological directions for further research.

2. Methodology

This study adopts the systematic literature review as research methodology (Tranfield *et al.*, 2003). It differs from the traditional narrative reviews by being more systematic and explicit in the selection of the studies, and by employing rigorous and reproducible methods of evaluation (Denyer and Tranfield, 2009).

A systematic literature review is designed “to help engender a sense of collective endeavour, relevance and openness among the researches so as to prevent expensive and fruitless

repetition of effort, to assist in linking future research to the questions and concerns that have been posed by past research and finally to improve the methods used to collect and synthesize previous empirical evidence” (Thorpe *et al.*, 2005, p. 258).

The systematic review follows the three-phase approach outlined by Tranfield *et al.* (2003):

- 1 planning the review: defining objectives; preparing the proposal and developing the protocol;
- 2 conducting the review: identifying, selecting, evaluating and synthesizing the relevant articles; and
- 3 reporting and dissemination of the results: descriptive reporting of citations and thematic reporting of journal articles.

For the synthesis of the selected papers, the study employs a meta-analytic approach. Meta-analysis is a powerful technique for quantitatively integrating research findings across a number of individual studies (Hunter and Schmidt, 1990). Through meta-analysis, the study aims to:

- reflect on the definition of inter-organizational trust;
- map the constructs that have been examined empirically as outcomes of inter-organizational trust;
- reveal which of these constructs exhibit a strong relationship with inter-organizational trust; and
- demonstrate which methodological choices matter and which do not.

The combination of the systematic literature review with the meta-analytic approach can overcome important limitations that are inherent in traditional narrative summaries of research. Systematic methods impose discipline on the review process. Meta-analysis provides an efficient way to summarize the results of a large number of studies and can uncover associations not previously identified.

Following Tranfield *et al.*'s (2003) approach, the next sub-section provides details of the research protocol (phase a) as the defining of the objectives has already been presented in the introduction. Sub-section 2.2 describes the database searching process of the relevant articles (phase b). Finally, the reporting and dissemination (phase c) will be discussed in sections 3 and 4.

2.1 The research protocol

The review protocol was developed around the following research question: “What does inter-organizational trust lead to in supply chain relationships?” The domains for the research synthesis are the empirical (both qualitative and quantitative) papers on the outcomes of inter-organizational trust in the supply chain literature.

The research protocol provides details on the:

- 1 conceptualization of the inter-organizational trust construct;
- 2 definition of the different typologies of supply chain relationships; and
- 3 typology of studies to be included in the review and the eligibility criteria.

With regard to point (1), this study considers exclusively the conceptualization of trust that involves organizations both as trustor and trustee. Thus, the review excludes the research exploring the effects of interpersonal trust in an inter-firm context (Janowicz and Noorderhaven, 2006). It is conceptually consistent to view inter-organizational trust as

being placed in (or towards) another group of individuals such as the partner organization (contrary to what scholars say about the “origin” of the two concepts) (e.g. Adobor, 2005). In this view, inter-organizational trust has its base in individuals, although individuals in one organization may share an orientation towards another. Thus, inter-organizational trust describes the extent to which organizational members have a collectively-held orientation toward the partner firm (Zaheer *et al.*, 1998).

Point (2) concerns the definition of supply chain relationships. This review considers horizontal and vertical inter-firm relationships involving suppliers, manufacturers, distributors, and retailers (Spekman *et al.*, 1998). The study also includes strategic alliances such as those that fall into the “non-traditional contracts” classification, in which transactions take place between buyers and suppliers of industrial goods and services. This type of alliance is defined as a “precompetitive alliance” and consists of an inter-industry, vertical supply chain relationship between manufacturer-service provider and their suppliers-distributors (Monczka *et al.*, 1998, p. 554).

Considering the above, several choices with regard to the typology of studies to be included and the eligibility criteria (i.e. the inclusion and exclusion criteria) have been made (point 3). They are outlined below:

- 1 The review was conducted by searching the Business Source Premier (EBSCO), ABI/Informs and Ingenta (including Science Direct) databases. They were found to have the greatest coverage coupled to functionality and full article access in the fields of Marketing, Supply Chain and Operation Management, which are relevant for the study.
- 2 Only published peer-reviewed journal articles were considered, both practitioner and academic. Equally, books, chapters in books, conference proceedings, working papers and other unpublished works were excluded. Following David and Han (2004), this was aimed at enhancing quality control.
- 3 The review considers two restrictions in order to enhance quality control. Rejections were made on the basis of date of publication: only articles published from January 1990 to May 2010 were considered[1]. In addition, the review included only articles published in the English language.
- 4 Papers’ substantive relevance was ensured by requiring that selected articles contained “trust*” as primary keyword in their title or abstract[2].
- 5 In order to address the multidimensionality of trust definition, papers’ substantive relevance was ensured by requiring that selected articles not containing “trust*” as primary keyword contained at least one of the following eight additional keywords: benevolence, confiden*, credibilit*, depend*, fair*, goodwill, honest*, predictabilit*, reliabilit*. Seppänen *et al.*’s (2007) review oriented the selection of these nine additional keywords.
- 6 Papers’ substantive relevance was also ensured by requiring that articles selected contained at least one of the following 11 additional keywords in their abstracts: cooperative or cooperation, inter-firm* or interfirm*, interorganization* or inter-organization*, relationship* or relation*, supply chain*, buyer*, supplier*. Stemming from literature on cooperative relations, these keywords appear particularly relevant in order to tap into the inter-organizational trust construct in supply chain contexts;

- 7 Following Newbert’s (2007) approach, empirical content was ensured by requiring that selected articles also contain at least one of the following ten “methodological” keywords in their abstract: data, empirical, test*, statistical, finding*, result*, case stud*, survey*, longitudinal, evidence*.
- 8 Substantive and empirical relevance of the review was enhanced by reading all the abstracts for substantive context (i.e. discussion of effects, outcomes and/or consequences of inter-organizational trust in supply chain relationships) and empirical content (i.e. mention of quantitative or qualitative analysis)[3].
- 9 Substantive and empirical relevance was finally ensured by reading all remaining articles in their entirety for substantive context and adequate empirical content. This enforced the alignment between the selected articles and the review objectives.

The above criteria listed in nine points were all employed in order to conduct an effective and reproducible database searching process as described in the next sub-section.

2.2 Database searching process and results

The database searching process was developed in four stages. This section reports on the stages and activities of the process and presents the results both descriptively and synthetically (Table I).

In the first stage, the keywords were built into search strings and entered into the electronic databases. The search string was amended using operators AND/OR and the exclusion criteria listed in the aforementioned points 2 and 3. This process yielded over 5,600 citations, of which 1,124 were left as relevant after filtering according to the exclusion criteria.

In the second stage, a more thorough title and abstract analysis was then conducted on the retrieved studies against the criteria listed in points 5 and 6. In addition, the following articles were eliminated: duplicate studies (291), anonymous authors (13), and other publications (18) (i.e. book reviews). At the end of this process, 229 articles remained as relevant.

In the third stage, the selected citations were further scanned searching for empirical studies via criteria detailed in point 7. Then, the remaining articles were grouped into A, B and C lists (Thorpe *et al.*, 2005). “A” was defined as studies that were definitely relevant. “B” was defined as studies where the relevance was not clear *a priori*. “C” was defined as studies that were less relevant or unclear. There were 37 relevant articles, 21 partially relevant articles and 19 less relevant articles. The relevance assessment was relative, to the extent that the author’s judgments were focused on aspects contained within the review scope. Pittaway *et al.*’s (2004) quality criteria matrix was here adopted as a useful tool.

In the fourth stage, starting within the A list and following with the B and C lists, the full-text version of 77 studies were read in detail in order to verify substantive and empirical relevance as detailed in the above points 8 and 9. From this process, 21 articles were further excluded from the analysis as they were outside the scope of this review. Then, further quality assessment, along with data extraction from the 56 selected articles, were performed. This latter analysis was conducted descriptively and thematically using a standard template. The descriptive analysis produced tables designed to contain the author(s), year, journal, country, industry, relationship type, theoretical approach, methodology, sample

Table I Summary of the results

Stage and activities	Results	Citations selected
Stage 1: Citation searches in the databases	Databases (3) Keywords used (31) Number of searches (42) Citations found (5,631)	(1,124)
Stage 2: Exclusion analysis through keywords and search strings	Duplicates (291) Anon authors (13) Other publications (18) Exclusion criteria (573)	(229)
Stage 3: Quality and relevance criteria used to separate into three lists	Relevant (37) Partially relevant (21) Less relevant (19)	(77)
Stage 4: Full-articles analysis	Relevant (36) Partially relevant (20) Less relevant (0)	(56)

Source: computed based on the data set

and analysis method of each study in the relevant lists (see Table II). The thematic analysis developed tables that were designed to summarize the following elements: definition of inter-organizational trust adopted, dimensions of trust, typology of outcome, and relevant findings of each study in the relevant lists (see Appendix 1 (Table AI)). Since the time-frame is an important inclusion/exclusion criterion, both the synoptic views are organized by year of publication.

3. Descriptive statistics of the selected articles

This section shows the results of the analysis without discussing them as this will be done in section 4. The descriptive statistics proceed as follows:

- analysis by date of publication;
- analysis by journal;
- analysis by industry and countries;
- analysis by method; and
- analysis by theoretical approach and analysis method.

The analysis by date confirms that the selected articles were published quite regularly from 1990 to 2010. In the bar-chart presented in Figure 1 there appears a scarce number of publications in the early 1990s, with exceptions for 1997 and 1998. Figure 1 also highlights an upward trend in the number of publications in 2008 and 2009 when it peaks respectively at seven and eight articles per year. The four articles published in the first five months of 2010 show clear signals of the growing interest in the topic.

The analysis by journal aims to recover the journals most involved in the conversation about inter-organizational trust outcomes in supply chain relationships. A total of 30 journals contained the selected publications. Table III shows those with more than two publications. A long list of journals with only one article was omitted for practical reasons. Table III also shows that the majority of selected articles are published in journals with a high rating (i.e. 4*).

The analysis by industry indicates that a wide range of sectors has been considered in the selected articles, including primary industries, manufacturing, electronics, retailing and service industry. The majority of publications reports on

multi-industry studies which indicate an attempt to compare outcomes and findings across industries (Table IV).

The analysis by country illustrates a wide range of experiences. Table II reports on the countries chosen by each of the selected articles for the empirical research. The majority of publications concern the USA (21 articles) and China (six articles). A significant number of articles report on cross-country settings (ten articles), which indicates an effort to compare findings across different contexts and cultures (Figure 2).

The analysis by method shows that the majority of publications (82 percent) use a mail or web survey as the methodological approach. The remaining articles adopt different methods such as secondary sources of data (7 percent), longitudinal survey (4 percent), single-case study (4 percent), multiple-case study (2 percent), and laboratory experiment (1 percent) (see Table II for details).

In addition, Table V shows the theoretical approaches adopted and the analysis methods employed in the selected articles. For practical reasons, Table V reports on descriptive statistics concerning only theoretical perspectives and analysis methods adopted by more than two publications. The full list appears in Table II.

With reference to the theoretical approach, the review findings show that the majority of the selected articles use social exchange theory (37 percent), transaction cost economics (35 percent), trust-commitment perspective (8 percent), and resource-based view (5 percent). The findings also show that the majority of selected articles employ quantitative methodology for the analysis (76 percent). Only 19 percent of the sample employs a combination of qualitative and quantitative methods while very few articles adopt a qualitative approach for the data analysis (5 percent).

4. The meta-analysis

Hunter and Schmidt's (1990) meta-analytic method was employed to estimate the "true" correlations (i.e. corrected effect sizes) between inter-organizational trust and its outcomes. Study correlations are open to statistical artifacts, such as sampling error and measurement unreliability. Once

Table II Synoptic view of the descriptive analysis *

No. ^a	Author(s) (year)	Country	Industry	Relationship type	Theoretical approach	Methodology	Sample	Analysis method
1 _A	Anderson and Narus (1990)	USA	Manufacturing firms in various sectors	Manufacturer-distributor relationships	Social exchange theory	Interviews; mail survey	1,365 questionnaires	Structural equation model
2 _A	Heide and John (1992)	USA	Manufacturing firms in various sectors	Supplier-manufacturer relationships	Transaction cost economics; relational norm perspective	Mail survey	235 questionnaires	Structural equation model
3 _A	Ganesan (1994)	USA	Retail (regional department-store chains)	Buyer-vendor relationships	Social exchange theory	Two mail surveys	176 questionnaires	Exploratory and confirmatory factor analysis
4 _A	Mohr and Spekman (1994)	USA	Personal computer industry	Manufacturer-dealer relationships	Social exchange theory	Mail survey	140 questionnaires	Multiple regression analysis
5 _A	Morgan and Hunt (1994)	USA	Automobile tire industry (retail)	Inter-organizational relationships	Trust-commitment theory; social exchange theory	Mail survey	129 questionnaires	Competing structural models
6 _A	Zaheer and Venkatraman (1995)	USA	P&C insurance industry	Inter-organizational relationships	Transaction cost economics	Survey	329 questionnaires	Hierarchical regression model
7 _B	Andaleeb (1996)	USA	Various sectors	Buyer-seller relationships	Social exchange theory	Laboratory experiment	192 individuals	Confirmatory factor analysis
8 _A	Aulakh <i>et al.</i> (1996)	Cross-countries	Not mentioned (Fortune 500 US industrial firms)	Inter-organizational relationships	Social exchange theory; transaction cost economics	Mail survey	1952 questionnaires	Exploratory factor analysis
9 _A	Geyskens <i>et al.</i> (1996)	USA; The Netherlands	Automobile retail industry	Buyer-vendor relationships	Marketing channel	Mail survey	703 questionnaires	Structural equation model
10 _B	Chow and Holden (1997)	USA	Electronic circuit-board industry	Buyer-seller relationships	Not specified	Mail survey	297 questionnaires	Structural equation model
11 _A	Doney and Cannon (1997)	USA	Industrial manufacturing	Buyer-seller relationships	Not specified	Mail survey	678 questionnaires	Confirmatory factor analysis
12 _A	Nooteboom <i>et al.</i> (1997)	The Netherlands	Electrical/electronic components	Manufacturer-supplier relationships	Resource dependence and relational contracts	Survey	97 questionnaires	Confirmatory factor analysis
13 _A	Smith and Barclay (1997)	Canada	Computer industry	Selling partnerships	Social exchange theory	Mail survey	103 questionnaires	Partial least squares
14 _B	Gulati and Singh (1998)	Cross-country	Biopharmaceuticals, new materials	Strategic alliances	Transaction cost economics	Secondary sources of data	1570 questionnaires	Multinomial logistic regression model
15 _A	Monczka <i>et al.</i> (1998)	Cross-country	Manufacturing firms in various sectors	Strategic alliances	Social exchange theory; transaction cost economics	Mail survey	77 questionnaires	Multiple regression analysis
16 _A	Selnes (1998)	Norway	Food industry	Manufacturer-supplier relationships	Social exchange theory	Survey	177 questionnaires	Confirmatory factor analysis
17 _B	Spekman <i>et al.</i> (1998)	Cross-country	Various sectors	Buyer-supplier relationships	Trust-commitment theory; transaction cost economics	Mail survey	161 questionnaires	Ordinary least squares (OLS) regression model
18 _A	Zaheer <i>et al.</i> (1998)	USA	Electrical equipment manufacturers and their component suppliers	Supplier-manufacturer relationships	Social exchange theory; transaction cost economics	Questionnaires; survey	1050 questionnaires	Exploratory factor analysis

(continued)

Table II

No. ^a	Author(s) (year)	Country	Industry	Relationship type	Theoretical approach	Methodology	Sample	Analysis method
19 _A	Young-Ybarra and Wiersema (1999)	At least one of the partners was US-based	Telecommunications	Strategic alliances	Social exchange theory; transaction cost economics	Survey	132 questionnaires (241 firms)	Structural equation model
20 _B	Gassenheimer and Manolis (2001)	USA	Various sectors	Buyer-seller relationships	Resource dependence	Survey	138 questionnaires	Confirmatory factor analysis
21 _A	Handfield and Bechtel (2002)	North America	Manufacturing firms in various sectors	Buyer-supplier relationships	Social exchange theory	Mail survey	97 questionnaires	Structural equation model
22 _A	Luo (2002)	China	Various sectors	Inter-organizational relationships	Relational governance; transaction cost economics	Archival data	293 questionnaires	Standardized regressions
23 _B	Norman (2002)	USA	Telecommunications, microelectronics	Strategic alliance	Resource-based view	Archival sources; survey	61 questionnaires	Factor analysis
24 _A	Carson <i>et al.</i> (2003)	USA	Knowledge-intensive sectors	Inter-organizational relationships	Information processing	Mail survey	129 questionnaires	Exploratory factor analysis
25 _A	Claro <i>et al.</i> (2003)	The Netherlands	Agriculture (potted plants and flowers industry)	Supplier-distributor relationships	Marketing channel; business networks	Mail survey	174 questionnaires	Ordinary least squares regression model
26 _B	Coote <i>et al.</i> (2003)	China	Not available	Industrial marketing relationships	Industrial marketing theory	Mail survey	152 questionnaires	Confirmatory factor analysis
27 _A	Dyer and Chu (2003)	USA; Japan; Korea	Automobile industry	Supplier-automaker relationships	Social exchange theory; transaction cost economics	Interviews; survey	344 questionnaires	Linear regression analysis
28 _A	Lusch <i>et al.</i> (2003)	n.a.	Retail distribution industry	Supplier-retailer relationships	Social exchange theory	Longitudinal survey	201 questionnaires	Confirmatory factor analysis
29 _B	Johnston <i>et al.</i> (2004)	Canada	Various sectors	Supplier-manufacturer relationships	Social exchange theory; transaction cost economics	Mail survey	164 questionnaires	Partial least squares model
30 _B	Kwon and Suh (2004)	USA	Manufacturing firms in various sectors	Inter-organizational relationships	Social exchange theory; transaction cost economics	Mail survey	171 questionnaires	Ordinary least squares regression model
31 _B	Corsten and Felde (2005)	Switzerland	Not mentioned (Fortune 500 US industrial firms)	Buyer-supplier relationships	Social exchange theory	Mail survey	135 questionnaires	Structural equation model; multi-group comparison
32 _A	Kwon and Suh (2005)	USA	Manufacturing firms in various sectors	Inter-organizational relationships	Trust-commitment theory; social exchange theory	Mail survey	171 questionnaires	Structural equation model
33 _A	Myhr and Spekman (2005)	Finland; Norway; Sweden	Various sectors	Inter-organizational relationships	Transaction cost economics	Web-based survey	157 questionnaires	Multiple regression analysis
34 _A	Narasimhan and Nair (2005)	USA	Various sectors	Strategic alliance	Social exchange theory	Secondary data; survey	411 questionnaires	Confirmatory factor analysis
35 _B	Chu and Fang (2006)	China	Various sectors	Inter-organizational relationships	Social exchange theory	Mail survey	288 questionnaires	Structural equation model
36 _A	Krishnan <i>et al.</i> (2006)	India	Various sectors	Inter-organizational relationships	Transaction cost economics	Mail survey	126 questionnaires	Confirmatory factor analysis; OLS regression analysis
37 _B	Vlachos and Bourlakis (2006)	Greece	Food industry	Manufacturer-retailer relationships	Trust-commitment theory; social exchange theory	Mail survey	97 questionnaires	Hierarchical regression analysis
38 _B	Cheng <i>et al.</i> (2008)	Taiwan	Various sectors	Inter-organizational relationships	Knowledge-based view	Mail survey (two rounds)	288 questionnaires	Structural equation model
39 _A	De Jong and Klein Woolthuys (2008)	The Netherlands	High-tech industries: biotechnology, new material development	Strategic alliances	Social exchange theory; transaction cost economics	Mail survey	391 questionnaires	Structural equation model

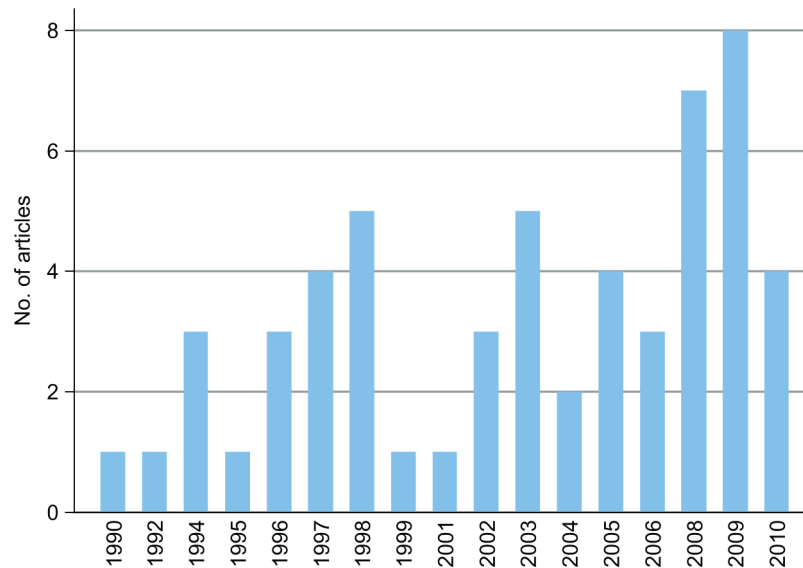
(continued)

Table II

No. ^a Author(s) (year)	Country	Industry	Relationship type	Theoretical approach	Methodology	Sample	Analysis method
40 _B Ghosh and Fedorowicz (2008)	USA	Retail distribution industry	Supplier-retailer relationships	Social exchange theory	Single case study	Not applicable	Analysis of interviews records
41 _A Gulati and Nickerson (2008)	USA	Automobile industry	Supplier-automaker relationships	Social exchange theory; transaction cost economics	Survey; interviews (37)	222 questionnaires (two firms)	Three-stage switching regression model
42 _B Laaksonen <i>et al.</i> (2008)	Finland	Paper industry	Buyer-supplier relationships	Transaction cost economics	Single case study	Not applicable	Analysis of interviews records and questionnaires
43 _A Lado <i>et al.</i> (2008)	USA	Not mentioned (<i>Fortune</i> 500 US industrial firms)	Inter-organizational relationships	Relational exchange theory; transaction cost economics	Longitudinal survey	409 questionnaires	Confirmatory factor analysis
44 _A Liu <i>et al.</i> (2008)	China	Household appliances sector	Buyer-supplier relationships	Social exchange theory; transaction cost economics	Mail survey	225 questionnaires	Structural equation model
45 _B Ibrahim and RibbersCross-country (2009)	Cross-country	Industrial automation; home commodities industry	Inter-organizational relationships	Resource-based view; transaction cost economics	Multiple case study (3)	Not applicable	Analysis of interviews records and questionnaires
46 _B Jambulingam <i>et al.</i> (2009)	USA	Pharmaceutical industry (retail)	Inter-organizational relationships	Marketing channel	Mail survey	156 questionnaires	Structural equation model
47 _A Laaksonen <i>et al.</i> (2009)	Finland	Paper industry	Buyer-supplier relationships	Game theory; transaction cost economics	Multiple case study	Not applicable	Activity based costing model
48 _B Panayides and Lun (2009)	UK	Manufacturing firms in various sectors	Manufacturer-supplier relationships	Not specified	Mail survey	193 questionnaires	Structural equation model
49 _B Ryu <i>et al.</i> (2009)	Cross-country	Electronic; textile; steel	Manufacturer-supplier relationships	Transaction cost economics	Mail survey	172 questionnaires	Structural equation model
50 _B Sharfman <i>et al.</i> (2009)	Cross-country	Various sectors	Inter-organizational relationships	Social exchange theory; transaction cost economics	Theoretical sample survey; interviews (14)	27 questionnaires	Multiple regression analysis
51 _A Squire <i>et al.</i> (2009)	UK	Manufacturing firms in various sectors	Strategic buyer-supplier relationships	Resource-based view	Mail survey	104 questionnaires	Ordinary least squares (OLS) regression model
52 _A Yeung <i>et al.</i> (2009)	China	Manufacturing firms in various sectors	Supplier-manufacturer relationships	Social exchange theory	Mail survey	617 questionnaires	Exploratory factor analysis
53 _A Fink and Kessler (2010)	Austria; Slovenia; Czech Republic	Various sectors	Inter-organizational relationships	Resource-based view; cooperation theory	Mail survey	303 questionnaires	Linear regression analysis
54 _A Hausman and Johnston (2010)	USA	Healthcare sector	Buyer-supplier relationships	Commitment-trust theory	Mail survey	324 questionnaires	Structural equation model
55 _A Hoffmann <i>et al.</i> (2010)	Austria; Germany	Automotive industry	Inter-organizational relationships	Social exchange theory; transaction cost economics	Mail survey	151 questionnaires	Logistic regression models
56 _A Liao (2010)	China	Manufacturing firms in various sectors	Inter-organizational relationships	Social network theory	Mail survey	102 questionnaires	Hierarchical regression analysis

Notes: The journal of each articles was omitted for practical reasons; ^aA, B or C letters attest the quality evaluation scoring (see Pittaway *et al.*, 2004)

Source: computed based on the data set

Figure 1 Analysis by date of publication

these artefacts are controlled for, then a chi-square test should be conducted in order to determine if sufficient variance remains in the results and justifies a search for moderator variables. Without sufficient variance, one can conclude that inconsistent findings are in fact completely explained by statistical artifacts.

The effect size metric selected for the analysis is the zero-order Pearson product-moment correlation coefficient between inter-organizational trust and the constructs in question (i.e. the outcomes). For studies that did not report correlations, Student's *t* and *F*-ratios with one *df* in the numerator were converted to correlation coefficients by means of formulae given by Hunter and Schmidt (1990, p. 272). Additionally, four papers have been excluded from the original set of selected articles (56 articles) as they employed single/multiple case study methodology[4]. Only the papers that actually measured inter-organizational trust were included in the meta-analytic process. Thus, the analysis considered 52 studies and reported 33 outcome variables correlated to inter-organizational trust from 96 independent samples and a total of 69,452 subjects involved.

Following the procedure, as set forth by Hunter and Schmidt (1990), we first corrected each correlation for attenuation using the reliabilities reported for each measure, where reliability information is available[5]. For samples not reporting the reliability of a multi-item measure of a certain variable, the sample size-weighted mean reliability of the multi-item measure of that variable across the samples was used as the substitute (see Judge and Ilies, 2002). For studies using a single-item measure for a certain variable, when the corresponding reliability was missing, we followed the procedure proposed by Williams *et al.* (2006) estimating the sample size-weighted mean reliability of single-item measures of each variable and using this estimate as the substitute.

After the correlations are corrected for attenuation, the estimated true correlation (r_t) between each dependent variable and the inter-organizational trust construct is calculated. In order to calculate the mean r_t , each corrected correlation for a given study is weighted by the sample size and averaged across respondents and studies[6]. The next step is to calculate the estimated population standard deviation (S_p^2) and finally, a chi-square statistic that allows

Table III Number of articles by journal

Journals	Journal rating	No of articles	Percentage of sample
<i>Academy of Management Journal</i>	4 ^a	2	4
<i>British Journal of Management</i>	4 ^a	2	4
<i>Industrial Marketing Management</i>	3 ^a	7	12
<i>International Journal of Physical Distribution & Logistics Management</i>	2 ^a	2	4
<i>International Journal of Production Economics</i>	3 ^a	4	7
<i>Journal of Managerial Issues</i>	n.a.	2	4
<i>Journal of Marketing</i>	4 ^a	6	11
<i>Organization Science</i>	4 ^a	5	9
<i>Strategic Management Journal</i>	4 ^a	5	9
<i>Supply Chain Management: An International Journal</i>	3 ^a	2	4

Notes: The Academic Journal Quality Guide (version 4; March 2010) by the Association of Business Schools (ABS) provides journal ratings

Source: computed based on the data set

Table IV Analysis by industry

Industry	No of articles	Percentage of sample
Primary industries (agriculture)	1	2
Manufacturing (automotive, textile, paper, household appliances)	21	38
Electronics (and related)	7	13
High-technology industries	2	3
Pharmaceutical industries	2	3
Retail distribution	5	9
Service industry	4	7
Healthcare industry	1	2
Multi-industry	8	14
Other	5	9

Source: Computed based on the data set

for the assessment of the heterogeneity across the studies after correcting for statistical artifacts (Hunter and Schmidt, 1990). A significant chi-square indicates the presence of moderator variables. It is also necessary to compute the 95 percent confidence interval around the corrected mean correlations. Moreover, a fail-safe N is calculated for each variable studies in order to assess the possibility of publication bias or the “file-drawer” problem in the analysis. This information, given in the last column in Table VI, indicates the number of other studies that would have to be included in the analyses in order to change the correlation to $r < 0.01$, yielding confidence in the results of the meta-analysis.

4.1 Results from the overall meta-analysis

A summary of the meta-analysis is presented in Table VI. The analysis examined 33 constructs as outcomes of inter-organizational trust. Table VI also provides a description of the effect size of the relationships between inter-organizational trust and the outcomes constructs in accordance with the guidelines set forth by Cohen and Cohen (1983), where correlations less than 0.10 are considered to be “small” (S),

correlations ranging from 0.10 to 0.30 are “medium” (M), and correlations greater than 0.30 are “large” (L).

To systematically review such a large number of constructs, meta-analysis studies typically adopt some categorization typology (e.g. Geyskens *et al.*, 1998). This study proposes to categorize the selected variables in three different domains, which have occupied the primary interest of empirical research on the topic. They are:

- 1 direct economic outcomes;
- 2 indirect outcomes; and
- 3 relational outcomes.

All the correlations involving inter-organizational trust and its outcomes were classified into one of three categories. The findings of meta-analysis are descriptively presented along with the above themes in the following three sub-sections.

4.1.1 Direct economic outcomes

Inter-organizational trust has been shown to influence a number of recognizable economic outcomes. Various metrics are in place for measuring the direct economic effect of inter-organizational trust in supply chain relationships. The performance variables that have been investigated consider

Figure 2 Analysis by country

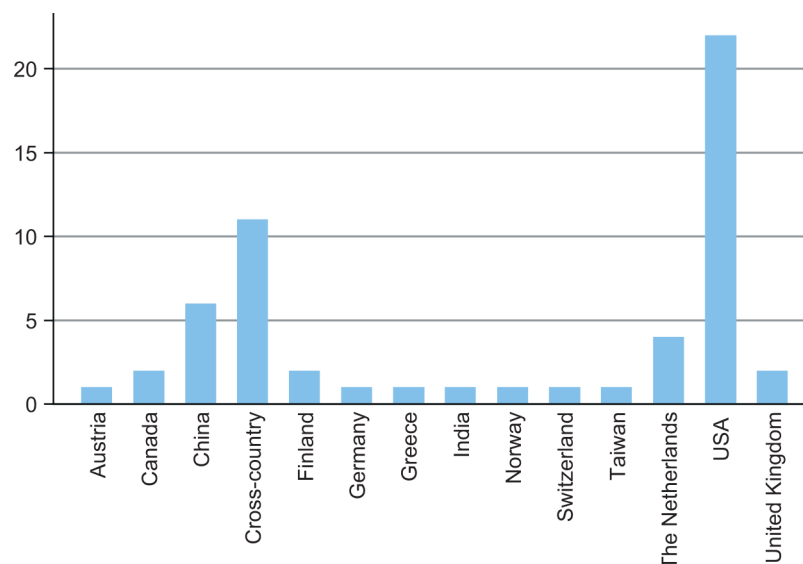


Table V Analysis by theoretical approach and analysis method

	No. of articles	Percentage of sample
<i>Theoretical approach</i>		
Marketing channel	3	4
Relational governance	2	3
Resource dependence	2	3
Resource-based view	4	5
Social exchange theory	29	37
Social network theory	2	2
Transaction cost economics	27	35
Trust-commitment theory	6	8
Not specified	3	4
<i>Analysis method</i>		
Analysis of interviews records	3	6
Confirmatory factor analysis	12	22
Exploratory factor analysis	5	9
Hierarchical regression model	3	6
Linear regression analysis	3	6
Multiple regression analysis	4	7
Ordinary least squares regression model	5	9
Partial least squares model	2	4
Structural equation model	16	31

Source: Computed based on the data set

the subjective evaluation perspective, the financial perspective, the cost perspective, and the business process perspective. Such analysis of direct economic outcomes can serve as a good indicator of integration issues in the supply chain (Spekman *et al.*, 1998).

The subjective perspective considers studies in which the performance measure is a subjective evaluation – provided by one partner towards another – reflecting the degree to which the partner organization fulfils the goal of competitive price, timeliness of delivery and high quality supply in the relationship (e.g. Zaheer *et al.*, 1998). The impact of inter-organizational trust on this direct outcome is confirmed.

The meta-analysis provides a strong support for the link between inter-organizational trust and performance measured by efficiency and productivity metrics (Gulati and Nickerson, 2008). Equally, the findings confirm the strong rationale in the literature for the link between trust and financial performance, measured by sales growth, cash flow and/or increased Return on Investment (ROI).

With regard to the cost perspective, the meta-analysis demonstrates a modest purchasing cost reduction as a consequence of increased levels of inter-firm trust between partners (Corsten and Felde, 2005) while providing strong support for the effect of trust on lowered transaction costs. From a business process perspective, the findings show that inter-organizational trust has a positive impact on task performance measured by timeline and quality (Carson *et al.*, 2003). Similarly, the analysis gives empirical evidence that working to build trust within the relationship can improve supplier responsiveness measured by cycle time reduction and strategic flexibility (Panayides and Lun, 2009).

4.1.2 Indirect outcomes

Research into inter-organizational trust suggests that it also leads to a variety of outcomes that are less directly economic

but nevertheless desirable outcomes for the relationship. The majority of the selected variables fall within this domain (14 variables) and consider a wide variety of different indirect outcomes.

In general, inter-organizational trust has a strong positive impact on partners' actions such as investment in relation-specific assets, supplier integration, joint action and joint problem-solving (e.g. Monczka *et al.*, 1998). Several studies agree that inter-firm trust makes information sharing much easier by increasing the openness in the relationship (Squire *et al.*, 2009) and reducing the need for information protection mechanisms (Cheng *et al.* 2008; Norman, 2002).

The meta-analysis confirms the positive link of inter-firm trust with cooperation, defined as “the degree to which partners are able to work together in a joint fashion toward their respective goals” (Myhr and Spekman, 2005, p. 180). Within this domain, a significant number of articles assert that, for supply chain relationships to become truly collaborative in nature, trust is not only a desired characteristic but a necessary one (e.g. Anderson and Narus, 1990; Morgan and Hunt, 1994).

A growing area of interest in the review topic is the one that introduces trust to explain governance mechanisms in an uncertain environment. In this view, trust appears as a condition for influencing a partner's propensity towards a specific governance structure (i.e. arms-length or relational mechanisms) (Heide and John, 1992). Despite the theoretical orientation on the topic (e.g. Gulati and Singh, 1998), surprisingly the overall results indicate that the relationship between inter-firm trust and vertical control is neither negative nor significant.

Finally, Table VI shows the small effect size for the relationship between trust and contract flexibility as well as for the relationship of trust on the duration of collaboration. In

Table VI Overview of pairwise relationships involving inter-organizational trust

	α	k	n	r	r _t	sd _t	95% CI		ES	χ^2	Nfs
<i>Direct economic outcomes</i>											
Exchange performance (subjective performance)	0.86	8	5,910	0.31	0.29	0.01	0.2490	0.3299	M	30.09 [*]	180.54
Performance: efficiency and productivity	0.84	7	1,204	0.33	0.31	0.09	0.1907	0.4020	L	97.31 [*]	389.24
Financial performance	0.78	8	10,515	0.30	0.26	0.07	0.2390	0.3004	M	65.86 [*]	526.88
Purchasing cost reduction	0.82	5	801	0.09	0.08	0.00	−0.0404	0.1981	S	97.31 [*]	184.22
Cycle time reduction	0.81	2	870	0.39	0.35	0.12	0.2447	0.4472	L	44.64 [*]	699.33
Strategic flexibility	0.84	1	132	0.07	0.06	0.02	−0.1021	0.2380	S	47.82 [*]	147.23
Task performance	0.85	4	1,734	0.15	0.14	0.02	0.0693	0.2288	M	128.18 [*]	640.9
Transaction costs	0.79	6	4,635	−0.26	−0.23	0.05	−0.2767	−0.1822	M	19.09 [*]	57.27
<i>Indirect outcomes</i>											
Contract flexibility	0.91	2	1,371	0.08	0.08	0.00	−0.0118	0.1705	S	48.51 [*]	748.48
Cooperation	0.88	5	438	0.23	0.22	0.04	0.0597	0.3693	M	32.11 [*]	160.55
Duration of collaboration	0.69	1	97	0.17	0.14	0.00	−0.1994	0.1994	S	0.37	347.72
Functionality of conflict	0.78	3	7,632	−0.17	−0.15	0.10	−0.2075	−0.132	M	34.7 [*]	104.1
Information sharing	0.82	6	4,323	0.34	0.31	0.09	0.2626	0.3559	L	12.84 [*]	77.04
Innovativeness	0.83	5	984	0.40	0.36	0.13	0.2619	0.4507	L	48.06 [*]	440.62
Interdependence	0.71	2	1,122	0.24	0.20	0.04	0.1006	0.2954	M	106.18 [*]	699.33
Investment in relation-specific assets	0.81	7	1,686	0.41	0.37	0.13	0.2964	0.4393	L	96.84 [*]	271.19
Joint action	0.83	3	2,481	0.37	0.34	0.11	0.2783	0.3989	L	23.38 [*]	70.14
Joint problem-solving	0.89	3	153	0.47	0.44	0.09	0.3344	0.5347	L	4.82	54.68
Knowledge transfer	0.87	2	495	−0.09	−0.08	0.00	−0.230	0.0737	S	23.3 [*]	2.27
Supplier integration	0.94	5	2,838	0.11	0.11	0.01	0.0466	0.1725	M	97.31 [*]	470.9
Vertical control	0.75	3	5,931	0.02	0.02	0.00	−0.0241	0.064	S	120.46 [*]	361.38
<i>Relational outcomes</i>											
Affective commitment	0.80	9	5,580	0.27	0.24	0.05	0.1967	0.2823	M	65.86 [*]	592.74
Behavioral uncertainty	0.71	2	765	−0.01	−0.01	0.02	−0.0808	0.0609	S	62.6 [*]	748.48
Calculative commitment	0.86	3	312	−0.15	−0.14	0.00	−0.2472	−0.0294	M	20.71 [*]	968
Expectation of continuity	0.89	6	2,565	0.43	0.41	0.16	0.3526	0.4643	L	128.18 [*]	256.36
Future purchase intentions	0.70	1	138	0.23	0.19	0.03	0.0236	0.3461	M	16.62 [*]	421.07
Joint responsibility	0.79	1	64	0.23	0.20	0.04	0.0482	0.3427	M	2.57	55.22
Loyalty	0.71	2	453	0.19	0.15	0.01	0.0587	0.2388	M	34.65 [*]	177.3
Perceived risk	0.90	2	966	−0.09	−0.09	0.00	−0.1974	0.0195	S	43.92 [*]	263.52
Relationalism (solidarity; flexibiliy; mutuality)	0.81	1	409	0.54	0.49	0.03	0.4126	0.5603	L	22.58 [*]	203.22
Satisfaction	0.79	8	948	0.28	0.25	0.06	0.1436	0.3507	M	37.72 [*]	150.88
Support for change	0.91	1	201	0.09	0.09	0.00	−0.0490	0.2256	S	40.02 [*]	440.22
Willingness to invest	0.73	5	999	0.21	0.18	0.03	0.0740	0.2820	M	55.02 [*]	220.08

Notes: α = average reliability measure of the variables; k = the number of samples in each analysis; n = the total number of respondents in the k samples; r = the mean uncorrected correlation; r_t = the mean weighted corrected correlation; sd_t = the estimated population standard deviation; ES = effect size; χ^2 = a chi-square test for variance unaccounted for across the samples; N_{fs} = fail-safe N; * $p < 0.01$

addition, results suggest that a high degree of inter-organizational trust impacts negatively on the functionality of conflict but has a positive and strong effect on innovativeness and interdependence (Corsten and Felde, 2005).

4.1.3 Relational outcomes

A number of different relational outcomes have been related to inter-organizational trust. As Table VI indicates, the impact of inter-organizational trust on partner orientation and behavior has been pervasive and continuing. For example, the level of inter-firm trust has been shown to increase the partners' loyalty and support for change (Chow and Holden, 1997; Jambulingam *et al.*, 2009).

Confirming prior research on the topic (Geyskens *et al.*, 1996; 1998), the link between inter-organizational trust and

commitment has been well-documented along the selected studies (e.g. Chu and Fang, 2006). Starting from Morgan and Hunt's (1994) work, many studies address the point that exchange participants seek only trustworthy partners because commitment entails vulnerability. This line of argument is supported by the meta-analysis, which shows that greater levels of inter-firm trust increase affective commitment and decrease calculative commitment.

In line with Anderson and Narus' (1990) work, the findings confirm the positive effect of inter-firm trust on satisfaction. Even the relationship between trust and relationalism (i.e. the set of behavioural norms that support relational contracting) is confirmed (Lado *et al.*, 2008). Satisfaction and relationalism are global evaluations of fulfillment of the

relationship, to which trust may strongly contribute (as shown by the corresponding effect sizes).

The most surprising result of this analysis is the one concerning behavioral uncertainty. In fact, contrary to what is posited in the literature (Krishnan *et al.* 2006), inter-firm trust seems to have a small effect size on the level of behavioral uncertainty even if the relationship is negative. Further, a pair of articles provides modest empirical confirmation for the negative effect of inter-firm trust on perceived risk in buyer-supplier relationships (e.g. Liu *et al.*, 2008).

The remaining correlations illustrate that inter-organizational trust positively impacts on a number of other relational outcomes such as expectation of continuity (Ganesan, 1994), future purchase intention (Gassenheimer and Manolis, 2001), joint responsibility (Johnston *et al.*, 2004), and willingness to invest (Myhr and Spekman, 2005). In sum, greater inter-firm trust increases the perceived “extendedness” of a relationship and encourages the partner(s) to share resources and responsibilities in a long-term perspective.

4.2 Integrative review of qualitative studies

Wolf (1986) suggests that qualitative studies be included in a review even if such work cannot be incorporated in the quantitative analysis. In addition to the studies covered above, inter-organizational trust outcomes have been examined in four qualitative/ethnographic papers that complement the quantitative enquiries.

This integrative review examined the qualitative papers in terms of the outcomes of trust identified in the meta-analysis and found that all four studies confirmed the quantitative findings. Specifically, Ghosh and Fedorowicz (2008) confirm that inter-firm trust supports the information sharing between supply chain partners and positively affects supply chain performance. In addition, Laaksonen *et al.* (2009) propose an ethnographic study providing confirmation for the direct effect of trust on lowered multi-supplier transaction costs. They also examine the potential benefits of inter-firm trust on the partners’ financial performance. Ibrahim and Ribbers (2009) underline that inter-firm trust strongly influences the exploitation of a specific kind of relationalism while Laaksonen *et al.* (2008) address how inter-firm trust impacts on the partners’ interdependence over time.

The qualitative studies provide a form of multi-method confirmation of the meta-analysis results as a set of studies using quite different methods but yielding similar findings.

4.3 Moderator analysis

As indicated above, the effect size provided by the meta-analysis varies by the type of construct involved, with the largest effect sizes being expected for indirect outcomes such as innovativeness and joint problem-solving as well as for relational outcomes such as relationalism.

As a follow-up to the overall meta-analysis, several tests were conducted to check for the presence of moderators in the data set. The first indicator of moderators is to examine whether or not statistical artifacts explain the variance in observed correlations (Hunter and Schmidt, 1990). The chi-square test (shown in Table VI) indicates that between study variance was in fact due to statistical artifacts in three of the 33 correlations examined. Two of the three mentioned studies are based on a single sample. However, the remaining 30 analyses indicate that there are potential moderators of the

relationship between inter-organizational trust and the outcome constructs.

To examine the impact of moderators on the trust-outcome relationships, a generalized least squares regression (GLS) approach was taken. GLS can overcome the assumption of independence that is necessary in other multivariate analysis techniques. The correlations in this analysis cannot be treated as independent because the majority of the samples in the meta-analysis provided more than one inter-organizational trust pairwise correlation. Therefore it is necessary to model within-sample dependencies and in turn safeguard against samples that yielded more information, thus biasing the results. In order to model these dependencies, it was necessary to calculate the block diagonal variance-covariance matrices for each sample and analyze them together in a single analysis (Raudenbush *et al.*, 1988). Appendix 2 provides details of how the variances and covariances were calculated for each sample (Becker, 1992). Appendix 2 explicates the model estimated in order to examine the impact of moderators.

As is typical in meta-analysis, the coded study characteristics can be categorized as variables related to the operationalization of constructs or to other study design features (Palmatier *et al.*, 2006). This study considers three broad categories of moderators that are often mentioned in the supply chain literature as being potentially detrimental to the generalizability of study results. The moderators are as follows:

- 1 the operationalization of inter-organizational trust;
- 2 the temporal nature of the data (cross-sectional versus longitudinal); and
- 3 the number of industries[7].

The rationale behind the impact of these moderators is provided in Table VII.

The results from the generalized least squares regression are summarized in Table VIII[8]. Overall the results provide support for all the moderator hypotheses. A discussion of specific results follows.

With regard to the operationalization of inter-organizational trust, no standard dimensions of the construct have been used. With many different ways of operationalizing inter-organizational trust, it is difficult to synthesize and interpret the findings of prior research. However, it is hypothesized that the dimensions of inter-organizational trust employed will significantly impact on the correlations observed between trust and the other constructs. Specifically, *H1* predicts that an operationalization of inter-organizational trust based on either reliability/integrity or credibility/benevolence will exhibit higher effect sizes than samples using other dimensions. The parameter estimate for “Other dimensions” is negative ($-0.422, p < 0.001$) thus supporting *H1*. Because these results have such a strong implication for future research, it is worthwhile examining them further. A univariate analysis was conducted in order to determine the impact of the use of specific dimensions in the operationalization of trust. In general, employing credibility/benevolence components yields the highest correlations between inter-firm trust and relational outcomes such as affective commitment and satisfaction. Equally, employing reliability/integrity components in the operationalization of inter-firm trust exhibits a larger effect on direct economic effects (i.e. exchange performance) and on a number of

Table VII Theoretical rationale for proposed moderators

Operationalization of inter-organizational trust	Many researchers have included alternatively two couples of components (or dimensions) in their operationalization of inter-organizational trust: reliability and integrity; and credibility and benevolence. Others have included different dimensions or have measured the construct globally with no reference to any of its facets. Theoretical argument indicates that the operationalization of trust based on one of the two couples of dimensions are more reliable. Given that the content validity of a trust scale that comprises either reliability/integrity or credibility/benevolence is expected to be higher than scales using no dimensions or different components, it is hypothesized that the former types of operationalization yield stronger relations with other constructs (Hypothesis 1)
Research design	In meta-analytic investigations, scholars often code for the temporal nature of studies investigating causal relationships (e.g. Hom <i>et al.</i> , 1992). It is probable that studies investigating inter-organizational trust at one point in time versus over a period of time are likely to yield different correlations between trust and its outcomes. Therefore, it is hypothesized that the temporal design of the samples will bias the effects sizes observed with regard to inter-firm trust (Hypothesis 2)
Number of industries	Most empirical studies draw their sample from one particular industry, mainly the automobile industry (e.g. Morgan and Hunt, 1994). However, some researchers have drawn samples from multiple industries (e.g. Anderson and Narus, 1990; Ganesan, 1994). Multiple industries yield more variation in the data than a single industry. This should increase the range of the constructs of interest and consequently have a positive effect on the magnitude of the correlation coefficient. Hence, it is hypothesized that empirical relations of trust with other constructs are stronger in studies involving multiple industries (Hypothesis 3)

Table VIII GLS moderators results

Moderator	Beta	Variance	z-value
Dimensions of inter-organizational trust			
Reliability/integrity	1.131	0.0001	141.29 *
Credibility/benevolence	0.659	0.0004	29.90 *
Other dimensions	−0.422	0.0002	−34.27 *
Research design			
Cross-sectional vs longitudinal	0.358	0.0004	53.25 *
Number of industries			
Single industry	0.032	0.0001	3.41 *
Multiple industries	1.182	0.0001	119.60 *
Direct economic outcomes			
Exchange (subjective) performance	−0.101	0.0001	−11.76 *
Performance: efficiency and productivity	−0.108	0.0002	−7.94
Financial performance	−0.922	0.0002	−70.12 *
Purchasing cost reduction	−0.747	0.0001	−69.47 *
Transaction costs	−0.173	0.0001	−14.71 *
Indirect outcomes			
Cooperation	−1.062	0.0001	−101.58 *
Information sharing	0.388	0.0002	26.85 *
Innovativeness	0.500	0.0001	70.72 *
Investment in relation-specific assets	0.308	0.0002	19.63 *
Supplier integration	0.501	0.0001	45.31 *
Relational outcomes			
Affective commitment	−0.661	0.0002	−46.11 *
Expectation of continuity	−0.586	0.0001	−59.32 *
Satisfaction	0.522	0.0002	41.44 *
Willingness to invest	−0.120	0.0001	−16.65 *

Note: $p < 0.001$

indirect effects such as cooperation, information sharing and supplier integration.

H2 predicts that examining innovation either with a cross-sectional research design or longitudinally will bias the effect sizes observed. The results provide support for H2 (0.358, $p < 0.001$) and suggest that studying the impact of inter-organizational trust at one point in time will inflate the true effect size of these trust relationships as compared to examining the impact of inter-organizational trust over time. This finding indicates a need for researchers to be cognizant of the differences in studying inter-organizational trust at one point in time versus longitudinally. Again, the univariate *t*-test comparisons suggest that studies that are cross-sectional tend to find a much stronger relation between trust and financial performance. Equally, longitudinal studies find a stronger relationship between inter-firm trust and the majority of indirect and relational outcomes. These findings suggest that, in general, indirect and relational outcomes take longer to come than economic outcomes.

Finally, the outcomes of inter-organizational trust have been examined in several different contexts. H3 predicts the impact of studying trust-outcome relationships in both single and multiple industries. The moderator analysis found support for this hypothesis (1.182, $p < 0.001$). The results suggest studying inter-organizational outcomes in multiple industries inflates the effect size of trust-outcome relationships as compared to studying inter-organizational trust in a single industry. Univariate analysis revealed that cross-industry studies strongly yield the relationship between trust and multiple outcomes, such as for example transaction costs, innovativeness, investment in specific assets, supplier integration and satisfaction.

5. Direction for future research

Building upon the rich foundation of the empirical findings described, this section presents the issues that merit further discussion and hold the most promise for future research. Some of these areas of potential research arise directly from the research streams previously discussed, although others are

notable primarily due to the lack of research attention paid to them.

After considering the theoretical direction for future research, the review agrees with Zaheer and Harris' (2006) suggestions and considers some methodological issues. This is because it is difficult to discuss theory development without also considering the corresponding methodological implications and challenges.

5.1 Theoretical directions

According to the review findings, future theoretical directions could try to explore the following themes:

- impact of inter-firm trust on the choice of governance mode;
- network perspective of inter-organizational trust;
- inter-firm trust as a reciprocal concept;
- cultural influences on inter-organizational trust outcomes; and
- dark-side of inter-organizational trust.

5.1.1 Inter-organizational trust and governance choices

Considering the basic question of whether trust serves as a substitute for or to complement contracts, scholars widely examine the impact of inter-firm trust on the relational governance choice (Bradach and Eccles, 1989; Ryu *et al.*, 2009). The articles exploring this topic tend to split inter-organizational trust into different forms, such as goodwill-based and competence-based trust. Each of these forms plays a different role in influencing the choice between vertical control or cooperation (Gulati and Singh, 1998). As the investigation of the correlation between inter-firm trust and vertical control provided inconclusive results, future research could extend the topic by expanding the enquiry into a more complex mediating or moderating relationship between trust and relational governance mode, including factors such as organizational context, prior history of the relationships, dependence and reputation.

5.1.2 Network perspective of inter-organizational trust

The findings of this review show a lack of studies exploring effects and outcomes of inter-organizational trust beyond the dyad. Actually, the implication of inter-firm trust on network dynamics have been little explored in the selected articles with the only exception being that of Liu *et al.*'s (2008) work. A basic question that arises is how the outcomes of inter-firm trust change when trust is no longer simply dyadic but is network-based (Zaheer and Harris, 2006). Future research could explore how network trust might affect the dyadic inter-organizational relationship. This research effort could provide interesting insights considering that, besides trust, other mechanisms operate in networks, for example sanctioning and reputation effects. The distinction between these network relational mechanisms and trust outcomes could be an interesting challenge for the researcher.

5.1.3 Inter-organizational trust as a reciprocal concept

Organizational trust seems to have some specific properties that make studying it hard. For example, the relationships between trust and cooperation, trust and commitment, and trust and performance have all been suggested to be reciprocal. Causality appears as one of the major reasons for the ambiguity and confusion in defining the outcomes of inter-organizational trust. This view suggests that "trust is a reciprocal concept, being potentially both a cause and partly an effect" (Seppänen *et al.*, 2007, p. 256).

This review provides confirmation for Laurent's (2000, p. 178) comment that "almost always [authors] manage to propose models with 'simple' causality" (i.e. without circular or reciprocal causation). This methodological choice frequently provides feedback loops in research on trust, as simple causal models are logically wrong and empirical estimation is not able to confirm it. Future research could try to overcome this weakness.

5.1.4 Cultural influences

The findings point out that there are differences in the effects of inter-organizational trust across national and cultural contexts (e.g. Ibrahim and Ribbers, 2009; Monczka *et al.*, 1998). The selected articles providing cross-country empirical analyses show a growing interest in this topic and specifically in the impact of context-specific norms and customs on trust outcomes (Young-Ybarra and Wiersema, 1999).

However, future research not only needs a more systematic examination of the differences across such contexts, but also needs to explain the theoretical underpinnings of such differences and subsequently to extend the empirical efforts. In addition, greater attention could be paid to contextual factors arising not only from national or cultural influences but also from formal institutions or industry norms and tacit practices of inter-firm interaction that may be idiosyncratic to particular geographies or economic segments (Zaheer and Harris, 2006).

5.1.5 Dark-side of inter-organizational trust

The review findings clearly show a lack of theoretical interest and empirical effort in the research on the downside of inter-organizational trust. The examination of the "dark-side of trust" (Gargiulo and Ertug, 2006) should address two primary research patterns. The first refers to the study of the negative outcomes of inter-firm trust, including the lock-in from unproductive high-trust relationships (Gargiulo and Benassi, 2000). The second research pattern refers to the study of the situations of high trust inherently containing the conditions for abuse or betrayal of trust. Only this last perspective is partially accountable within this review. Specifically, Corsten and Felde explicitly consider the detrimental effects of too much trust on financial supply chain performance. They argue that in collaborative relationships high trust can lead to being "too close for comfort" and to vulnerability towards a supplier (Corsten and Felde, 2005, p. 456). Future research could expand this topic, empirically testing, for example, the consequences of misplaced trust and the risk of collusion in inter-firm relationships with high trust.

5.2 Methodological issues

From the review findings, several methodological issues emerge. As such, this study identifies three methodological challenges that face scholars: conceptualization and operationalization of inter-organizational trust; methodological issues concerning the research design.

5.2.1 Conceptualization of inter-organizational trust

The methodological quality of the studies on trust outcomes is strongly influenced by the conceptualization of trust construct. The difficulty of this conceptualization is related to two main issues:

- 1 the definition of the "subject" of trust (i.e. trustor); and
- 2 the definition of the "object" of trust (i.e. trustee).

Inter-organizational trust appears when both the trustor and the trustee are organizations (Janowicz and Noorderhaven, 2006).

With regard to the first issue, the literature considers both the studies, which attribute trust to the organization as such and the studies arguing that an organization itself cannot trust. The latter group points out that organizations are made up of and managed by individuals (Aulakh *et al.*, 1996) and it is through them that inter-firm trust comes into effect (Inkpen and Curral, 1997; Nooteboom *et al.*, 1997).

The use of the organization as the “object” of inter-firm trust is problematic, both theoretically and empirically. Many authors who adopt organization as the unit of analysis simply apply individual-level terminology and logic to the organizational level. However, theories of inter-firm exchange that take trust to be a property of organizations without specifying the link between the micro and macro level are inaccurate, as they “anthropomorphize the organization” (Zaheer *et al.*, 1998, p. 142; Chow and Holden, 1997). In addition, obtaining reliable data on inter-organizational trust is more challenging if conceptualizations of such trust involve the organization as the trustor (Janowicz and Noorderhaven, 2006).

The further research on inter-organizational trust outcomes should clearly consider the above insights in order to avoid inconsistent findings and wrong interpretations.

5.2.2 Operationalization of inter-organizational trust

The findings of the moderator analysis show that, in the operationalization of inter-organizational trust, the use of specific components can significantly alter the conclusion garnered from a particular study. Overall, in inter-organizational contexts of analysis, the operationalization of trust through either reliability/integrity or credibility/benevolence components, positively biases the observed correlations. Future research should seek to utilize alternatively these two couples of components as they are best suited for the particular situation in which the trustor and the trustee are both independent organizations.

5.2.3 Methodological issues concerning the research design

The meta-analysis gives outstanding indications about some methodological issues concerning the research design. The findings suggest that examining inter-organizational trust at one point in time inflates the true effect size of trust-outcome relationships as compared to longitudinal research design. Results also suggest that the use of samples drawn from multiple industries tends to produce larger effects than the use of field studies and samples drawn from a single industry.

Further, the consideration of findings from qualitative works suggests an additional methodological issue. Specifically, the complexity of the topic suggests the use of different and complementary methodological approaches. A consistent number of the selected articles employ two or more methods such as mail survey and interviews, or survey and archival data analysis. From these findings, it emerges that the use of triangulation in the study of inter-organizational trust outcomes can improve the completeness of the enquiry more than a single research method (Jack and Raturi, 2006).

The combined use of a qualitative and quantitative approach appears the most effective as the two methods complement each other (e.g. Gulati and Nickerson, 2008). In addition, the use of multiple methodology may positively impact on the confirmation of the research: triangulation

should improve “the ability of researchers to draw conclusions from their studies and might result in a more robust and generalizable set of findings” (Jack and Raturi, 2006, p. 316).

The overall remarks above give an important contribution for the purposes of the efficient design of future research studies. It seems important to combine several of these suggestions when planning the next study on inter-organizational trust outcomes. Doing so will maximize the contribution of this new study to the improvement of knowledge.

6. Conclusion

The objective of this systematic literature review was to recover, synthesize, and integrate the wide stream of empirical work on inter-organizational trust outcomes. For this purpose a meta-analytic approach was employed.

The study found that inter-organizational trust exhibits a robust and rather strong relationship with a number of different outcome variables under different conditions. This provides quantitative evidence across a wide range of studies for the contention that inter-firm trust is central to supply chain relationships (e.g. Kannan and Tan, 2006). Three major themes emerge from this survey:

- 1 direct outcomes;
- 2 indirect outcomes; and
- 3 relational outcomes of inter-organizational trust.

For each theme, the study explores the relevant empirical evidences, leading to the identification of a promising research agenda for scholars of the topic. This agenda includes five central theoretical avenues as well as three methodological challenges that hold high potential for scholarly enquiry into this interesting phenomenon.

Notes

- 1 With few exceptions, the majority of contributions to inter-organizational trust literature appear in journals after 1990.
- 2 As David and Han (2004) explain, the asterisk at the end of a search word allows for different suffixes.
- 3 It is important to note that, in 19 cases, insufficiently comprehensive or elliptical abstracts made it difficult to understand the subject, approach, findings and conclusion of the studies. This necessitated looking at the introduction to these studies.
- 4 The results of the meta-analysis will be integrated with the findings from the qualitative papers in para. 4.2.
- 5 Corrected $r_x = \text{uncorrected } r_{xy} / (\text{reliability } x \text{ reliability } y)$.
- 6 Some articles contain more than one correlation between trust and a specific construct. For instance, Ganesan (1994) reports correlations for two measures of dependence. In resolving this issue, we followed the basic recommendations of Hunter and Schmidt (1990) by averaging the correlations and reporting the data as a single study.
- 7 The reference frame was excluded from the set of moderators as only one study was conducted under laboratory conditions.
- 8 The GSL regression only examined the impact of variables with a sample size of five or greater.

References

- Adobor, H. (2005), "Trust as sensemaking: the microdynamics of trust in interfirm alliances", *Journal of Business Research*, Vol. 58, pp. 330-7.
- Andaleeb, S.S. (1996), "An experimental investigation of satisfaction and commitment in marketing channels: the role of trust and dependence", *Journal of Retailing*, Vol. 72 No. 1, pp. 77-93.
- Anderson, J.C. and Narus, J.A. (1990), "A model of distributor firm and manufacturer firm", *Journal of Marketing*, Vol. 54, January, pp. 42-58.
- Aulakh, P.S., Kotabe, M. and Sahay, A. (1996), "Trust and performance in cross-border marketing partnerships: a behavioral approach", *Journal of International Business Studies*, Vol. 27 No. 5, pp. 1005-32.
- Becker, B.J. (1992), "Models of science achievement: forces affecting male and female performance in school science", in Cook, T.D. (Ed.), *Meta-analysis for Explanation: A Casebook*, Russell Sage Foundation, New York, NY.
- Bradach, J. and Eccles, R.G. (1989), "Price, authority, and trust: from ideal types to plural forms", *Annual Review of Sociology*, Vol. 15, pp. 97-118.
- Carson, S.J., Madhok, A., Varman, R. and John, G. (2003), "Information processing moderators of the effectiveness of trust-based governance in interfirm R&D collaboration", *Organization Science*, Vol. 14 No. 1, pp. 45-56.
- Cheng, J.H., Yeh, C.H. and Tu, C.W. (2008), "Trust and knowledge sharing in green supply chains", *Supply Chain Management: An International Journal*, Vol. 13 No. 4, pp. 283-95.
- Chow, S. and Holden, R. (1997), "Toward an understanding of loyalty: the moderating role of trust", *Journal of Managerial Issues*, Vol. 9 No. 3, pp. 275-98.
- Chu, S.Y. and Fang, W.C. (2006), "Exploring the relationships of trust and commitment in supply chain management", *The Journal of American Academy of Business*, Vol. 19 No. 1, pp. 224-8.
- Claro, D.P., Hagelaar, G. and Omta, O. (2003), "The determinants of relational governance and performance: how to manage business relationships?", *Industrial Marketing Management*, Vol. 32 No. 8, pp. 703-16.
- Cohen, J. and Cohen, P. (1983), *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*, 2nd ed., Lawrence Erlbaum Associates, Hillsdale, NJ.
- Coote, L.V., Forrest, E.J. and Tam, T.W. (2003), "An investigation into commitment in non-Western industrial marketing relationships", *Industrial Marketing Management*, Vol. 32 No. 7, pp. 595-604.
- Corsten, D. and Felde, D. (2005), "Exploring the performance effects of key-supplier collaboration", *International Journal of Physical Distribution & Logistics Management*, Vol. 35 No. 6, pp. 445-61.
- David, R.J. and Han, S.K. (2004), "A systematic assessment of the empirical support for transaction cost economics", *Strategic Management Journal*, Vol. 25 No. 1, pp. 39-58.
- De Jong, G. and Klein Woolthuis, R.J.A. (2008), "The institutional arrangements of innovation: antecedents and performance effects of trust in high-tech alliances", *Industry and Innovation*, Vol. 15 No. 1, pp. 45-67.
- Denyer, D. and Tranfield, D. (2009), "Producing a systematic review", in Buchanan, D. and Bryman, A. (Eds), *The Sage Handbook of Organizational Research Methods*, Sage Publications, London, pp. 671-89.
- Doney, P.M. and Cannon, J.P. (1997), "An examination of the nature of trust in buyer-seller relationships", *Journal of Marketing*, Vol. 61, pp. 35-51.
- Doney, P.M., Cannon, J.P. and Mullen, M.R. (1998), "Understanding the influence of national culture on the development of trust", *Academy of Management Review*, Vol. 23 No. 3, pp. 601-20.
- Dyer, J.H. and Chu, W. (2003), "The role of trustworthiness in reducing transaction costs and improving performance: empirical evidence from the United States, Japan, and Korea", *Organization Science*, Vol. 14 No. 1, pp. 57-68.
- Fawcett, S.E., Magnan, G.M. and Williams, A.J. (2004), "Supply chain trust is within your grasp", *Supply Chain Management Review*, Vol. 8 No. 2, pp. 20-6.
- Fink, M. and Kessler, A. (2010), "Cooperation, trust and performance – empirical results from three countries", *British Journal of Management*, Vol. 21 No. 2, pp. 469-83.
- Ganesan, S. (1994), "Determinants of long-term orientation in buyer-seller relationships", *Journal of Marketing*, Vol. 58, April, pp. 1-19.
- Gargiulo, M. and Benassi, M. (2000), "Trapped in your own net: network cohesion, structural holes, and the adaptation of social capital", *Organization Science*, Vol. 11 No. 2, pp. 183-96.
- Gargiulo, M. and Ertug, G. (2006), "The dark side of trust", in Bachmann, R. and Zaheer, A. (Eds), *Handbook of Trust Research*, Edward Elgar, Northampton, MA, pp. 165-86.
- Gassenheimer, J.B. and Manolis, C. (2001), "The influence of product customization and supplier selection on future intention: the mediating effects of salesperson and organizational trust", *Journal of Managerial Issues*, Vol. 13 No. 4, pp. 418-35.
- Geyskens, I., Steenkamp, J.E.M. and Kumar, N. (1998), "Generalizations about trust in marketing channel relationships using meta-analysis", *International Journal of Research in Marketing*, Vol. 15 No. 3, pp. 223-48.
- Geyskens, I., Steenkamp, J.E.M., Scheer, L.K. and Kumar, N. (1996), "The effects of trust and interdependence on relationship commitment: a trans-Atlantic study", *International Journal of Research in Marketing*, Vol. 13 No. 4, pp. 303-17.
- Ghosh, A. and Fedorowicz, J. (2008), "The role of trust in supply chain governance", *Business Process Management Journal*, Vol. 14 No. 4, pp. 453-70.
- Gulati, R. and Nickerson, J.A. (2008), "Interorganizational trust, governance choice, and exchange performance", *Organization Science*, Vol. 19 No. 5, pp. 688-708.
- Gulati, R. and Singh, H. (1998), "The architecture of cooperation: managing coordination costs and appropriation concerns in strategic alliances", *Administrative Science Quarterly*, Vol. 43 No. 4, pp. 781-814.
- Handfield, R.B. and Bechtel, C. (2002), "The role of trust and relationship structure in improving supply chain responsiveness", *Industrial Marketing Management*, Vol. 31 No. 4, pp. 367-82.
- Hausman, A. and Johnston, W.J. (2010), "The impact of coercive and non-coercive forms of influence on trust, commitment, and compliance in supply chains", *Industrial Marketing Management*, Vol. 39 No. 3, pp. 519-26.

- Heide, J.B. and John, G. (1992), "Do norms matter in marketing relationships?", *Journal of Marketing*, Vol. 56, April, pp. 32-44.
- Hoffmann, W.H., Neumann, K. and Speckbacher, G. (2010), "The effect of interorganizational trust on make-or-cooperate decisions: disentangling opportunism-dependent and opportunism-independent effects of trust", *European Management Review*, Vol. 7 No. 2, pp. 101-15.
- Hom, P.W., Caranikas-Walker, F., Prussia, G.E. and Griffeth, R.W. (1992), "A meta-analytical structural equations analysis of a model of employee turnover", *Journal of Applied Psychology*, Vol. 77 No. 6, pp. 890-909.
- Hunter, E. and Schmidt, F.L. (1990), *Methods of Meta-analysis: Correcting Error and Bias in Research Findings*, Sage, Newbury Park, CA.
- Ibrahim, M. and Ribbers, P.M. (2009), "The impacts of competence-trust and openness-trust on interorganizational systems", *European Journal of Information Systems*, Vol. 18 No. 3, pp. 223-34.
- Inkpen, A.C. and Currall, S.C. (1997), "International joint venture trust: an empirical examination", in Beamish, P.W. and Killing, J.P. (Eds), *Cooperative Strategies: North American Perspectives*, New Lexington Press, San Francisco, CA.
- Jack, E.P. and Raturi, A.S. (2006), "Lessons learned from methodological triangulation in management research", *Management Research News*, Vol. 29 No. 6, pp. 345-57.
- Jambulingam, T., Kathuria, R. and Nevin, J.R. (2009), "How fairness garners loyalty in the pharmaceutical supply chain: role of trust in the wholesaler-pharmacy relationship", *International Journal of Pharmaceutical and Healthcare Marketing*, Vol. 4 No. 4, pp. 305-22.
- Janowicz, M. and Noorderhaven, N. (2006), "Levels of inter-organizational trust: conceptualization and measurement", in Shenkar, O. and Reuer, J.J. (Eds), *Handbook of Strategic Alliances*, Sage Publications, London, pp. 264-79.
- Johnston, D.A., McCutcheon, D.M., Stuart, F.I. and Kerwood, H. (2004), "Effects of supplier trust on performance of cooperative supplier relationships", *Journal of Operations Management*, Vol. 22 No. 1, pp. 23-38.
- Judge, T.A. and Ilies, R. (2002), "Relationship of personality to performance motivation: a meta-analytic review", *Journal of Applied Psychology*, Vol. 87 No. 4, pp. 797-807.
- Kannan, V.R. and Tan, K.C. (2006), "Buyer-supplier relationships: the impact of supplier selection and buyer-supplier engagement on relationship and firm performance", *International Journal of Physical Distribution & Logistics Management*, Vol. 36 No. 10, pp. 755-75.
- Krishnan, R., Martin, X. and Noorderhaven, N.G. (2006), "When does trust matter to alliance performance?", *Academy of Management Journal*, Vol. 49 No. 5, pp. 894-917.
- Kwon, I.W.J. and Suh, T. (2004), "Factors affecting the level of trust and commitment in supply chain relationships", *Journal of Supply Chain Management*, Vol. 40 No. 2, pp. 4-14.
- Kwon, I.W.J. and Suh, T. (2005), "Trust, commitment and relationships in supply chain management: a path analysis", *Supply Chain Management: An International Journal*, Vol. 10 No. 1, pp. 26-33.
- Laaksonen, T., Jarimo, T. and Kulmala, H.I. (2009), "Cooperative strategies in customer-supplier relationships: the role of interfirm trust", *International Journal of Production Economics*, Vol. 120 No. 1, pp. 79-87.
- Laaksonen, T., Pajunen, K. and Kulmala, H.I. (2008), "Co-evolution of trust and dependence in customer-supplier relationships", *Industrial Marketing Management*, Vol. 37, pp. 910-20.
- Lado, A.A., Dant, R.R. and Tekleab, A.G. (2008), "Trust-opportunism paradox, relationalism, and performance in interfirm relationships: evidence from the retail industry", *Strategic Management Journal*, Vol. 29 No. 4, pp. 401-23.
- Laurent, G. (2000), "Improving the external validity of marketing models: a plea for more qualitative input", *International Journal of Research in Marketing*, Vol. 17 Nos 2-3, pp. 177-82.
- Liao, T.J. (2010), "Cluster and performance in foreign firms: the role of resources, knowledge, and trust", *Industrial Marketing Management*, Vol. 39 No. 1, pp. 161-9.
- Liu, Y., Li, Y., Tao, L. and Wang, Y. (2008), "Relationship stability, trust and relational risk in marketing channels: evidence from China", *Industrial Marketing Management*, Vol. 37 No. 4, pp. 432-46.
- Luo, Y. (2002), "Contract, cooperation, and performance in international joint ventures", *Strategic Management Journal*, Vol. 23 No. 10, pp. 903-19.
- Lusch, R.F., O'Brien, M. and Sindhav, B. (2003), "The critical role of trust in obtaining retailer support for a supplier's strategic organizational change", *Journal of Retailing*, Vol. 79 No. 4, pp. 249-58.
- Mohr, J. and Spekman, R. (1994), "Characteristics of partnership success: partnership attributes, communication behavior, and conflict resolution techniques", *Strategic Management Journal*, Vol. 15 No. 2, pp. 135-52.
- Möllering, G., Bachmann, R. and Lee, S.H. (2004), "Understanding organizational trust: foundations, constellations, and issues of operationalisation", *Journal of Managerial Psychology*, Vol. 19 No. 6, pp. 556-70.
- Monczka, R.M., Petersen, K.J., Handfield, R.B. and Ragatz, G.L. (1998), "Success factors in strategic supplier alliances: the buying company perspective", *Decision Sciences*, Vol. 29 No. 3, pp. 553-77.
- Morgan, R.M. and Hunt, S.D. (1994), "The commitment-trust theory of relationship marketing", *Journal of Marketing*, Vol. 58 No. 3, pp. 20-38.
- Myhr, N. and Spekman, R.E. (2005), "Collaborative supply-chain partnerships built upon trust and electronically mediated exchange", *The Journal of Business & Industrial Marketing*, Vol. 20 Nos 4/5, pp. 179-86.
- Narasimhan, R. and Nair, A. (2005), "The antecedent role of quality, information sharing and supply chain proximity on strategic alliance formation and performance", *International Journal of Production Economics*, Vol. 96 No. 3, pp. 301-13.
- Newbert, S.L. (2007), "Empirical research on the resource-based view of the firm: an assessment and suggestions for future research", *Strategic Management Journal*, Vol. 28 No. 2, pp. 121-46.
- Nooteboom, B., Berger, H. and Noorderhaven, N.G. (1997), "Effects of trust and governance on relational risk", *Academy of Management Journal*, Vol. 40 No. 2, pp. 308-38.
- Norman, P.M. (2002), "Protecting knowledge in strategic alliances: resource and relational characteristics", *Journal of High Technology Management Research*, Vol. 13 No. 2, pp. 177-202.
- Palmatier, R.W., Dant, R.P., Grewal, D. and Evans, K.R. (2006), "Factors influencing the effectiveness of

- relationship marketing: a meta-analysis”, *Journal of Marketing*, Vol. 70 No. 4, pp. 136–53.
- Panayides, P.M. and Lun, Y.H.V. (2009), “The impact of trust on innovativeness and supply chain performance”, *International Journal of Production Economics*, Vol. 122, pp. 35–46.
- Pittaway, L., Robertson, M., Munir, K., Denyer, D. and Neely, A. (2004), “Networking and innovation: a systematic review of the evidence”, *International Journal of Management Reviews*, Vol. 5/6 Nos 3/4, pp. 137–68.
- Raudenbush, S.W., Becker, B.J. and Kalaian, H. (1988), “Modeling multivariate effect sizes”, *Psychological Bulletin*, Vol. 103 No. 1, pp. 111–20.
- Ryu, S., Lim, Y. and Hong, H. (2009), “Volatile environments and interfirm governance: does trust matter?”, *Journal of Business-to-Business Marketing*, Vol. 16 No. 4, pp. 325–42.
- Selnes, F. (1998), “Antecedents and consequences of trust and satisfaction in buyer-seller relationship”, *European Journal of Marketing*, Vol. 32 No. 3, pp. 305–22.
- Seppänen, R., Blomqvist, K. and Sundqvist, S. (2007), “Measuring inter-organizational trust: a critical review of the empirical research in 1990–2003”, *Industrial Marketing Management*, Vol. 36 No. 2, pp. 249–65.
- Sharfinan, M.P., Shaft, T.M. and Anex, R.P. Jr (2009), “The road to cooperative supply-chain environmental management: trust and uncertainty among pro-active firms”, *Business Strategy and the Environment*, Vol. 18 No. 1, pp. 1–13.
- Smith, J.B. and Barclay, D.W. (1997), “The effects of organizational differences and trust on the effectiveness of selling partner relationships”, *Journal of Marketing*, Vol. 61 No. 1, pp. 3–21.
- Spekman, R.E., Kamauff, J.W. Jr. and Myhr, N. (1998), “An empirical investigation into supply chain management: a perspective on partnerships”, *International Journal of Physical Distribution & Logistics Management*, Vol. 28 No. 8, pp. 630–50.
- Squire, B., Cousins, P.D. and Brown, S. (2009), “Cooperation and knowledge transfer within buyer-supplier relationships: the moderating properties of trust, relationship duration and supplier performance”, *British Journal of Management*, Vol. 20 No. 4, pp. 461–77.
- Svensson, G. (2001), “Perceived trust towards suppliers and customers in supply chains of the Swedish automotive industry”, *International Journal of Physical Distribution & Logistics Management*, Vol. 31 Nos 9/10, pp. 635–50.
- Thorpe, R., Holt, R., Macpherson, A. and Pittaway, L. (2005), “Using knowledge within small and medium-sized firms: a systematic review of the evidence”, *International Journal of Management Reviews*, Vol. 7 No. 4, pp. 257–81.
- Tranfield, D., Denyer, D. and Smart, P. (2003), “Towards a methodology for developing evidence-informed management knowledge by means of systematic review”, *British Journal of Management*, Vol. 14 No. 3, pp. 207–22.
- Vlachos, I.P. and Bourlakis, M. (2006), “Supply chain collaboration between retailers and manufacturers: do they trust each other?”, *Supply Chain Forum An International Journal*, Vol. 7 No. 1, pp. 70–80.
- Williams, M.L., McDaniel, M.A. and Nguyen, N.T. (2006), “A meta-analysis of the antecedents and consequences of pay level satisfaction”, *Journal of Applied Psychology*, Vol. 91 No. 2, pp. 392–413.
- Wolf, F.M. (1986), *Meta-analysis: Quantitative Methods for Research Synthesis*, Sage, Newbury Park, CA.
- Yeung, J.H.Y., Selen, W., Zhang, M. and Huo, B. (2009), “The effects of trust and coercive power on supplier integration”, *International Journal of Production Economics*, Vol. 120 No. 1, pp. 66–78.
- Young-Ybarra, C. and Wiersema, M. (1999), “Strategic flexibility in information technology alliances: the influence of transaction cost economics and social exchange theory”, *Organization Science*, Vol. 10 No. 4, pp. 439–59.
- Zaheer, A. and Harris, J.D. (2006), “Interorganizational trust”, in Shenkar, O. and Reuer, J.J. (Eds), *Handbook of Strategic Alliances*, Sage Publications, London, pp. 169–97.
- Zaheer, A. and Venkatraman, N. (1995), “Relational governance as an interorganizational strategy: an empirical test of the role of trust in economic exchange”, *Strategic Management Journal*, Vol. 16 No. 5, pp. 373–92.
- Zaheer, A., McEvily, B. and Perrone, V. (1998), “Does trust matter? Exploring the effects of interorganizational and interpersonal trust on performance”, *Organization Science*, Vol. 9 No. 2, pp. 141–59.

(See Appendices overleaf.)

Appendix 1

Table A1 Synoptic view of the thematic analysis

Study (year)	Definition of inter-organizational trust	Dimensions of trust	Typology of outcome	Relevant findings
1 Anderson and Narus (1990)	The firm's belief that another company will perform actions that will result in positive outcomes for the firm, as well as not take unexpected actions that would result in negative outcomes for the firm (p. 45)	Reliability and integrity	Cooperation functionality of conflict; satisfaction	Trust leads to satisfaction with the relationship, which presumably would increase propensity to cooperate, making the causal chain circular. The study provides confirmation for the link between trust and functionality of conflict
2 Heide and John (1992)	Trust as a supportive relational exchange norm: expectations of mutuality of interest that prescribe stewardship behavior designed to enhance the wellbeing of the relationship as a whole (p. 37)	Not available	Vertical control	The findings show that relational norms (leading to trust) play a significant role in structuring economically efficient relationships
3 Ganesan (1994)	Credibility-based trust: willingness to rely on an exchange partner in whom one has confidence. It includes expectations of credibility and benevolence	Credibility and benevolence	Willingness to invest	Trust and dependence play key roles in determining the long-term orientation of both retail buyers and their suppliers
4 Mohr and Spekman (1994)	Trust is the belief that a party's word is reliable, and that a party will fulfil its obligations in an exchange (p. 138)	Reliability	Financial performance; satisfaction	The primary characteristics of partnership success are: partnership attributes of commitment, coordination, and trust
5 Morgan and Hunt (1994)	Trust exists when one party has confidence in an exchange partner's reliability and integrity (p. 23)	Reliability and integrity	Cooperation; functionality of conflict; commitment; behavioral uncertainty	The results indicate that trust influences relationship commitment and the way in which disagreements and arguments are perceived by exchange partners
6 Zaheer and Venkatraman (1995)	Trust reflects the extent to which negotiations are fair and commitments are upheld and one party's belief that its requirements will be fulfilled by the other party (p. 87)	Predictability and fairness	Joint action; supplier integration	The study demonstrates that the combined model including trust explains relational governance better than a model without it
7 Andaleeb (1996)	Trust is a one's beliefs about the motives or intent of another party (p. 79)	Honesty and benevolence	Commitment; satisfaction	The findings indicate the main effects of trust and dependence on satisfaction. For commitment, an interaction effect was found
8 Aulakh <i>et al.</i> (1996)	The degree of confidence the individual partners have on the reliability and integrity of each other (p. 1008).	Reliability and integrity	Financial performance	No support for the link between trust and performance (measured by increased sales and market share of the partnership)
9 Geyskens <i>et al.</i> (1996)	Trust is the belief that one's partner stands by its word, fulfils promised role obligations, and is sincere. Trust also reflects the belief that one's partner is interested in the firm's welfare and will not take unexpected actions which will negatively impact on the partner (p. 307)	Honesty and benevolence	Commitment	The results show that total interdependence enhances both affective and calculative commitment. Trust has a strong effect on affective commitment and less on calculative commitment
10 Chow and Holden (1997)	Trust is an expectation held by an individual/organization that the words, promise, verbal or written statement of another individual/organization can be relied on (p. 277)	Reliability and honesty	Interdependence; loyalty intentions	The paper finds that trust held by a buyer for a seller is an important antecedent of loyalty for at least some buying situations in an inter-firm context

(continued)

Table AI

Study (year)	Definition of inter-organizational trust	Dimensions of trust	Typology of outcome	Relevant findings
11 Doney and Cannon (1997)	The development of trust relies on the formation of a trustor's expectations about the motives and behaviors of a trustee (p. 37)	Credibility and benevolence	Expectation of continuity	Supplier's trust influences a buyer's anticipated future interaction with the supplier. However, this relationship is negatively influenced by previous experience and supplier performance
12 Nootboom <i>et al.</i> (1997)	Trust concerns a partner's ability to perform according to the intentions and expectations of a relationship (competence trust) or his/her intentions not to defect (intentional trust) (p. 312)	Institutionalization and habitualization	Perceived risk	The study confirms that relational risk has two dimensions: size of loss and probability of loss. The findings show that trust, induced by institutionalization and habitualization, has a negative effect on risk in the form of the perceived probability of loss
13 Smith and Barclay (1997)	Two perspectives adopted: trust as a cognitive expectation or affective sentiment and trust as risk-taking behavior or a willingness to engage in such behavior (p. 9)	Honesty and integrity; reliability and dependability	Task performance; satisfaction	Trusting behaviors were found to have a greater effect on perceived task performance than on mutual satisfaction, whereas dimensions of trustworthiness had both direct and indirect effects on satisfaction
14 Gulati and Singh (1998)	Trust is the confidence in the predictability of each other's actions (p. 789)	Predictability	Vertical control	The study finds that both the extent of coordination costs and appropriation concerns in inter-firm relationships can predict the use of a specific governance structure. The study points out that inter-firm trust diminishes the use of hierarchical controls
15 Monczka <i>et al.</i> (1998)	Trust occurs in two forms. One of these has its roots in reliable role performance, cultural similarity and professional credential, whereas the other has its roots in "citizenship" behavior and interaction frequency (p. 558)	Reliability and integrity	Information sharing; interdependence; joint problem-solving; commitment; satisfaction	The findings indicate that trust, coordination and interdependence are important factors in strategic supplier alliances because of the multiple dimensions implicit in such relationships
16 Selnes (1998)	Trust is a generalized expectancy of how the other party will behave in the future. Such a generalized expectancy is derived both from a type of cultural context of how business partners are expected to behave and from experiences or episodes within the relationship (p. 309)	Not available	Expectation of continuity	The findings show that trust has a significant impact on the intention of future enhancement and enhancement drives continuity. Also the effect of trust on continuity was not significant
17 Spekman <i>et al.</i> (1998)	Trust is one's belief that one's supply chain partner will act in a consistent manner and do what he/she says he/she will do (p. 634)	Faith; reliability and integrity	Exchange performance; purchasing cost reduction	These findings imply that both trust and commitment contribute to satisfaction as the elements of collaboration. This outcome implies a willingness to share information, without the concern for it being used against either trading partner, and a longer-term focus on the trading relationship

(continued)

Table AI

Study (year)	Definition of inter-organizational trust	Dimensions of trust	Typology of outcome	Relevant findings
18 Zaheer <i>et al.</i> (1998)	Trust as the expectation that an actor (1) can be relied on to fulfil obligations, (2) will behave in a predictable manner, and (3) will act and negotiate fairly when the possibility for opportunism is present (p. 143).	Reliability; predictability; fairness	Exchange performance; transaction costs; functionality of conflict	The results indicate that interpersonal trust and inter-organizational trust are related but distinct constructs and play different roles in affecting exchange performance (direct link between inter-organizational trust and performance). Trust was found to be positively related to flexibility while dependence was found to be negatively related to the strategic flexibility of the alliance. Additionally economic constraints were positively related to trust between the alliance partners while dependence was negatively related to trust. The results confirm that trust in a salesperson mediates the effect of resource dependence on future intentions.
19 Young-Ybarra and Wiersema (1999)	Trust is a state of mind, an expectation held by one trading partner about another, that the other will behave in a predictable and mutually acceptable manner (p. 231)	Dependability; predictability; faith	Strategic flexibility; task performance	The results suggest that even in cases when buyers do not have a great deal of control over their suppliers, working to build trust within the relationship can improve supplier responsiveness
20 Gassenheimer and Manolis (2001)	Trust is the willingness to endure dependence in order to achieve long-term goals (p. 423)	Dependability	Future purchase intentions	The results confirm that trust in a salesperson mediates the effect of resource dependence on future intentions
21 Handfield and Bechtel (2002)	Trust occurs in cognitive and effect-based forms. The former has its roots in reliable role performance, cultural-ethnic similarity, and professional credentials, while the latter is a function of "citizenship" behaviour and interaction frequency (p. 372)	Not available	Cycle time reduction; task performance	The results suggest that even in cases when buyers do not have a great deal of control over their suppliers, working to build trust within the relationship can improve supplier responsiveness
22 Luo (2002)	Calculative trust as an exchange process that acts as a safeguard mechanism (p. 909)	Not available	Financial performance; contract flexibility	The findings indicate that contract completeness and cooperation drive exchange performance both independently and interactively. When contracts are more complete, cooperation contributes more to performance
23 Norman (2002)	Trust is the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control the other party (p. 183)	Predictability and fairness	Knowledge transfer	The findings show that a firm tends to be more protective when the capabilities it contributes to the alliance are highly tacit and core, when its partner has a higher learning intent, and when the firm and its partner have very similar resources. Higher trust in a partner tends to reduce knowledge protection
24 Carson <i>et al.</i> (2003)	Trust is the confidence held by one party in its expectations of the behavior and goodwill of another party regarding business actions (p. 46)	Goodwill	Task performance	Trust-based governance has a positive impact on task performance (measured by innovativeness, timeline and quality). This relationship is also magnified by partner's skill level and task overlap
25 Claro <i>et al.</i> (2003)	Trust reflects the extent to which negotiations are (expected to be) fair and commitments are sustained and a party's belief that its requirements will be fulfilled through future actions undertaken by the other party (p. 706).	Not available	Exchange performance; financial performance; joint action; joint problem-solving	The study finds that joint planning is positively influenced by inter-organizational trust, information obtained from network, physical transaction-specific investments and by fixed lines as the exchange mode. Joint problem solving is solely influenced by the two dimensions of trust

(continued)

Table AI

Study (year)	Definition of inter-organizational trust	Dimensions of trust	Typology of outcome	Relevant findings
26 Coote <i>et al.</i> (2003)	Trust exists when a party has faith or confidence in the integrity and reliability of their partner (p. 597)	Reliability and integrity	Commitment	The study posits that commitment is related to trust, communication quality, conflict, and similarity. It is further argued that trust mediates the effects of communication, conflict, and similarity on commitment
27 Dyer and Chu (2003)	Inter-organizational trust is one party's confidence that the other party in the exchange relationship will not exploit its vulnerabilities (p. 58)	Reliability; goodwill and benevolence	Transaction costs; information sharing	The findings indicate that perceived trustworthiness reduces transaction costs and is correlated to greater information sharing in supplier-buyer relationships
28 Lusch <i>et al.</i> (2003)	Trust is a firm's belief that another company will perform actions that will result in positive outcomes for the firm as well as not take unexpected actions that result in negative outcomes (p. 251)	Not available	Support for change	The paper empirically shows the existing trust in the supplier was a major determinant of the support for organizational and strategic change
29 Johnston <i>et al.</i> (2004)	Trust definition reflects the idea of a belief in the other party being dependable or reliable. It is also the belief that the other party would act in the best interests of the partner even if there was no way of checking on or policing behaviour (p. 28).	Benevolence; credibility; reliability	Contract flexibility; information sharing; joint responsibility	Higher levels of inter-organizational cooperative behaviors such as shared planning and flexibility in coordinating activities were found to be strongly linked to the supplier's trust in the buyer firm
30 Kwon and Suh (2004)	Trust is firms' expectation that their partners will act to benefit their interests regardless of their ability to monitor such behavior (p. 5)	Honesty and benevolence	Commitment; investment in specific assets; behavioral uncertainty	The results indicate that a firm's trust in its supply chain partner is highly associated with both sides' specific asset investments and behavioral uncertainty. It is also found that information sharing reduces the level of behavioral uncertainty, which in turn improves the level of trust. Finally, the level of commitment is strongly related to the level of trust
31 Corsten and Felde (2005)	Psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another (p. 449)	Not available	Financial performance; purchasing cost reduction; innovativeness	The results demonstrate that supplier collaboration has a positive effect on buyer performance both in terms of innovative capability and financial results. Trust enhances the buyer's innovation level and reduces the purchasing cost. The study also highlights the detrimental effect of too much trust on collaboration
32 Kwon and Suh (2005)	Trust is firms' expectation that their partners will act to benefit their interests regardless of their ability to monitor such behavior (p. 27)	Honesty; benevolence	Commitment; investment in specific assets	A firm's trust in their supply chain partner is highly associated with both parties' specific asset investments. The level of commitment is strongly related to the level of trust
33 Myhr and Spekman (2005)	Trust is the degree to which partners perceive each other as credible and benevolent (p. 180)	Credibility and benevolence	Information sharing; willingness to invest	Results indicate that electronically mediated exchange more readily enhances collaboration in exchange relationships involving standardized products, while trust plays a larger role when customized products are being exchanged

(continued)

Table AI

Study (year)	Definition of inter-organizational trust	Dimensions of trust	Typology of outcome	Relevant findings
34 Narasimhan and Nair (2005)	Not defined	Not available	Performance: efficiency and productivity; financial performance; information sharing	The results of the study highlight the impact of trust on quality expectations from suppliers and information sharing. Additionally, the relationships between trust and several supply chain performance metrics are shown
35 Chu and Fang (2006)	Trust is a firm's belief that another company will perform actions that will result in positive outcomes for the firm as well as not take unexpected actions that result in negative outcomes (p. 224)	Not available	Commitment	The study's findings indicate that the level of commitment is strongly related to the level of trust. In addition, trust is positively related to perceived satisfaction, partner's reputation and communication
36 Krishnan <i>et al.</i> (2006)	Trust is the expectation held by one firm that another will not exploit its vulnerabilities when faced with the opportunity to do so (p. 895)	Reliability and fairness	Exchange performance; behavioral uncertainty	The findings show the positive relationship between trust and performance is stronger under high behavioral uncertainty and weaker under high environmental uncertainty
37 Vlachos and Bourlakis (2006)	Trust is the willingness of a party to be vulnerable to the actions of another party based on the expectations that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control the other party (p. 71)	Not available	Exchange performance; financial performance; duration of collaboration; commitment	The findings show that the effectiveness of collaboration is highly dependent on retailers' initiative to build and foster trust with their partners. It also depends on manufacturers' ability to fulfil a complex set of retailers' requirements including commitment to the partnership
38 Cheng <i>et al.</i> (2008)	Trust is a firm's belief to have confidence in its partner's reliability and integrity that leads to positive outcomes (p. 287)	Confidence; reliability and integrity	Information sharing	The paper finds that trust is the pivot of the factors influencing inter-organizational knowledge sharing. The more a factor contributes to trust, the more the factor contributes to knowledge sharing correspondingly
39 De Jong and Klein Woolthuis (2008)	Trust is the perception by a firm that a partner organization will not engage in opportunistic behavior, even in the face of opportunities and incentives to do so (p. 49). Trust reflects the confidence of one party in a two-way relationship that the other party will not exploit its vulnerabilities (p. 457)	Not available	Exchange performance	The results provide evidence to support the direct value of inter-organizational trust in durable business relationships that strive for the development of new technological knowledge
40 Ghosh and Fedorowicz (2008)		Integrity and predictability	Information sharing; performance; efficiency and productivity	The findings show that the three constructs of the governance framework (trust, bargaining power, contract) are intertwined. Trust as a governance mechanism plays a crucial role in sharing information among business partners
41 Gulati and Nickerson (2008)	Trust is linked to the predictability of a partner firm's behavior toward a vulnerable focal firm (p. 689)	Predictability	Performance: efficiency and productivity	High levels of pre-existing inter-organizational trust increased the probability that a less formal, and thus less costly, mode of governance was chosen over a more formal one. The study also found a positive effect of trust on performance

(continued)

Table AI

Study (year)	Definition of inter-organizational trust	Dimensions of trust	Typology of outcome	Relevant findings
42 Laaksonen <i>et al.</i> (2008)	Trust is a belief by one party that the other party will not act against his or her interests, where this belief is held without undue doubt or suspicion and in the absence of detailed information about the actions of the other party (p. 916)	Competence and goodwill	Interdependence	The analysis confirms the strong impact of inter-firm trust on partners' interdependence
43 Lado <i>et al.</i> (2008)	Trust is one party's confidence in the goodwill of an exchange partner (p. 403)	Benevolence and credibility	Performance: efficiency and productivity; relationalism	The results show that an increase in trust or a decline in opportunism is followed by an increase in relationalism as well as performance
44 Liu <i>et al.</i> (2008)	Goodwill trust is defined as the expectation that some others in our social relationship have moral obligations and responsibility to demonstrate a special concern for others' interests above their own. Competence trust is based on the extent to which one party believes that its exchange partner has the required professional expertise to perform the job effectively so as to achieve relationship benefits	Not available	Perceived risk	The results indicate that relationship length and dyadic solidarity can reduce the relational risk perceived by buyers through goodwill trust in their suppliers, but can increase the perceived relational risk through trust in their competence
45 Ibrahim and Ribbers (2009)	Competence-trust is based on perceived trustee's abilities, skills and expertise that facilitate performance within a specific domain (p. 224)	Competence and honesty	Relationalism	Competence-trust is found to positively influence the use of human knowledge resources, resources related to inter-linkage of business processes and organizational domain knowledge resources
46 Jambulingam <i>et al.</i> (2009)	Trust is the willingness to rely on an exchange partner in whom one has confidence	Credibility and benevolence	Loyalty	A firm's trust in its supply chain partner's ability and expertise, along with perceived procedural fairness, serves as the foundation for increased commitment and reduced behavioral uncertainty
47 Laaksonen <i>et al.</i> (2009)	Three types of trust, namely, contractual (trust in oral and written agreements), competence (trust in partner's ability to perform according to agreements), and goodwill (trust in partner's intentions to operate in accordance with agreements) (p. 83)	Competence and goodwill	Financial performance; transaction costs	The study demonstrates the benefits of mutual inter-firm trust in financially measurable terms. Indeed, inter-firm trust can decrease the transaction costs of the relationship, thus providing competitive advantage for the partners
48 Panayides and Lun (2009)	Trust has been defined as a willingness to rely on an exchange partner in whom one has confidence (p. 36)	Confidence and reliability	Cycle time reduction; task performance; innovativeness	The findings add credence to the positive effects of trust and identify trust and innovativeness as antecedents to higher performance in the supply chain
49 Ryu <i>et al.</i> (2009)	Trust involves a firm's belief that its exchange partner will perform actions that will result in positive outcomes and will avoid taking actions that will result in negative outcomes for the focal firm (p. 330)	Reliability	Cooperation; vertical control	The results show that when a manufacturer does not trust its supplier under conditions of environmental volatility, the manufacturer should consider adopting unilateral governance. If a manufacturer trusts its supplier, it should consider bilateral governance

(continued)

Table AI

Study (year)	Definition of inter-organizational trust	Dimensions of trust	Typology of outcome	Relevant findings
50 Sharfman <i>et al.</i> (2009)	Not defined. The study refers to Morgan and Hunt's (1994) perspective	Not available	Cooperation	The results suggest that inter-firm trust, uncertainty and pro-active environmental management most directly affect the extent to which firms engage in cooperative supply chain environmental management
51 Squire <i>et al.</i> (2009)	Trust is defined as the confidence in an exchange partner's reliability and integrity (p. 431)	Reliability and integrity	Cooperation; knowledge transfer	The results indicate that knowledge transfer is positively influenced by the extent of cooperation, but that this relationship is moderated by the level of trust and the performance of the supplier firm
52 Yeung <i>et al.</i> (2009)	Trust is the extent to which a firm believes that its exchange partner is honest and/or benevolent (p. 68)	Honesty and benevolence	Supplier integration	The results reveal that both trust and coercive power improve internal and supplier integration, but when trust is low, coercive power reduces internal integration
53 Fink and Kessler (2010)	Maxim-based trust is the level of self-commitment of a partner to the cooperation relationship	Not available	Financial performance	The results show that although cooperation experience contributes positively to business performance, maxim-based trust makes a significantly larger contribution to performance in cooperation arrangements
54 Hausman and Johnston (2010)	Trust is confidence in the integrity and reliability of another party, rather than confidence in the partner's ability to perform a specific action	Integrity; reliability	Joint action	Results suggest that coercive strategies are counterproductive in encouraging cooperation and compliance either directly or through relational intermediaries, while non-coercive influence produces positive outcomes and effects on intermediaries
55 Hoffmann <i>et al.</i> (2010)	Trust is a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another	Not available	Transaction costs; cooperation; investment in relation-specific assets	The results confirm both an opportunism-mitigating effect of trust that lowers the transaction costs of a collaborative exchange and an opportunism-independent effect that increases the transaction value of a collaborative exchange and also encompasses non-economic motives for collaboration
56 Liao (2010)	Trust is defined as the extent to which a foreign manufacturer expects that its partners will act in its best interests, regardless of the manufacturer's ability to monitor the behavior of the partners (p. 164)	Not available	Performance: efficiency and productivity	The study finds that inter-organizational trust, resources, and the mechanisms of system dependence all have a positive impact on performance. In contrast, the interaction effect of clustering and inter-organizational trust appears to be negatively related to performance

Appendix 2. Variances and covariances calculation

For each sample the variances and covariances were calculated as:

$$\begin{aligned} Var(r_{trust,x}) &= (1 - p_{trust,x}^2)^2 / n, \\ Cov(r_{trust,x}, r_{trust,y}) &= \left[\frac{1}{2} (2p_{x,y} - p_{trust,x}p_{trust,y}) \right. \\ &\quad \left. (1 - p_{trust,x}^2 - p_{trust,y}^2 - p_{x,y}^2) \right] / n, \end{aligned}^*$$

where $r_{trust,x}$ is the sample correlation between inter-organizational trust and variable x , $p_{trust,x}$ is the corresponding population correlation, and n is the sample size. From these calculations, a matrix consisting of variance and covariance values for each sample was constructed (Σ_i), with the full covariance matrix for the meta-analysis denoted as Σ . In order to examine the impact of moderators, the following model was estimated

$$d = X\beta + e$$

where d is the effect size of the trust-outcome variable relationship, and the parameter β is estimated through GLS estimation. In order to estimate β , the following equation was used

$$\beta^* = (X'\Sigma^{-1}X)^{-1}X'\Sigma^{-1}d,$$

with the variance-covariance matrix of β^* being:

$$V_{\beta} = (X'\Sigma^{-1}X)^{-1}$$

About the author

Emanuela Delbufalo is an Assistant Professor of Business Management at European University of Rome, Faculty of Economics. She received her PhD in Management and Organizational Behaviour from the University of Rome “Tor Vergata”. Her research interests mainly lie in the fields of supply chain collaboration and supply chain innovation. Emanuela Delbufalo can be contacted at: emanuela.delbufalo@gmail.com