7 Conclusions

§ 7.1 Main conclusions

This research aimed to describe work floor experiences of project leaders who work for Dutch housing associations and who attempt to apply principles of SCP. Reason to do this, was that current research about SCP does not provide insight in what goes on at the work floor. This insight is necessary, because supply chain partnering is formed by ongoing complex responsive processes of interaction between professionals in their daily work life. To intervene effectively and to improve performances of collaboration, work floor experiences were studied. This research consists of a literature review, three case studies, and an overarching study in which the insights that are gained in the three case studies are synthesized.

The nature of qualitative construction partnering research

Before conclusions of the case studies are detailed, first the results of a literature study about the nature of qualitative construction partnering research are discussed. This was done because this PhD-project relies on the assumption that current literature about construction partnering research is too abstracted from daily work life. Reviewing peer-reviewed academic articles about the nature of qualitative construction partnering research identified the following gaps. 1) Literature underexposes processes of data analysis. 2) Reflections on the role of the researcher(s) in the research process are underexposed. 3) The individual level of analysis is underexposed. 4) The way in which the results are generalized remain somewhat opaque, especially reflections on internal generalization are underexposed. All identified gaps have in common that specific time and place dependent details that may have influenced understanding of studied individuals are underexposed and that may explain a feeling that current literature is too abstracted from the individual work floor experiences.

What are work floor experiences of project leaders who work for Dutch housing associations and who try to apply the principles of SCP?

The narratives describe that with or without a managerial intervention, some of the project leaders start experimenting with applying principles of SCP. Individual

initiatives have risen, albeit in a somewhat patchy and uncoordinated way. It appeared to be difficult to unify all the supply chain partners with different agendas and frames of reference. The cases address issues in especially intra-organizational relations that hamper the collaboration with external partners. The cases also show that key values associated with SCP are applied inconsistently.

Similarities between the cases in terms of strength, scope, duration and depth

The cases were compared by using four dimensions strength, scope, duration and depth of SCP, that were provided by *Eriksson (2015)*. This resulted in multiple observations. None of the project leaders worked with preferred partners (by-passing expensive and time-consuming procurement and selection procedures) in any case, and there is no indication that this will change in the future. In all three cases, it was expected that applying SCP would reduce costs, but there was no agreement as to what those costs were specifically. In general, pricing and cost remained a complex topic, and all project leaders referred to different aspects of this topic. Formally, the duration of relationship with the contractors was one project only. Informally, the respondents acknowledged that they expected to cooperate again with most of the contractors in the future. One reason for this could be the limited size of the regional market. The maintenance phase was not involved in the collaboration in any of the cases. The contractor's timing of involvement varied between projects. However, in all cases, the outlines of the project, such as approximate budget and main technical interventions, were predetermined, and difficult and time consuming to change. Implementation of SCP (especially when applied for the first time in a project setting) was not perceived as something that necessarily leads to shorter duration of (parts of) the project. In all three cases, the managing directors of the departments of renovation supported SCP. However, the managers' actual involvement in daily work practice was limited. Moreover, the support did not lead to changes in the formal strategy for the other departments in the organization outside the department of renovation and maintenance.

The comparison resulted in practical insights in how supply chain partnering in the three cases emerged. Overarching, this comparison resulted in three core insights. (Although neutral, the findings may not be perceived so by respondents or readers of this thesis.) The core insights are: 1) despite the attention, engagement, and effort put into applying the principles of SCP, there are no indications that this leads to fundamental and structural improvements of intra- and inter-organizational collaborations. 2) From a micro-perspective, intra-organizational relationships are just as important as inter-organizational relationships when applying the principles of SCP. 3) Integrative activities are sometimes conducted and perceived as contradictory, unfinished and/or not followed up.

As described in the introduction of this thesis, this research deliberately started with one broad open research question for themes to emerge inductively. These four themes are: 1) the importance of the intra-organizational supply chain in effective collaboration. 2) Leadership. 3) Inconsistent use of key values that are associated with the concept of SCP. 4) Power dynamics and ethics. Not surprisingly, the four themes and the core insights that were derived from the comparison based on *Eriksson's (2015)* dimensions overlap and interrelate. For example, both analyses emphasize the importance of intra-organizational relations. And both analyses show the chaotic and inconsistent character of actions that were conducted to improve performances. The four themes are elaborated below.

The importance of the intra-organizational supply chain in effective collaboration

All three cases show the importance of the intra-organizational supply chain on relationships with external partners. All three cases show examples of project leaders who try to collaborate with contractors, but were hindered by intra-organizational issues. For example, the first case study shows that a serious misunderstanding with the internal client caused uncertainty of the progress of a project in which a time was invested by the contractor. In the second case study, the newly founded department of purchasing was perceived by some project leaders as an extra chain in the supply chain, which makes processes of selecting partners more complex instead of lean. The third case study shows that continuation of the success was insecure, because within the client organization it was decided not to start working with preferred partners. Based on these examples, it was concluded that different types of non-functional intra-organizational dynamics slowed down the collaboration processes with the external partners, or made continuation of perceived good practices insecure.

Leadership

From the perspective of the project leaders, it seems that their managers' focus is not on facilitating daily work practice of SCP, neither on designing and communicating a deliberate SCP-strategy. It seems that some project leaders feel victims of contextual vagaries, not always able to get a grip on managing the supply chain effectively. Interventions that were undertaken by project leaders and their managers, are patchy, contradictory, and/or unfinished. Many individual initiatives have arisen, but continuation of good practices appeared uncertain. In all three cases, the project leaders' managers (in different hierarchical levels) initiated and/or supported the implementation of SCP. For example, BIM-software was purchased, a presentation was organized, or the project leaders are supported with words. And in each case a procurement policy still prevailed and management's expectations of what project leaders should do or aim for were not clear. The social relation between the project

leaders and their managers appeared to be problematic in many individual cases. Especially the project leaders in the first and second case experience that the managers have too little insight and ear for what the project leaders do and the problems they encounter in daily work life. When those project leaders try to discuss their experiences, they often feel unheard and misunderstood.

Inconsistent use of key values that are associated with the concept of SCP

The cases show that certain values were associated with applying SCP. In the first case trust and trustworthiness are discussed. In the second case values such as 'sharing responsibilities', 'pro-activity', and 'you must give each other open and honest feedback' were discussed. In the third case, among other things, informal evaluations and expressing appreciation from the client's project leader towards the building site workers were mentioned as important values. The exact formulation of these key values always differs slightly, but there is no reason to assume that the mentioned key values differ significantly from what has often been mentioned in literature about construction SCP. It could be argued that these key values are similar to general ideas of professional behavior and should therefore be applied in non-SCP-situations as well. But that debate falls outside the scope of this study.

New insight that this study provides is that the key values that are associated with SCP were applied to limited parts of the supply chain only and applied inconsistently. For example, the internal client was not involved in the application of SCP at all, and therefore the values of SCP were not applied to this party. Another example, in the third case study, people who were perceived as 'not that far in their thinking', were not provided with a short informal evaluation, although that was mentioned as a factor of success. Especially the intra-organizational supply chain seems to be treated differently than the inter-organizational supply chain.

This dynamic of shifting application of values and the actions that provokes, seems not to be a matter of bad intentions. There is no reason to question individual intentions. Rather, a possible reason could be that project leaders are not always (fully) aware of the extent of the supply chain they are working with, as seems the case with some intra-organizational supply chain partners. Another reason could be that project leaders feel unable to apply the key values, as seems the case with, for example, the client's building site supervisor in the third case study. Further, a possible reason is that they do not believe in a positive result of doing so, as for example in relation with the Department of Purchasing in the second case stud. A last possible reason is that they fear the consequences of doing so, example in relation with some team leaders.

Power dynamics and ethics

Whatever the reason for the shifting application of key values of SCP is, the participants together have created situations that provoke ethical questions. Related to this discussion, is the discussion about power dynamics. In this study power is not seen as something that one possesses, rather it is something one gains through interactions. A constant power shift is ubiquitous in all normal daily social interactions. The cases show that in normal daily work life, people constantly negotiate, construct, conduct process of trial-and-error, and in those processes, they may gain or lose power. Power arises in normal social interactions at work floor and power dynamics can be visible or hidden. An example of a form of visible power is when the client's project manager claims that contractors are not allowed to make money on smart purchasing of materials. He proposes a system involving a risk buffer, something which the contractor's head of the regional branch agreed to, although he does not think this is fair. An example of hidden form of power is when a purchaser might have formal power over project leaders in terms of selection of contractors, but the project leader might gain back his power by selectively 'forgetting' to involve the purchaser in a selection procedure, and so on. It is well possible that an internal client, who appeared to be not engaged and informed about the change of the department of renovations and maintenance towards SCP, does not even realize the power he may have on the process. That means that certain people unexpectedly and unconsciously may appear to have a great power in the process of collaboration.

It seems that, although perhaps unintendedly and unconsciously, supply chain partnering is used strategically to gain power. The word 'SCP' (or one of its synonyms) can be used as an argument to easily convince somebody else to do something that one would otherwise not do. After all, SCP is a buzz-word that seems to represent 'good practices' in the sector, rather than it is a deliberated strategy and the key values that are associated with SCP are hard to not agree with. By strategically referring to key values of SCP power can be gained. Perhaps the clearest example of such an issue is shown in especially the first and third case studies. A possible interpretation of the case studies is that applying SCP leaded to a situation in which the contractors still go through time consuming and expensive selection procedures, are involved in earlier phases of the process (thus provide extra work), still have limited influence in the technical interventions, have more responsibilities, and are supposed to (gradually) save 20% of the costs (although it is undefined how this cost-reduction is calculated). It is highly questionable whether this is fair and whether all the effort that was put in applying SCP will solve the problems that people expect. This also feeds the impression that despite the attention, engagement, and effort put into applying the principles of SCP, intra- and inter-organizational collaborations have not improved fundamentally.

§ 7.2 Reflection on the research

Before implications and recommendations of this study are discussed, the study should be reflected and limitations should be acknowledged. The first point of reflection concerns finding the right position of the researcher in the field. The most integrated situation is that the researcher itself is employed in the field of research and does research from the perspective of 'reflective practitioner'. In that case, the researcher would have worked as a housing association's project leader. This was not the case. Instead, in the first case study the researcher acted as a participative observer, and in the second and third case study the researcher became less participative. Whatever position the researcher has in the field, the most important aspects are awareness of that role in the field, and awareness that the researcher is just as well part of the ongoing complex responsive processes. Based on this research, an ideal distance between the researcher and the object of research cannot be determined.

Another methodological quest was what it means to analyze at an individual level of analysis. As *Stacey (2011)* argues, every thinking (and communication) is an abstraction from direct experience. In the processes of gathering data, constructing narratives, and in comparing the cases, many individual details of the direct experience get lost. Throughout this study, it was experienced that abstracting from direct experiences happens gradually. Based on this research an ideal level of abstraction cannot be determined. Researchers should always be aware of how far they are abstracting from direct experiences, and what level of abstraction their study requires. The observation that in the field of qualitative construction partnering research an individual level of analysis is underexposed, remains. Also at this point the researcher has to be aware and make conscious decisions (and be transparent) at all times.

In **section 6**, four predetermined dimensions were used as an experiment to compare the cases. One reason to do this was to experiment with the utility of the dimensions. The main difficulty of using predetermined dimensions to compare cases is that what goes on at the work floor is chaotic, dynamic, unruly, capricious, unfinished, and messy and that character does not seem to fit well with the structured and static predetermined dimensions. For example, some individuals see themselves as part of the supply chain, while others don't see those individuals as part of the supply chain It is questionable whether the internal client in the first case falls in or outside the scope. These types of ambiguities make it more complicated to assess the experience with help of the dimensions. This researcher's experience is that in using the framework there is a danger that the process of abstraction from direct experiences accelerates, compared to an inductive analysis. But in the end, it is not so much the framework, rather how the framework is utilized that determines the level of abstraction.

The considerations in the process of assessing reveal details that are necessary to understand what happens at work floor level and are therefore useful in the context of this thesis.

Concerning acceptability of the results, hindsight it is a missed opportunity to not systematically involve student research. While doing this research, the researcher was employed at the university of applied sciences in Utrecht. As a teacher, she taught undergraduate and graduate students about housing associations in general, and especially about collaboration strategies in renovation projects. She and her students conducted smaller and bigger studies about supply chain partnering or related topics from different perspectives. Repeatedly, the students came to similar observations and conclusions. Recently, a student studied evaluation criteria in a SCP-construction between contractor and client. The student discovered that all evaluation criteria to evaluate the quality of the supply chain partnership were directed at the contractor and none of the criteria focused on evaluating the client. This would have supported the finding of this thesis.

Another point of attention is about objectivity and neutrality of the researcher. In this thesis, these personal details are covered in the prologue, epilogue and author's notes. I believe that this enriches the research and increases the understanding of the results. However, it is not common to involve such personal background in, for example, peer-reviewed research papers. First, the researcher is limited in amount of words that she can use. Secondly, it is impossible to exactly know what influenced what and what details are most important to describe. Thirdly, and may be most importantly, this seems to be contradictory to general scientific value of objectiveness and neutrality of the researcher. Instead of pretending to be objective and neutral, I think it is better to acknowledge that no person is capable of being objective and neutral. Therefore, the researcher should be as transparent as possible about her personal motivation. Then the reader has more fair opportunity to value the research.

§ 7.3 Academic recommendations

Recommendations concern development of theory as well as methodology. A first academic recommendation is to keep considering work floor experiences of SCP – as well as work floor experiences of introduction of any other phenomenon, such as Total Cost of Ownership, or circular building. This study has shown that constructing narratives about what happens at work floor contributes to the existing knowledge,

because it provides different insights in why and how actions are undertaken, and how it influences the working of the supply chain. The study shows that salient context-related details, such as a non-engaged internal partner, problematic relations between project leaders and managers, may highly influence the local expression of SCP. Research that is abstracted from such ongoing daily work practice, may easily overlook such relatively small, unexpected, but influential factors.

A second academic recommendation is to study ethics in work floor relationships. This research provides reasons to think that some groups at work floor level are treated with differently with different underlying values than others. The question is whether this is justified. Also, it was observed that participants together create situations that provoke ethical questions, while there is no reason to question individual intentions.

A third academic recommendation concerns the low diversity among project leaders. Most project leaders in this study are white male with a technical or business Bachelor-degree. Only one of the studied project leaders was female. In this study, no project leaders (or other participants) with an immigration background were engaged. We think this represents the diversity within the total population. Studies show that diversity in groups increase performances in general. The relation between low diversity and performance in this sector should be studied.

Methodological recommendations concern qualitative construction partnering research and are directly based on the four methodological gaps that are identified in the literature review. The first recommendation is to be more transparent about the way in which data are analyzed. Second, the role of the researcher in current qualitative construction partnering research remains undiscussed in most research. By not discussing that role, it is implied that the role is objective and neutral which is highly debatable assumption. Thirdly, it is recommended to conduct an individual level of analysis, because most qualitative construction partnering research analysis data are analyzed at project level or higher. Individual experiences are averaged away and important details that are necessary to understand complex responsive processes lack. Fourthly, results are generalized in a vague and opaque way. It is recommended to pay more attention if and how results can be generalized.

§ 7.4 Practical recommendations

Concerning practical recommendations, a common critique about thinking of complex responsive processes in general is that it does not lead to practical solutions to improve performances in the field. Indeed, research from this perspective does not lead to managerial plans or interventions. As the case studies show, managerial interventions are always interpreted and formed in many interactions between individuals in the field. As *Stacey (2011)* argues, deliberated strategies, and all related plans, are myths and only create an illusion of control. Further, because the experiences that were studied are highly context-related, findings can never be generalized one-on-one. However, other housing associations – and other parties in other supply chains – can use the findings in multiple ways.

First, the description of work floor experiences may provoke many ideas for practical interventions, but professionals who are inspired by this research are recommended to evaluate their own situation thoroughly, before coming to action. In other situations, other salient details might hinder effective collaboration between intra-organizational as well as inter-organizational supply chain partners. Therefore, the results of this research can never be used as an argument to intervene in other situations. The conclusions of this study may not be generalizable one-on-one to other situations, but they may point at weak spots in comparable supply chain partnerships. The cases show the importance of the intra-organizational supply chain collaboration as a condition for effective external supply chain collaboration. Further, the cases show the struggle about the seemingly paradox of leadership in emergent processes. Also, the cases show an inconsistent use of key values of SCP and the power dynamics between individuals in the supply chain. When professionals in other housing associations evaluate their own situation, it is recommended to be specifically alert to those topics. The weak spots can be a point of attention within that evaluation, but professionals may also be inspired by the methodologies that were used to evaluate work floor experiences. Important tools in evaluating one's own situation is conducting interviews and observations from different perspectives in different hierarchical levels among parties within the supply chain. This may be done in a formal and informal way and it might be more a matter of attitude, rather than performing extra actions. After all, a professional is part of ongoing conversation with all kinds of people daily. Therefore, there are plenty of opportunities to conduct interviews and observe situations with an evaluative eye.

A second recommendation is that, if practitioners decide to intervene, they should focus on the effects of the intervention, at least as much as they focus on the intervention itself. This recommendation is directed towards managers, but also to other professionals in the field, such as project leaders. The results in this study show

that interventions have never a one-on-one-effect on others. Others always interpret the intervention with their own frames of reference. Therefore, the action does not stop when the intervention stops. Rather the action begins when the interventions was done. Again, this is a matter of finding a right attitude, rather than a matter of undertaking all kinds of extra actions.

A third recommendation is to explore the role as managers and leaders. The study shows project leaders feel that their managers not always take the lead, and project leaders themselves seem not always able to take the lead either. There is no one-size-fits-all-solution. The right management and leadership-style depends on many local and personal factors, such as the characteristics and preferred working style of the leader, as well as the characteristics and preferred working style of the team members. There is a lot of management literature that contributes to this debate, that can help in exploring this role. Exploring one's individual role, is an individual process that can touch personal aspects that reach far beyond business related aspects. Such as self-exploration demands vulnerability and a willingness to change. Whatever the outcome of the self-exploration process will be, the cases show that many project leaders feel unheard and misunderstood by their managers. This dynamic is relatively easy to overcome, and that takes effort from both the manager and the project leader. Simple conversation rules, such as non-violent communication principles, may help in increasing mutual understanding and increasing competences of listening.

Fourthly, we observe that some parts of the supply chain are thought of (and treated) with different values than other parts. The intra-organizational supply chain is treated with less awareness and different key values than the inter-organizational supply chain. The third case makes clear that the building site workers are thought of and treated in different ways than colleagues from the office. To change this, self-awareness of use of such key values and answering the question whether this is justified should be answered individually.

Lastly, the practical recommendations have in common that they demand a high level of self-reflective competences, and therefore it is recommended to keep increasing self-reflective competences. Again, this is a matter of attitude, rather than undertaking extra actions. There are different ways to achieve this. People can start by considering their daily communication as if it were interviews or observations and start acting like reflective practitioners. This action will likely also increase skills of listening. Further, one can ask help of a coach. Or one can consider meditating. Becoming and being reflective is an ongoing process.

§ 7.5 Bibliography

Stacey, R., (2011). Strategic Management and Organisational Dynamics, The Challenge of Complexity. London: Pearson.

Eriksson, E., (2015). Partnering in engineering projects: Four dimensions of supply chain integration. Journal of Purchasing and Supply Management, 21(1), 38-50.

Appendix A: Analysis nature of qualitative construction partnering research

ANVUUR ET AL. (2011)	**Aim**	'This paper addresses the above needs by exploring the major issues in developing RIVANS'.
	Position in the field	Multi-player, inter-organizational, both project and strategic based relationships.
	Gathering data	In an extensive literature review key-issues of RIVANS are identified and validated conducting a 'focus group approach'.
	Data analysis	There are no concrete indications what analysis-techniques are used.
	Role of the researcher	The role of the researcher is not explicated.
	Theoretical background	Extensive literature review on value networks in business, the RIVANS framework and building blocks of operational RIVANS.
	Level of Analysis	Country-level.
	Internal generalisation	'Two workshops provide the forum for the groups. They brought together a representative group of built environment professionals from industry and academia in Hong Kong and two international research collaborators'.
	Statistical generalisation	No.
	Analytical generalisation	No explicit reference to possibilities of analytical generalisations.

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BADENFELT (2010)	Aim	'The present paper seeks to deepen our understanding of the complex and dynamic relationship between aspects of trust and control in client–contractor interactions ' (pp. 301).
	Position in the field	Dyad, inter-organizational, project based, new non-residential building.
	Gathering data	A three-year longitudinal case study (referring to Yin, 1994) about a large € 32 million laboratories for a high-tech company in Sweden. 'The main data sources were, besides contract documents, non-participative observations of 26 project meetings held on the building site' (pp. 303). This was complemented with interviews with key-respondents from both client and contractor.
	Data analysis	Badenfelt (2010) refers to Strauss and Corbin, 1997) 'The analysis was guided by a coding process in which data were categorized using qualitative analysis methods'.
	Role of the researcher	There is no reflection on the role of the researcher.
	Theoretical background	The theoretical background provides an overview of recent research trends on trust and control.
	Level of Analysis	Case-level with individual quoting to support understanding at case level.
	Internal generalisation	There is no reflection on the internal generalisation.
	Statistical generalisation	No
	Analytical generalisation	No explicit reference to possibilities of analytical generalisations. Badenfelt (2010) does suggest that 'the findings of this study are expected to contribute not only to construction management theory and practice, but also to all types of inter-organizational projects in which contracting parties struggle with problems related to risk allocation and relational risks' (pp. 309).

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BERENTE ET AL. (2010)	**Aim**	'By using these concepts, we articulate a framework in situ of how ICT enabled inter-organizational knowledge creation takes place during the design and construction of a highly complex building' (pp 570).
	Position in the field	Multi-player, inter-organizational, project based, new non-residential building.
	Gathering data	A multi-level case study about Peter B. Lewis Building at Case Western Reserve University carried out by Gehry Partners. 'The data were collected primarily through open-ended interviews using a semi-structured questionnaire near the end and shortly after completion of the building' (pp 575).
	Data analysis	The authors iterated through these analyses multiple times and compared findings to ensure that the examples and episodes were tightly grounded and consistent with the individual firm, the project as a whole, and where applicable with pre- or post-Gehry projects in which the firm may have been involved' (pp. 576).
	Role of the researcher	There is no reflection on the role of the researcher.
	Theoretical background	The theoretical background discusses inter-organizational knowledge creation and information technology, information pooling, physical interaction and object worlds.
	Level of Analysis	Case-level with individual quoting to support understanding at case level.
	Internal generalisation	There is no reflection on the internal generalisation.
	Statistical generalisation	No
	Analytical generalisation	Explicit reference to analytical generalisations at pp 574. Berente et al. (2010) suggest that 'it can also apply to other contexts across functional disciplines' (pp. 586).

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ELLEGAARD AND KOCH (2012)		
	Aim	'How does internal integration between purchasing and operations in the buying company affect suppliers' recourse mobilization?' (pp. 149).
	Position in the field	Multi-player, intra- and inter-organizational, strategic based relationships.
	Gathering data	A qualitative single case study' (pp. 149) about a constructor collaborating with subcontractors that produce windows, trade wooden floors, and contract electrical installations. Data were gathered with 'twenty semi-structured interviews' with employers from the construction company and suppliers. Also key-documents are used.
	Data analysis	Miles and Huberman (1994, chapter 4 and 5) are used. 'We relied on various coding procedures and tools for within cases analysis'. [...] The coding process involved a high level of iteration and switching back and forth between interview data from the informants' (pp. 150).
	Role of the researcher	Reflection on the role of the researcher is not explicated.
	Theoretical background	A brief theoretical background about elements of internal integration and effects of internal integration on external integration and supplier recourse mobilization (pp. 150 - 151).
	Level of Analysis	Individuals are quoted in the appendix. The level of analysis in the main text concerns small groups of people, such as 'the purchasers', thus: case-level.
	Internal generalisation	There is no reflection on internal generalisation.
	Statistical generalisation	The authors suggest - amongst other recommendations - that future research may involve survey methodology in order to generalize findings to broader populations.
	Analytical generalisation	Ellegaard and Koch (2012) argue that the single case study 'also represents a limitation as broader analytical generalisability has traded off with detailed insight'.

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ERIKSSON (2010)	Aim	"The following three interconnected research questions will therefore be investigated: (1) What is partnering? (2) When should partnering be used and to what extend? And (3) How should partnering be implemented?" (pp. 906).
	Position in the field	Multi-player, intra- and inter-organizational, project and strategic based relationships in existing civil projects.
	Gathering data	Data are gathered using 'four case studies of partnering projects produced by a Swedish mining company' (pp 909). 50 semi-structured interviews and document analysis.
	Data analysis	Several data analysis techniques are applied, such as: cross-case pattern analysis (Eisenhardt, 1989), pattern-matching analysis (Yin, 2003), visual mapping strategy (Langley, 1999),
	Role of the researcher	Reflection on the role of the researcher is not explicated.
	Theoretical background	The theoretical background is about what partnering is, when it should be used and to what extend and how partnering should be implemented?
	Level of Analysis	Case level, with individual quotes.
	Internal generalisation	The internal generalisation is not problematized.
	Statistical generalisation	No.
	Analytical generalisation	A reference is made to analytical generalizations (Yin, 2003): "Case study should however aim for analytical rather than statistical generalizations' (pp. 909). According to Eriksson (2014) the main findings [...] are probably valid for other settings as well'.

FERNIE AND TENNANT (2013)	Aim	'The research strategy has [...] adopted a grounded theory approach (Glaser and Strauss, 1967) as a way to develop substantive theory to explain the development and diffusion of supply chain management in the construction industry' (pp. 1039).
	Position in the field	Multi-player relationships in UK construction industry.
	Gathering data	A grounded theory approach in which data are gathered using 'orientation interviews were largely informal meeting with interested stakeholders' in UK (pp. 1045).
	Data analysis	Profound description of analysis techniques, using a grounded theory approach.
	Role of the researcher	Extensive description of the researchers' own role in the research process.
	Theoretical background	In the theoretical background supply chain management theory and construction supply chain management are discussed.
	Level of Analysis	Country level
	Internal generalisation	Extensive overview of participants, but no reflection to what extend the participants represent the field.
	Statistical generalisation	No
	Analytical generalisation	No explicit reference to possibilities of analytical generalisations. In this context, research findings are generalizable in so far as they provide a wide-ranging statement on the action, reaction and transaction of supply chain practice in construction' (pp. 1048).

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FULFORD AND STANDING (2014)	Aim	'The objective of this study is to identify factors inhibiting collaboration and determine how collaboration might be improved in the CI' (pp. 316).
	Position in the field	Multi-player, inter-organisational, strategic based relationships.
	Gathering data	Three mini-cases about a 1) Constructor that does government or company tenders. 2) infra-structure projects, 3) commodity provider. Data are gathered using semi-structured interviews and expert panels.
	Data analysis	Six steps of Mishler (1990) are applied. No further research-specific aspects about de analysing process are explicated.
	Role of the researcher	Reflection on the role of the researcher is not explicated.
	Theoretical background	The theoretical background is about fragmentation in the supply chain, small enterprises in the supply chain, construction supply chains and types of relations.
	Level of Analysis	Case level.
	Internal generalisation	There is no reflection on internal generalisation.
	Statistical generalisation	No
	Analytical generalisation	No explicit reference to possibilities of analytical generalisations.

GOTTLIEB AND HAUGBOLLE (2013)	Aim	'We analyse the underlying dynamics of construction through activity theory based on a case study of the first Danish examples of partnering' (pp. 119).
	Position in the field	Multi-player, inter-organisational, project based, new non-residential building.
	Gathering data	Paradigmatic case study about a € 22 million building of headquarters for a central organization of a Danish trade union. It concerns a longitudinal case study in which data are gathered through a 'combination of questionnaire surveys, interactive workshops, semi-structured qualitative research interviews and onsite observations' (pp. 119).
	Data analysis	The way in which data are analysed is not explicated.
	Role of the researcher	The role of the researcher in the research process is not explicated.
	Theoretical background	The theoretical background is about 'activity theory'. The researcher's view on partnering is that it is not a fixed definition that exactly describes what it is and what it entails in practice, but it is 'a fluid concept, which emerges from the specific circumstances of activities'.
	Level of Analysis	Case level that is generalized to country level.
	Internal generalisation	There is no reflection on internal generalisation.
	Statistical generalisation	No
	Analytical generalisation	'The aim of the present study is not ''to test specific hypotheses or produce statistically generalizable results, but to use the case study in an exploratory way to contribute further towards theory development by developing analytical generalizations" (Bresnen, 2010, p. 619)'.

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HUGHUS TE AL. (2012)	Aim	'The research aims to test the hypothesis "The use of incentivisation with a gain/pain share of about 15 per cent is a precursor to the achievement of successful infrastructure partnering projects in South Wales' (pp. 306).
	Position in the field	Dyad, Inter-organisational, project bases, existing infra project.
	Gathering data	Two case studies about rail infra projects in South Wales of £200 million and £3 million are conducted. 'Questionnaires and interviews were used to gather both breadth and depth of data from within these two case projects' (pp. 309).
	Data analysis	Statistic procedures are applied. The results are supported and nuanced with interviews with key figures.
	Role of the researcher	The role of the researcher in the research process is not explicated.
	Theoretical background	The theoretical background is about incentives in partnering.
	Level of Analysis	Case level
	Internal generalisation	There is no reflection on internal generalisation.
	Statistical generalisation	Statistical procedures are used to analyse data.
	Analytical generalisation	No explicit reference to possibilities of analytical generalisations.

JEFFERIES ET AL. (2014)	Aim	'The aim of this paper is to investigate factors that influence the successful implementation of Project Alliancing and therefore establish a framework of critical success factors (SCF's)' (pp. 465).
	Position in the field	Multi-player, inter-organisational, strategic based relationships in an existing civil project.
	Gathering data	Single case study about an operations and maintenance of a sewage system in Australia, whereby senior managers from the six partners from the alli-ance are interviewed following a semi-structured interview protocol.
	Data analysis	Short description about how a 'content analysis approach' was used to 'group and compare the findings from both the review of literature and the case study project' (pp 471).
	Role of the researcher	The role of the researcher in the research process is not explicated.
	Theoretical background	In the theoretical background existing critical success factors are identified.
	Level of Analysis	Case level. Individuals are quoted to increase understanding and ground the findings.
	Internal generalisation	There is no reflection on internal generalisation.
	Statistical generalisation	No
	Analytical generalisation	No explicit reference to possibilities of analytical generalisations.

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JOHNSON ET AL. (2013)	Aim	The purpose of this paper is to determine if an IPD contract can effectively be utilized in federal construction and, if so, to create a framework under which federal organizations can take advantage of IPD' (pp. 481).
	Position in the field	Dyadic, inter-organisational, strategic based relationships.
	Gathering data	An embedded single case study design' This type of study is appropriate to test a hypothesis with a clear set of propositions, as well as clear circumstances within which they are believed to be true' (pp 483). Further, the 'Delphi method was utilized for data collection', using a group of reviewers.
	Data analysis	This paper's analysis was developed from a combination of the reviewers' findings and interpretations, the author's own research and interpretations, and respondent validation performed during data collection and after completion of early drafts' (pp. 481).
	Role of the researcher	Except that it is acknowledged that the researcher's interpretation played a role in analysing data, the role of the researcher within the research process is not explicated.
	Theoretical background	The theoretical background is about key practices of using a contract.
	Level of Analysis	Different 'units of analysis' in this case are object of study – case level
	Internal generalisation	There is no reflection on internal generalisation.
	Statistical generalisation	No
	Analytical generalisation	No explicit reference to possibilities of analytical generalisations. The findings seem to apply for all federal construction alliancing projects, because the authors conclude that 'If the preceding steps are followed, an effective alliancing contract can be used in federal construction without major difficulty' (pp 487).

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LAAN ET AL. (2011)	Aim	In this paper we aim to generate insight into the process of establishing and maintaining cooperative, trusting relationships in partnering projects' (pp. 99).
	Position in the field	Multi-player, inter-organizational, project based relationships, in a both new and existing infra project.
	Gathering data	Longitudinal case study about a € 40 mln rail infra project in the Netherlands. Doubling the number of tracks in the domain of a medium-sized city over a length of about 5 km. Some new and existing related buildings and infrastructure is involved. Data are gathered in three rounds of interviews with key respondents, using a protocol that was based on literature study about 'risk, trust, control and performance' (pp 101).
	Data analysis	In one paragraph it is explained how the authors reduced and categorized data, using Swanson and Holton (2005) and Miles and Huberman (1994).
	Role of the researcher	The role of the researcher in the research process is not explicated.
	Theoretical background	The theoretical background is about the concept of trust, and dimensions and resources of trust and the role of trust in the governance of inter-organizational relationships. Also, the interview protocol is based on literature study.
	Level of Analysis	Case level with individual quoting.
	Internal generalisation	There is no reflection on internal generalisation.
	Statistical generalisation	No
	Analytical generalisation	It is not literally suggested that the findings can be generalized analytically. It is recognized that 'we have to be careful in generalizing our findings' (pp. 106).

LU ET AL. (2013)	Aim	The research 'aims to add new insights to the knowledge body on Construction Professional Services by situating Chinese construction professional services (CCPSs) within the international context (pp 303).
	Position in the field	Multiplayer, inter-organizational relationships.
	Gathering data	Data-triangulation is applied, gathering quantitative as well as qualitative data, using 'yearbooks, annual reports, interviews, seminars, and interactions with managers in major CCPS companies' (pp 306).
	Data analysis	Two of the authors analysed the data separately, and agreement of the analysis was achieved through multiple interactions between the two authors' (pp. 307).
	Role of the researcher	The role of the researcher in the research process is not explicated.
	Theoretical background	The theoretical background is about the history and current state of Construction Professional Services in China.
	Level of Analysis	Country level.
	Internal generalisation	There is no reflection on internal generalisation.
	Statistical generalisation	No
	Analytical generalisation	It is not literally suggested that the findings can be generalized analytically. The results apply for the Chinese market.

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OSIPOVA (2011)	Aim	The aim of this study is to investigate how procurement options influence risk management in construction projects' (pp 1150).
	Position in the field	Multi-player, inter-organizational, project based relationships.
	Gathering data	Data are gathered in 11 cases about building as well as civil engineering projects in small and large cities in Sweden. Data are gathered in several round using interviews with experts in the cases and questionnaires.
	Data analysis	The process of data analysis is not explicated.
	Role of the researcher	The role of the researcher in the research process is not explicated.
	Theoretical background	The theoretical background is about risk management in general and risk allocation through construction contracts.
	Level of Analysis	Case level
	Internal generalisation	There is no reflection on internal generalisation.
	Statistical generalisation	No.
	Analytical generalisation	It is not literally suggested that the findings can be generalized analytically. It is suggested that 'future surveys should aim to target a wider range of procurement options in a larger sample of construction projects' (pp 1156).

PAN ET AL. (2012)	Aim	This paper scrutinizes the processes through which off-site technologies were adopted and utilized in house building' (pp 1332).
	Position in the field	Multi-player, inter-organizational, strategy based relationships in new residential building.
	Gathering data	Action research in two cases of residential buildings in the UK in which the researcher was 'proactively' engaged 'in the use of off-site production at three distinct but interrelated levels of governance'. Data were collected using, a questionnaire survey, interviews, focus groups, informal discussions and meetings, 'which were supported by observations, site visits, and document analysis'. (pp 1334).
	Data analysis	The analytical model (Miles and Huberman 1994) was used for data analysis, which included three concurrent flows of activity: data reduction, data display, and conclusion drawing and verification' (pp. 1334).
	Role of the researcher	The research approach was based on the collaboration between the researcher and the organization, using a coproduction model in creating new knowledge' (pp. 1333).
	Theoretical background	The theoretical background is about classifying off-site production technologies and off-site production in house building.
	Level of Analysis	Case level
	Internal generalisation	There is no reflection on internal generalisation.
	Statistical generalisation	No
	Analytical generalisation	It is not literally suggested that the findings can be generalized analytically. The authors suggest that care should be taken when generalizing the results to other countries, because of differences in context.

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SANDBERG AND BILDSTEN (2011)	**Aim**	The purpose of this paper is to explore the relationship between the coordination of activities and recourses on the one hand, and the occurrence of different types of waste on the other' (pp 77).
	Position in the field	Multi-player, intra-organizational, strategic based relationships in new building.
	Gathering data	Case study about a Swedish manufacturer that produces Timber Volume Elements, operating on the Swedish and Norwegian market. Interviews were held with different employers in different aggregation levels of this company.
	Data analysis	There are no concrete indications what analysis-techniques are used.
	Role of the researcher	The role of the researcher is not explicated.
	Theoretical background	The theoretical background is about coordination and waste and the question what exactly coordination is. It is also about value and waste in the lean concept.
	Level of Analysis	Case level
	Internal generalisation	Short reflection on the representativeness of the case: 'The case company has been chosen not for being representative of the whole construction industry or the industrialised housing concept, but because it is expected to replicate or extend the emergent theory' (pp 81).
	Statistical generalisation	No
	Analytical generalisation	No explicit reference to possibilities of analytical generalisations.

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SMYTH (2010)	Aim	'While many have felt that there has been little or no progress (e.g. Green, 2006), yet scant empirical research has been put forward to support success or failure of these initiatives. This paper has the overall aim of helping to address this gap' (pp. 256).
	Position in the field	Inter-organisational relationships in the UK.
	Gathering data	'The so-called 'Continuous Improvement' programme in the UK is evaluated as a case study through an analysis of demonstration projects' (pp. 255). According to Smyth (2010) primarily an action research method was applied. Two types of evidence are used in this study: 'aggregate data over a 10-year period and qualitative data over a two-year period at the end of the first decade since the Egan Report in order to identify in greater depth trends for the future'.
	Data analysis	The analysing procedure involved several steps of categorizing data. No reference to an existing method of analysing is made.
	Role of the researcher	The role of the researcher is not explicated.
	Theoretical background	The theoretical background discusses attempts to evaluate performance improvement programmes.
	Level of Analysis	Country-level.
	Internal generalisation	'The sample is 150 demonstration projects, representing 33% of the population, selected for reasons that industry actors had written these up in short report format. This is a reasonable sample, yet the fact that only one-third has been written up is itself a constraint upon demonstration and dissemination, even before adoption is addressed'. (Pp 259).
	Statistical generalisation	Statistical procedures are used to analyse data.
	Analytical generalisation	Possibilities for analytical generalisation is not literally referred to, yet limitations and opportunities of generalizing results to other contexts are discussed.

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TAGGART ET AL. (2014)	Aim	'The purpose of the research and empirical work described herein was twofold. First to assist a small/medium enterprise to improve its productive processes towards the elimination/reduction of rework and defects. Secondly the work seeks to contribute to theory in the area of defects elimination and management through dissemination of the research findings (Baskerville 1999, Robson 2002) This involved work in the following areas: 1) understanding the improving defects identification and management system, 2) providing an understanding of the costs involved, 3) providing root cause analysis into defects with the aim of avoiding future repetition, 4) training and learning' (pp 830).
	Position in the field	Multi-player, inter-organizational, project based relationship in non-residential building.
	Gathering data	Action research case study about a health department with a project value of € 1.4 million in UK'. And, 'a substantial amount of diverse qualitative data was produced' (pp 831).
	Data analysis	No explanation about how data were analysed.
	Role of the researcher	Some indications about the role of the researcher in the research process, such as this research is part of a wider PhD-project, and the field researcher attended site 'during the latter part of the construction phase' (pp 835).
	Theoretical background	The theoretical background is about defects causation, cost of rework and defects, and collaboration in the supply chain.
	Level of Analysis	Case level, with individual quoting.
	Internal generalisation	There is no reflection on internal generalisation.
	Statistical generalisation	No
	Analytical generalisation	No explicit reference to possibilities of analytical generalisations.

YING AND TOOKEY (2014)	Aim	'The objective of this research sought to address how construction logistics efficiency can be improved through optimising vehicle movements to the construction site' (pp 262).
	Position in the field	Multi-player, inter-organizational, project based relationships.
	Gathering data	Case study about a 13 level tower block with roof top plant room surrounded with lecture theatre and student facility in Auckland, New Zealand. Data are gathered using interviews and observations.
	Data analysis	'These data were analysed as a whole, reduced to focus on the main questions of how these challenges occur. The causes of the problem were analysed, and generalisation of the causes were carried out using principles of supply chain management' (pp 267).
	Role of the researcher	The role of the researcher is not explicated.
	Theoretical background	The theoretical background discusses theoretical perspectives of construction logistics.
	Level of Analysis	Case-level.
	Internal generalisation	There is no reflection on internal generalisation.
	Statistical generalisation	No, suggestions for quantitative research in the future.
	Analytical generalisation	No explicit reference to possibilities of analytical generalisations.

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ZIMINA ET AL. (2012)	Aim	Is Target Value Design really different from current practice and why?' (pp 384).
	Position in the field	Inter-organisational, project based relationships.
	Gathering data	Action research in 12 cases amongst which Fairfield Medical Office, and The Cathedral Hill Hospital.
	Data analysis	The process of analysing data is not explicated.
	Role of the researcher	Some indications about the role of the researchers are given. For example, 'The researchers were directly involved and worked with the project teams almost on a daily basis, acting as informers of the theory of target costing, helping with the execution of the practical trials, making adjustments and collecting data' (pp 384).
	Theoretical background	The theoretical background is about target costing, target costing in construction and target value design.
	Level of Analysis	Case level.
	Internal generalisation	There is no reflection on internal generalisation.
	Statistical generalisation	No
	Analytical generalisation	No explicit reference to possibilities of analytical generalisations.