'After all, it's a matter of trust'

Assessment of success factors for supply chain collaboration in the Dutch social housing sector

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1. Introduction

1.1 Research subject

As of 2002, the percentage of tenants of social housing in the Netherlands who are at risk of not being able to pay their rent due to insufficient income (so called rent-paying risks), has increased steadily up to this date (Schilder, de Groot & Conijn, 2015; Schilder & de Groot, 2017). Schilder and de Groot (2017) mention that as of 2015 roughly 18 percent of all tenants of social housing are at risk of not being able to pay their rent. As the current level of rent allowances seems insufficient to combat this problem effectively, social housing corporations [SHCs] could play a role in lowering the rent-paying risks through providing housing at a more affordable price point. Since SHCs need to be wary of their financial position, Schilder, de Groot and Conijn (2015) mention the need for not only governmental intervention, but also increased efficiency of SHCs.

This need for increased efficiency, both in time and financial means, could be dealt with by implementing chain collaboration, with its inherent goal to bring about significant (supply-chain-) improvement in the long term (Benavides, De Eskinazis & Swan, 2012). Furthermore, supply chain management [SCM] can also be a means to "increase customer satisfaction by reduced cost and improved services" (Ramanathan, 2013, p. 210). In an attempt to increase their efficiency and reduce building costs of their housing stock, some SHCs have indeed already taken major steps towards successful chain collaborations (Aedes, January 2015; Aedes, November 2015). But although chain collaboration/SCM has gained much attention over the past years, there still seems to be a lack of consensus about what conditions are necessary to make chain collaboration successful (Kampstra, Ashayeri & Gattorna, 2006; Ramanathan, 2014).

Even though some academics have sought to construct clear guidelines for creating chain collaborations (Simatupang & Sridharan, 2008) it is not clear whether these guidelines are suitable for SHCs, given their distinct function and nature. As the current literature on chain collaboration focusses mainly on private, production-oriented organisations and service-oriented organisations such as in the power industry and health care, sectoral differences should be taken into account when applying the current body of literature to the Dutch social housing sector. Although private organisations, Dutch SHCs are subject to monitoring from, amongst others, the Ministry of the Interior and Kingdom Relations (Aedes, n.d.). With several cases of carelessness and misconduct in the past decades in the Dutch social housing sector (Kasteleijn, 2014; Willems, 2015; Dohmen, 2017), causing societal and political unrest, this sector is under strict scrutiny. The level of transparency and accountability demanded from the Dutch social housing sector, combined with the clear societal function Dutch SHCs have, could affect the way in which successful chain collaborations with SHCs comes about. For example, when Dutch SHCs wish to develop social real estate, or when SHCs develop real estate commissioned by the municipality they work in, SHCs have to adhere to the Dutch Tender laws (Aedes,

November 2017) . These laws include strict regulations on how to engage with suppliers, which could have far-reaching consequences for the process of chain collaboration in the social housing sector.

Ramanathan (2014) do mention that SCM can be used to increase customer satisfaction. Their description of SCM is however mostly geared towards the production of tangible goods, especially those that can be mass-produced. 'Traditional' ways of organising chain collaborations could therefore turn out to be unsuitable for the social housing sector. The social housing sector is focussed on providing a societal service, which is providing affordable housing to those who could otherwise not afford it. The level of costing in the social housing sector is therefore not profit-driven, but has evolved from a societal need for affordable housing for those citizens who would otherwise not be able to afford housing at all. Moreover, SHCs are obliged to maintain a maximum rent for their social housing stock of €710,68. Of these houses, 90 percent can only be rented out to households with a maximum income of €41.065,-. Furthermore, a minimum of 80 percent of the before mentioned 90 percent, should be rented out to households with a maximum income of €36.798,- (Ministry of the Interior and Kingdom Relations, November 2017). Adding to these regulations, SHCs are obliged to provide 95 percent of households, who are eligible for rent allowance, housing at a maximum rent of €597,30. These households have a maximum income varying between €22.375,- and €30.400,-, depending on the composition of the household (Ministry of the Interior and Kingdom Relations, November 2017). And while an SHC can develop and provide housing at a rent over €710,68, they can only do so under strict regulations and when commercial parties have shown no interest in developing said housing. Whether or not commercial parties show this interest is tested by the municipalities in which the SHC is active (Rijksoverheid, n.d.).

This indicates a clear difference between private organisations who may deliberately choose to offer products or services at a lower price and SHCs, who are obliged by law to offer a majority of their services at a lower price. Thus, since the way SHCs operate is not directly comparable to the way in which other private organisations operate, the current body of SCC literature may not be applicable to the Dutch social housing sector. While much research on SCC is done in the context of private organisations (without a distinct societal role), there appears to be a lack of theory building in the context of SCC with a clear social goal (Soosay and Hyland, 2015; Ralston, Richey and Grawe, 2017). Public-Private-Partnership [PPP] literature may shed some more light on the impact of regulations on the collaboration between SHC and their partners (Pongsiri, 2002). However, this body of literature focusses solely on governmental organisations and private organisations. Since SHCs are in fact private organisations, though subject to numerous regulations, PPP literature may also not be applicable. This need for more specific insights into the social housing sector leads to the following research goal.

1.2 Research goal

Taking the above mentioned characteristics of the Dutch social housing sector into account, additional research on supply chain collaboration in the social housing sector specifically, and on what factors

influence the success of said collaborations, is expected to provide more nuances in the existing body of SCC literature, which will be of practical use for the Dutch social housing sector.

Therefore, the goal of this research is to gain insights in what are crucial factors for the success of chain collaboration in the Dutch social housing sector, in order to provide practical recommendations to the Dutch social housing sector on how to best engage in chain collaborations.

1.3 Research question

In order to achieve the set research goal, the following research question is posed:

Which factors are crucial in making chain collaborations in the social housing sector successful?

By means of the following sub questions, the main research question will be answered:

1) *How is the level of successfulness of chain collaboration in SHCs determined?*
2) *What are similarities in cases that show, according to the social housing sector, successful chain collaboration in SHCs?*
3) *What are, according to professionals in the social housing sector, crucial success factors in chain collaboration?*

1.4 Theoretical and practical relevance

As mentioned in paragraph 1.1, there seems to be a lack of theoretical consensus on what successful supply chain collaboration [SCC] entails and how chain collaborations should come about in order to become successful. Discussion has risen on the scope of SCC, what factors could lead to successful SCC and the application of current SCC literature. With this thesis, an attempt will be made to provide some of the necessary insights required to close this knowledge gap, specifically in relation to the Dutch social housing sector.

By means of this research more insights will be generated specifically on the mechanisms that are at play in the social housing sector and to what extent these specific mechanisms play a role in SCC. As elaborated on in paragraph 1.1, the rules and regulations that SHCs are subject to heavily impact the way SHCs can engage in collaboration, as well as the way in which they offer their services. These factors are believed to impact the chain collaborations that SHCs engage in, in such a way that current SCC literature may not be fully applicable. Moreover, while the goal of SHCs may be to increase efficiency (a goal also frequently mentioned in current SCC literature), the majority of SCC literature indicates increased efficiency as a means to achieve competitive advantage in a highly competitive marketplace (Soosay and Hyland, 2015; Ralston et al., 2017). Since this context is not applicable to the Dutch social housing sector, transferability of the current body of SCC literature may be diminished. This calls for additional insights specifically into SCC in the social housing sector.

Furthermore, given the role of SHCs, this research will also provide more insights into the role of the customer in these types of collaborative arrangements. Most research on SCC focusses on

collaboration between organisations as a dyadic relation (Soosay and Hyland, 2015). Soosay and Hyland therefore indicate a need for more SCC research in which the scope includes not only the collaborating organisations, but also the customers.

On a more practical level, this research will provide the necessary insights to SHCs on how to organise (successful) chain collaboration, as a means to provide more affordable, sustainable housing to those who cannot afford other types of housing. With the ever growing demand for affordable housing and an increasing interest in durable and sustainable housing development, this research is not only theoretically relevant, but also practically and socially relevant. Umbrella organisation Aedes indicates poor collaboration as one of the main factors contributing to the amount of unnecessary building expenses (Aedes, June 2013). The average level of these unnecessary expenses lay at 11 percent of total costs in 2016 (Aedes, January 2017). The results of this research can be used as a guide for those SHCs that also wish to engage in SCC successfully, increasing the extent to which they can fulfil their societal function while at the same time decreasing the level of unnecessary costs related to the development of housing.

1.5 Research design

In order to achieve the research goal, a qualitative study will be conducted, which takes shape in the form of a multiple case study. By performing a multiple case study, the underlying mechanisms involved in chain collaboration in the social housing sector are believed to be discovered. In total, 9 professionals employed by SHCs that have proven to be successful in chain collaboration, were interviewed. Subsequently, an additional two interviews were held with two of these respondents. In addition to the interviews, a document study was done on the most recent annual reports and inspection reports of the SHCs. Subsequently, by means of template analysis, the data gathered was analysed.

1.6 Reading guide

In the following chapter, an elaboration on relevant supply chain literature will be provided. In paragraph 2.1 a historical overview of said literature is given. In paragraph 2.2.1, paragraph 2.2.2 and paragraph 2.2.3 more insights will be given into how supply chain collaboration should be formed, what critical success factors are distinguished in literature, and what actual success in supply chain collaboration entails. Chapter 2 is concluded with a conceptual model. In chapter 3, an elaboration is given on the research methods used, providing more insights in the research process and the considerations made. In chapter 4, an analysis of the gathered data will be given, by means of which the sub questions as posed in paragraph 1.3 are answered. Chapter 5 displays the conclusions of this research, answering the main research question. Subsequently, in chapter 6, both theory and methodology applied to this research are reflected on.

2. Theoretical framework

In this chapter, firstly a more general overview of SCM literature will be given. Subsequently, a description of how SCCs are formed according to different scholars will be provided in paragraph 2.2.1. Then, the key factors of successful SCC will be elaborated on in paragraph 2.2.2, followed by a description of what successful SCC entails in paragraph 2.2.3. This chapter is concluded by a conceptual model in which the presumed relations between the relevant concepts are shown.

2.1 Supply Chain Management

SCM has been elaborated on explicitly since 1982 (Ellram and Cooper, 2014), however, despite the substantial body of research on SCM, there seems to be little consensus about the definition and boundaries of this topic (LeMay, Helms, Kimball and McMahon, 2017). While the roots of SCM literature lie mostly in theories on vertical integration in the supply chain (e.g. Laffer, 1969), SCM evolved from this rather narrow perspective to perspectives in which logistics problems weren't seen as mere logistics problems, but as strategic problems (Houlihan, 1985; Houlihan, 1988) that should be dealt with in a new way: by means of supply chain management. These initial elaborations on SCM were mainly focussed on logistics, transportation and distribution of goods, leading to a broad concept, which was consequently difficult to precisely describe.

The initial definitions of SCM came about in the late 1980's and early 1990's, wherein SCM was defined as "*an integrative philosophy to manage the total flow of a distribution channel from the supplier to the ultimate user*" (Cooper and Ellram, 1993, p. 13). Other definitions by e.g. Jones and Riley (1985) and Cooper, Ellram, Gardner and Hanks (1997) contain similar aspects of flows of goods and services from suppliers to end users. Cooper et al. (1997, p. 68) add to this that SCM "*in its purest form focuses on the total supply chain system*", including managing the effects different players in the supply chain have on each other.

Still, authors mostly defined SCM as the management of the supply chain, proceeding to define what they deem to be the supply chain. Such definitions focussed on networks or sets of firms, and the alignment of said firms in order to move products or goods along towards the end users (e.g. La Londe & Masters (1994); Lamber, Stock & Ellram (1998)). Despite rather similar views on what is a supply chain, the lack of consensus on what then is supply chain management remained (Mentzer, DeWitt, Keebler, Min, Nix, Smith and Zacharia, 2001).

More recent descriptions of SCM involve an emphasis on elements of integration of business processes and flow of information and finances (Lambert, 2008 and Coyle et al., 2013 in LeMay et al., 2017) as opposed to the sole emphasis on the flow of materials. Lambert (2008) defines SCM as "*the integration of key business processes from end user through original suppliers that provides products, services and information that add value for customers and other stakeholders*". Coyle et al. (2013) add to this "*the art and science of integrating the flows of products, information and financials*". Monczka,

Handfield, Giunipero and Patterson (2009) provide a broader definition, stating that SCM involves "*proactively managing the two-way movement and coordination of goods, services, information and funds (i.e. the various flows) from raw material through end use. [It] requires the coordination of activities and flows that extend across boundaries*" (p. 10).

Given the myriad of definitions present in relevant literature, for the comprehensibility of this research, the following working definition of SCM will be used:

"*Actively steering the flows of products, information and financials from initial supplier to end user, in a way that adds value to the stakeholders*".

This definition is adapted from previous definitions by Lambert (2008), Coyle et al. (2013), Monczka et al. (2009) and Cooper & Ellram (1993).

In the following paragraph, the distinct nature of chain collaboration, the formation of chain collaboration and critical success factors for chain collaboration will be elaborated on.

2.2 Supply Chain Collaboration

Supply chain collaboration has quite a distinct character: being far more tightly knit than arm's length relationships, but less tightly knit than for example joint ventures, SCC takes up a unique position in the 'landscape' of collaborative forms. Moreover, SCC involves collaboration between parties that function in a fixed chain, as opposed to for example joint ventures and other strategic alliances, where the constellations of parties involved are much less predefined. Fawcett, Magnan and McCarter (2008, p. 93) define SCC as "*the ability to work across organisational boundaries to build and manage unique value-added processes to better meet customer needs*". In the next three sub paragraphs an elaboration will be provided of both the formation of SCC, the success factors of SCC, as well as what determines the successfulness of SCC.

2.2.1 Formation of supply chain collaboration

When analysing theory on collaboration between organisations, whether that collaboration is as tight-knit as a strategic alliance or more loose like SCC, there appears to be one universal key aspect that should be ensured in the formation stage of collaboration. Ensuring trust amongst partners is seen as the critical factor when establishing collaboration, as this is, for example, seen as the basis for creating commitment to the collaboration (e.g. Kwon and Suh, 2004; Child, Faulkner and Tallman, 2005; Jeng and Mortel, 2010; Fawcett, Fawcett, Brockhaus and Knemeyer, 2016).

Fawcett et al. (2008) mention three stages through which SCC can be implemented. Creating commitment, both on a managerial level as well as on the operational level, and creating a detailed understanding of the supply chain processes comprises the first stage. Fawcett et al. (2008) see this stage as "*the prerequisite to establishing the willingness and ability to collaborate effectively*" (p. 101).

Assuming that SCC demands organisational change, Fawcett et al. (2008) then underline the importance of removing resistance to SCC. When commitment to collaboration is created, Fawcett et

al. (2008) then state that managers should "*support a culture of collaboration*" (p. 101). In order to do this, they need to mitigate certain dynamics that hinder collaboration. For example, by implementing the proper information sharing systems, communication-related barriers that hinder collaboration can be removed. When removing such barriers, Fawcett et al. (2008) emphasize the importance of 'creating momentum', i.e. making sure the organisational change persist. When such momentum is not created, Fawcett et al. (2008) argue, organisational inertia can become stronger, frustrating the change process. Thus, by dealing with collaboration-impeding barriers in an effective and efficient way, 'solidifying' or 'refreezing' of the organisation, i.e. organisational change coming to a halt, can be prevented.

In order to remain open to collaboration, organisations must move through cycles of continuous improvement. This is the third and last stage Fawcett et al. (2008) mention. Continuous improvement of "*collaboration capability*" (p. 104) is also seen as a way to regain organisational stability after a phase of far-reaching organisational change.

When studying these three stages, it becomes clear that Fawcett et al. (2008) constructed their three-stages model based on the force field approach by Lewin (1951), assuming that the 'road' to chain collaboration consists of an unfreeze stage, a change stage and a refreeze stage. Note that these three stages are meant to prepare an organisation for SCC. Only after the third stage, collaboration partners are to be sought.

When selecting partners, Child et al. (2005) mention two factors that should be taken into consideration when forming an alliance: namely, strategic fit and cultural fit between alliance partners. Since the strategic fit Child et al. (2005) describe is mostly related to collectively achieving competitive advantage by supplementing the partner's resources, this factor is not necessarily applicable to this research. SHCs do not necessarily compete with one another, and while building firms may want to achieve a stronger competitive position through chain collaboration, the collective goal is not to achieve a competitive advantage. The cultural fit however does provide some more insights into the partner selection process. Child et al. (2005) emphasize that cultural fit does not entail perfect similarity of organisational culture. Rather, it is the ability of the collaborating firms to accept, respect and work with cultural differences.

Cummings and Holmberg (2012), argue that alliance partner selection should be done based on a number of critical success factors. They state that collaborations between organisations work best when task-related critical factors ("*the specific tasks that an alliance would be formed to accomplish*" (p. 142)) and partnering-related critical factors ("*the most important relational aspects of firms in any form of alliance*" (p. 147)) of the organisations involved are highly congruent. Keeping these critical factors in mind when selecting the right partner will enable more successful alliances, Cummings and Homberg (2012) state.

Kampstra, Ashayeri and Gattorna (2006) point towards power-balance and longevity of the collaboration as factors to keep in mind when selecting collaboration partners. While a complete equality of power in chain collaboration would be ideal, Kampstra et al. (2006) don't deem this to be realistic.

However, to counter opportunistic behaviour of either one of the collaboration partners, they advocate a clear division of roles and positions that merit different levels of power. Deciding which member of the chain collaboration is "*collaboration leader*", which is the "*collaboration coordinator*" and which are the "*remaining collaboration members*" up front, will enable collaboration partners to take appropriate measures against opportunistic behaviour and ensure the conservative use of power (pp. 316-317). Furthermore, Kampstra et al. (2006) argue that the longevity of the chain collaboration determines which partner to choose. Short term collaborations require much less far-reaching involvement of partners than long-term or ongoing chain collaboration. The latter requires ongoing alignment between partners through dialogue, a constant balancing of different priorities and innovativeness and creativity to avoid limitedness of the collaborative activities in the SCC (p. 317).

Interesting in the above mentioned theoretical contributions, is that there seems to be a divide between more operational aspects of partner-selection and the more relational aspects of partner-selection. The cultural fit, partner-related critical factors and the power balance between partners all have to do with the relation between partners, while the strategic fit, task-related critical factors and the longevity of the collaboration seem more related to operational aspects of chain collaboration.

Once readiness for SCC has been created within the organization, and partners have been selected, the different elements that should comprise SCC, according to Simatupang and Sridharan

(2008), can be put into place by the collaboration partners collectively. While the authors do not seem to provide a description of earlier stages of SCC formation, they do provide a comprehensive overview of what elements SCC should consist of. The following elements should be defined and shared by the chain collaboration partners collectively:

1) *A Collaborative Performance System;*
2) *Information sharing;*
3) *Decision synchronization;*
4) *Incentive alignment;*
5) *Innovative supply chain processes*

(Simatupang and Sridharan, 2008, p. 405)

Simatupang and Sridharan (2008) argue that defining and sharing these elements will improve commitment and overall enthusiasm of chain collaboration members.

When combining the before mentioned theories, a 'roadmap to SCC' can be constructed. This combines the efforts of Fawcett et al. (2008), Child et al. (2005), Cummings and Holmberg (2012), Kampstra et al. (2006) and Simatupang and Sridharan (2008) into a model of SCC formation, consisting of a preparation phase, followed by a partnering phase and a construction phase (Figure 1).

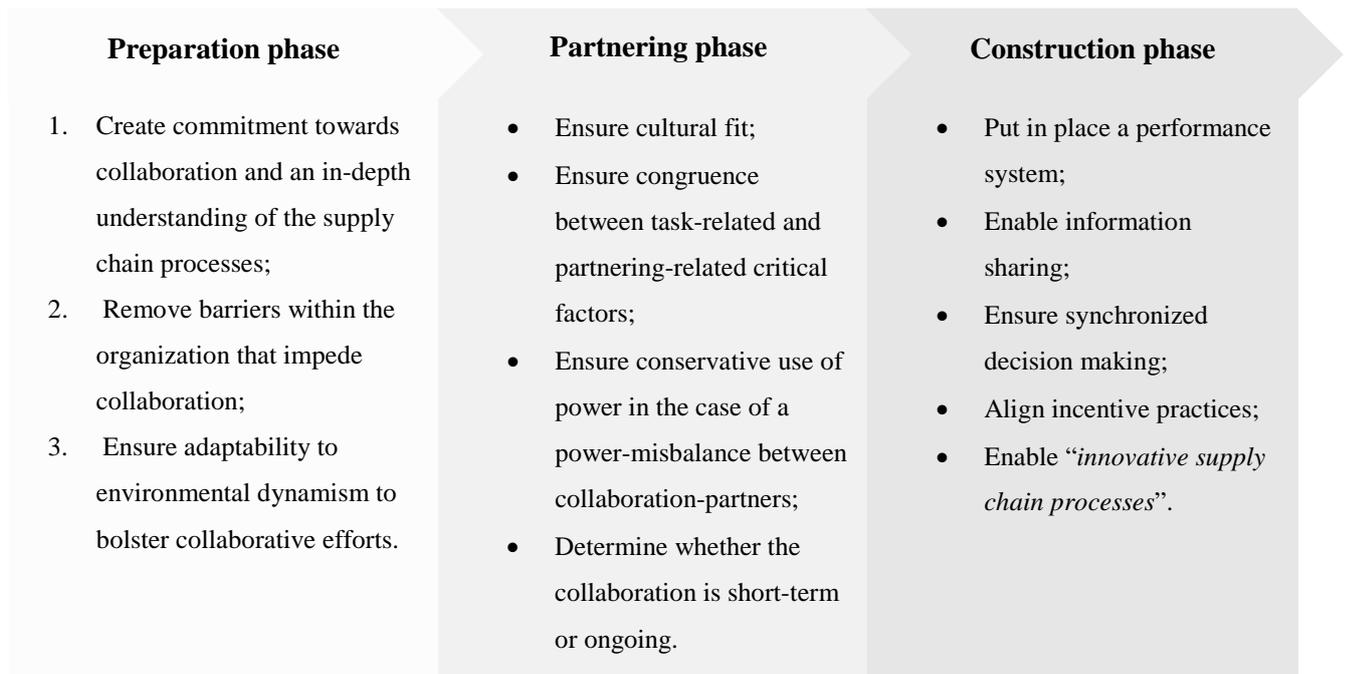| Preparation phase	Partnering phase	Construction phase
1. Create commitment towards collaboration and an in-depth understanding of the supply chain processes; 2. Remove barriers within the organization that impede collaboration; 3. Ensure adaptability to environmental dynamism to bolster collaborative efforts.	• Ensure cultural fit; • Ensure congruence between task-related and partnering-related critical factors; • Ensure conservative use of power in the case of a power-misbalance between collaboration-partners; • Determine whether the collaboration is short-term or ongoing.	• Put in place a performance system; • Enable information sharing; • Ensure synchronized decision making; • Align incentive practices; • Enable "*innovative supply chain processes*".

Figure 1. Stages of SCC formation. (Adapted from Fawcett et al. (2008, pp. 101-104), Child et al. (2005), Cummings and Holmberg (2012, pp. 142 & 147), Kampstra et al. (2006, p. 316) and Simatupang and Sridharan (2008, p. 405).)

It appears that specific theory on how supply chain collaboration should be formed, from the initial intention to form a chain collaboraiton up untill the collaborative efforts start, is not available as such. As this paragraph illustrates, by combining different academic efforts on chain collaboration, more insights could be generated on what steps should be taken to form SCC.

In conclusion, attention should be given to the following aspects of formation of chain collaboration:

1) Preparation of the chain collaboration - by creating readiness within the organisation and putting in place mechanisms that facilitate collaboration (Fawcett et al., 2008, pp. 101-104);

2) The selection of collaboration partners - ensuring congruence between partners when it comes to culture (Child et al., 2005), tasks and relational factors (Cummings and Holmberg, 2012, pp. 142 & 147), and power and longevity of the collaboration (Kampstra et al., 2006, p. 316);

3) The construction of the chain collaboration – by putting in place mechanisms to ensure performance, information sharing, synchronized decision making, aligned incentives and innovative supply chain processes (Simatupang and Sridharan, 2008, p. 405).

2.2.2 Success factors of supply chain collaboration

While quite some research has been done on the effects of SCC on firm performance and the barriers to good SCC, research on the actual success factors of SCC seems to be more sparse (Ralston, Richey and Grawe, 2017). By combining theoretical contributions on success factors of SCC specifically and success factors of collaboration in general, an overview will be made of the success factors of SCC, as described in relevant literature.

Zacharia, Nix and Lusch (2011) identify collaborative process competence (competences focussed on "*managing the collaboration process, from partner and participant selection, to facilitation of knowledge exchange and synthesis, to monitoring and adjusting the process for timely and successful completion*", p. 594) and collaborative engagement (the level of "*a firm's involvement in a collaboration effort*", p. 593) as positively affecting the outcomes of collaborative efforts. Zacharia et al. (2011) moreover identify the perceived interdependence of collaboration partners as positively related to collaborative engagement. Thus, collaborative process competence and collaborative engagement can be seen as direct success factors for chain collaboration, with perceived interdependence contributing to this. This argumentation by Zacharia et al. (2011) is also underlined by the theoretical efforts of Einbinder, Robertson, Garcia, Vuckovic and Patti (2000) on collaboration in general.

They mention not only an incentive and the willingness to collaborate, but also the ability and the capacity to collaborate as crucial factors for successful collaboration. Especially when it comes to the ability to collaborate, a certain common level of knowledge and skills is needed to do the work that is related to the collaboration, on top of the so-to-say 'day-to-day' activities (Einbinder et al., 2000). While training and development activities should be put in place to enable participants to gain the desired level of knowledge and skills, participants should also be facilitated to collaborate by means of organisational mechanisms, Einbinder et al. (2000) argue. Whether organisational mechanisms are in place that facilitate collaboration, e.g. a "*supra-organisational forum in which […] collaborating organisations can discuss […] and make decisions regarding necessary actions*" (Einbinder et al., 2000, p. 126), determines the collaborative capacity of organisations.

The paper by Ramanathan and Gunasekaran (2014) focusses more on collaborative actions and their relation to the success of chain collaboration. They identify collaborative planning, collaborative decision making and collaborative execution as positively related to the success of a collaboration (p. 257). Furthermore, they argue that collaborative planning and collaborative decision making lead to collaborative execution. The importance of collaborative planning (amongst others) is also underlined by Johnson, Zorn, Kay Yung Tam, LaMontagne and Johnson (2003). In their analysis of stakeholders' views of success factors regarding interagency collaboration, they mention six success factors (besides extensive collaborative planning). Commitment (defined by Johnson et al. (2003, p. 205) as "*the sharing of goals and visions and the establishment of a high level of trust and mutual responsibility for goals*") is seen as the foundation for successful interagency collaboration, as well as open communication. Moreover, Johnson et al. (2003, p. 206-207) mention strong involvement and commitment of senior management, the availability of enough resources for collaboration, mutual understanding of cultural differences between collaborating agencies and minimizing issues related to negative outlooks on collaboration and change as crucial success factors for collaboration.

Barratt (2004) makes a distinction between so called 'cultural elements' and 'strategic elements' in relation to SCC. It is argued that both the cultural elements as well as the strategic elements are essential for successful SCC. The strategic elements consist of committing resources to the

collaboration, ensuring intra-organisational support (both from senior managers and from others in the organisation), ensuring organisational focus on the collaboration and making sure technology facilitates, rather than overpowers, effective communication between partners (Barratt, 2004, pp. 38 -39). The cultural elements are somewhat intangible. The main cultural element mentioned by Barratt (2004, pp. 35 - 37) is the collaborative culture, which is supported by five underlying factors. The first of these factors is mutuality, which should be ensured in terms of "*benefits, […] risk-sharing and respect for the other […] partner*" (Barratt, 2004, p. 36). Secondly, information sharing between partners, in which the information shared should be transparent and of good quality, is deemed fundamental for successful SCC. Related to the sharing of information, is the third factor: enabling communication between organisations in such a way that a "*shared understanding*" can be created (Barratt, 2004, p. 37). The fourth factor, openness and honesty, is deemed necessary for successful collaboration as it is seen as a means to "*develop trust, respect and commitment*" (Barratt, 2004, p. 37). Trust, the fifth factor, is needed to support a collaborative culture as it, according to the author, contributes to stability of organisations, as well as "*effective co-ordination of the supply-chain*" (Barratt, 2004, p. 36).

Related to the concept of 'trust', Kwon and Suh (2004) provide an overview of which factors affect the level of trust and subsequently commitment between partners in a supply chain relationship. As trust appears to be a critical success factor for chain collaboration, the paper by Kwon and Suh (2004) could provide some useful insights into what factors should be taken into account when aiming for high levels of trust and commitment in chain collaborations. Kwon and Suh (2004) mention the partners' reputation, the partners' asset specificity, information sharing between partners and satisfaction caused by the collaborative relationship as factors that positively influence the level of trust between partners (p. 10). Behavioural uncertainty (the level to which the partners decisions cannot be predicted) of the collaboration partner, as well as perceived potential conflict with the partner, are, on the other hand, identified as a strong negative influence on the level of trust between collaboration partners (Kwon and Suh, 2004, p. 10).

In addition to supply chain theory, Wei-Skillern and Silver (2013) apply network theory to inter-organisational collaboration. They mention four principles that can be seen as success factors for collaboration. The first principle states that organisations should focus on a common mission, rather than their own organisational growth (Wei-Skillern and Silver, 2013, p. 123). The second principle has also been mentioned by several other authors and underlines that collaborations or partnerships should be built on trust. Rather than managing the collaborative efforts through strict control, Wei-Skillern and Silver (2013) advocate an approach where trust is put centre-stage. The third and fourth principle mentioned, relate to enabling others in the network to be successful (principle 3) and to focussing on the whole and the total outcomes of the collaboration, rather than focussing on just one partner (principle 4) (2013, pp. 125-126).

In conclusion, according to relevant literature, there are numerous, both tangible and intangible, factors related to the successfulness of chain collaborations. Many of these factors can be related to the

collaboration formation steps mentioned in paragraph 2.2.1 (figure 1). Furthermore, collaborative actions and in-collaboration behaviours appear to have great impact on the success of SCC. In the table below, an overview is presented of the success factors for SCC, as described in relevant literature.

Table 1.

Success factors related to SCC

Success factor	Mentioned by:
Trust	Johnson et al. (2003), (Barratt, 2004), Kwon and Suh (2004), Wei-Skillern and Silver (2013)
Commitment/ engagement	Zacharia et al. (2011), Johnson et al. (2003), Barratt (2004) , Kwon and Suh (2004)
Information sharing	Einbinder et al. (2000), Johnson et al. (2003), Zacharia et al. (2011)
Open communication	Johnson et al. (2003), Barratt (2004)
Involvement of senior management	Johnson et al. (2003), Barratt (2004)
Common goal/mission	Johnson et al. (2003), Wei-Skillern and Silver (2013)
Collaborative action	Ramanathan and Gunasekaran (2014), Johnson et al. (2003)
Willingness to collaborate	Einbinder et al. (2000), Johnson et al. (2003)
Incentive to collaborate	Einbinder et al. (2000), Johnson et al. (2003)
Understanding of/respecting cultural differences	Johnson et al. (2003), Barratt (2004)

2.2.3 Determining successfulness of chain collaboration

While there seems to be a lacuna in supply chain theory concerning what actually is successful chain collaboration, with authors mostly solely describing how to attain successful collaboration, one could argue that there appear to be two main components making up the successfulness of chain collaboration. When looking at the factors contributing to the successfulness of SCC, there seems to be a distinction between 'tangible' and 'intangible' factors. Barratt (2004) describes that both a strategic or process-related component and a cultural component make up the collaboration. This distinction between hard/strategic and soft/cultural may also be applicable when determining the successfulness of SCC.

In an attempt to further substantiate what successful chain collaboration is, drawing from different fields of theory, such as project management theory, in this paragraph an attempt will be made to describe the before mentioned components in more detail.

When it comes to tangible success of SCC, project management- related factors come to mind, such as time, costs and quality, the so-called 'iron triangle' (Radujkovic and Sjekavica, 2017). These tangible factors can be measured for successfulness of projects. Adding to these factors, relating more to 'strategic success', Heringa, Horlings, van der Zouwen, van den Besselaar and van Vierssen (2014) also mention the prevalence of innovation as a desirable tangible outcome of collaboration. Moreover,

as argued by Chen (2008), organisations that provide a social service, such as SHCs, should pay close attention to the extent to which their social goals are met.

While the tangible measures for (project-)success play an import role, Phillips, Bothell and Sneak (2002) and Radujkovic and Sjekavica (2017) both underline the importance of paying close attention to intangible success measures. Heringa et al. (2014) mention shared knowledge ("*any form of knowledge exchange*" (p. 703)), support for ideas (as expressed by the partners in the collaboration), and joint programmes ("*collaborations at organisational level*" (p. 703)) as intangible outcomes of collaboration. Chen (2008) adds to these intangible elements of collaboration-success the increase of 'social capital' or good will, an increase in shared meaning on the subject or problem that is being worked on by the partners, whether or not past collaborations lead to new collaborations between partners and whether or not the power balance between partners evens out over time during the collaboration.

Important to note here is that the tangible measures as provides by Radujkovic and Sjekavica (2017) appear to concern solely the project level, while the intangible measures mentioned by Heringa et al. (2014) and Chen (2008) appear to overarch this level and relate more to the overall collaboration. These latter elements are thus applicable to both the project level and to a (perhaps more lasting) collaboration level.

2.3 Conceptual model

By combining the before mentioned theories, the following conceptual model of successfulness of SCC could be drafted.
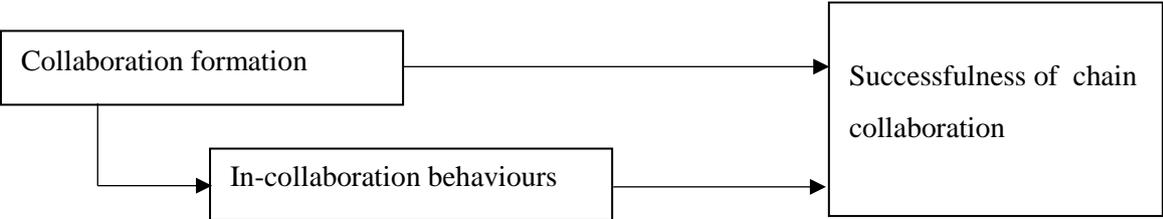
Figure 2. Conceptual model for successfulness of chain collaboration

In the conceptual model, it is assumed that the collaboration formation impacts the successfulness of chain collaboration, since the formation of collaboration lays the foundations for further collaborative efforts. When the foundation is laid down in such a way that readiness to collaborate is generated and organisational mechanisms facilitate collaborations, successfulness of chain collaboration is assumed to be more likely. Conversely, when the formation of collaboration takes place in a way that does not foster a solid foundation for the collaborative efforts, successfulness of chain collaboration is assumed to be less likely.

In-collaboration behaviours are also assumed to impact the successfulness of chain collaboration. As mentioned in paragraph 2.2.2., the way collaborative partners conduct themselves

while collaborating, impacts not only the levels of trust in the collaboration, but also the level of commitment, or collaborative engagement of the partners, as well as the ways in which the work is executed. As was also mentioned in paragraph 2.2.2., the way in which the collaboration is formed, also impacts the way collaborative partners behave. Thus, both collaboration formation and in-collaboration behaviours impact the successfulness of chain collaboration, but collaboration formation also impacts the in-collaboration behaviours displayed by the collaborative partners.

As can be seen when comparing paragraph 2.2.2 and 2.2.3, it appears that the outcomes of successful collaboration, as identified in literature, are to some extent quite similar to the success factors mentioned.

3. Methodology

In this chapter a description of the used research design will be given in paragraph 3.1, followed by a case description in paragraph 3.2 and a substantiation of the case selection (paragraph 3.2.1). Then, the used methods of data collection will be addressed in paragraph 3.3, followed by a description of the methods of data-analysis in paragraph 3.4. This chapter concludes with a reflection on research ethics (paragraph 3.5).

3.1 Research design

As mentioned in chapter 1, the goal of this research is to gain insights in crucial factors in success of chain collaboration in the Dutch social housing sector. While the theory mentioned in the previous chapter provides a preliminary overview of the concepts involved in this research, it has become clear that most literature on SCC involves manufacturing or logistics companies, which differ quite a bit from SHCs. Not only do SHCs not have the intention to gain competitive advantages, they are also subject to rigorous scrutinising by different governmental bodies. As a result, one cannot assume that previous theoretical efforts on SCC are directly applicable to SCC in SHCs. Since existing theory does not seem to provide enough support for the specific context researched in this report, qualitative research is most suited (Ang, 2014).

While one cannot assume that the before mentioned theory is applicable to the context of this research, whether or not the concepts mentioned in the conceptual model are applicable, will be explored. By using existing theory as a basis, a deductive approach is used. By evaluating the factors that lead to successful chain collaborations and matching these to the factors provided by existing theory, a contribution to said theory will be made.

In doing so, a multiple comparative case study will be executed, in which five SHCs are selected. As was shown in chapter 2, SCC has been described as having roughly two sides: a social, intangible side, and a strategic, tangible side. Especially when it comes to researching this social, intangible side, case studies are deemed appropriate. Deriving from chapter 2.2.2 and 2.2.3, it has become clear that collaboration between organisations is made up of a myriad of (social) mechanisms that are best captured by means of performing a case study (Cassell and Symon, 2004). As Cassell and Symon (2004, p. 325) state, case studies are especially useful when describing the "*flow of […] activity*" in an organisation. Moreover, as SCC appears to be a combination between social and strategic aspects, deeper insights are needed than one would obtain via, for example, surveys.

By performing a case study, the concepts of chain collaboration and the possibly related success factors can be examined in their natural context (Boeije, 2012). This way, the potential unique features of chain collaboration in the social housing sector can be uncovered.

3.2 Case description

As a result of increasing demand for affordable housing, combined with the need for sustainability and the opportunities sustainability offers to achieve more affordable housing, SHCs are increasingly encouraged and motivated to engage in sustainable chain collaborations with building firms and sub-contractors.

Given the current housing climate, as described above, this research will focus on the Dutch social housing sector, and the chain collaborations they engage in with building firms and subcontractors. Dutch SHCs do also engage in (chain) collaborations with all sorts of partners, such as healthcare organisations, and other social partners. However, as chain collaboration with building firms and subcontractors is seen as a means to achieve more, and especially more affordable and sustainable housing, this research focusses solely on those collaborations with building firms and subcontractors. While some SHCs engage in long-term collaborations with their partners, the actual collaboration itself occurs mostly on a project-basis. Therefore, these collaborations will be studied on a project level.

3.2.1. Case selection

The current research involves a multiple case study, in which successful and less successful projects in which chain collaboration was used, are compared in order to attain insights into what factors are crucial for successful chain collaboration in SHCs.

The units of observation are employees of SHCs that have either been awarded for their efforts in the field of chain collaboration, or SHCs that explicitly voice their commitment towards forming chain collaborations with building firms. The latter have made this commitment clear by stating it in their annual reports, strategic goals and/or other publications through which they can be held accountable. The SHCs that were selected based on being awarded for their efforts have either won the Nyenrode Supply Chain Awards or have been a finalist (i.e. top three contender) for winning the Nyenrode Supply Chain Awards. These Awards are an initiative of the Nyenrode Business University, Platform Ketensamenwerking Zuid and Duurzaam Gebouwd, and aim to promote chain collaboration and highlight outstanding performances in the field of chain collaboration (Duurzaam Gebouwd, n.d.).

The nominees for this award are scored on performance of building projects in terms of time and money used, and the quality of the final product, and are scored on the so called *Ketensamenwerkingsindex* [KSI], which indicates whether the organisations in a chain collaboration, have truly embraced the principles of chain collaboration. Furthermore, applicants for the Nyenrode Supply Chain Awards are judged based on a presentation in which attention should be given to sustainability and CSR, strategic vision and leadership, and entrepreneurship and innovativeness (Duurzaam Gebouwd, n.d.).

Based on the criteria described above, five SHCs were selected, of which four have either won, or were finalists for the Nyenrode Supply Chain Awards, and of which one has indicated a commitment towards working in chain collaborations in recent annual reports as well as finished projects. While it

would certainly be interesting to involve those SHCs that were unsuccessful in chain collaboration, discovering how successful chain collaboration comes about, is much more the focus of this research than discovering the characteristics of SHCs that have been successful in SCC. By applying the logic of replication, as described by Yin (2014), cases were selected that were assumed to show similar results (i.e. literal replication), as opposed to cases that were expected to show contrasting results (i.e. theoretical replication). In this research these predicted similar results would be the critical success factors for chain collaboration. Thus, exemplary cases of chain collaboration success in the social housing sector were chosen as these are assumed to show similar success factors.

While the logic of replication would have been a useful tool to discover the underlying causes for the successfulness of SCC in SHCs, there are also some practical considerations at play. SHCs that have been unsuccessful in chain collaboration are particularly difficult to find, let alone gain access to. SHCs that are successful in chain collaboration post this either in their annual reports or have this shown in their quadrennial inspection reports. On the other hand, when SHCs are not explicitly successful in chain collaboration, there is usually no mention of chain collaboration in either annual reports or inspection reports. This makes it difficult to find those SHCs that are explicitly unsuccessful in chain collaboration, especially given the resources available.

3.2.2. Respondent selection

Within the corporations mentioned in paragraph 3.2.1., employees were selected that have been, through their position in their corporation, actively involved in projects in which the corporation collaborated with partners through chain collaboration, or that are appointed to drive chain collaboration in the organisation. The reason these employees are selected as unit of observation, is that these employees were most involved, and are likely most able to describe the process of collaboration. Within each SHC, employees were selected that hold different positions in the organisation as to gain a more complete image of the chain collaboration projects that took place in each SHC. In table 2, an overview is displayed of which positions the selected respondents fulfil, as well as the size of the SHC they work at, and area in which the SHC operates.

Table 2.

Position and SHC-description of respondents

	SHC size category	**Working area**	**Position of respondent**
A	10.000 – 25.000 rental units	Province of Brabant	Manager Real Estate
B	> 25.000 rental units	Provinces of North Holland, South Holland, Utrecht, Flevoland and Gelderland	Project Manager
			Technical Project Leader

Table 2 (continued)

Position and SHC-description of respondents

C	> 25.000 rental units	Provinces of Limburg and Brabant	Program Manager Chain Collaboration
			Project Leader Construction and Restructuring
			Project Leader Chain Collaboration (non-planned maintenance)
D	5.001 – 10.000 rental units	Municipality of Nijmegen and the Betuwe region	Organisation Strategist
E	10.000 – 25.000 rental units	Kennemerland region	Senior Purchasing Consultant
			Project Leader

3.3 Methods of data collection

3.3.1 Interviews

The primary method of data collection for this research is performing interviews. In order to "get to the heart of the matter" (p. 133), Tracy (2013) argues that performing interviews is most appropriate when dealing with rather specific, as opposed to more general, subjects. As this research focusses on supply chain collaboration specifically in the Dutch social housing sector, performing interviews is deemed the most appropriate method to gain insights in this phenomenon, as opposed to for example observations. Moreover, as the subject of this research concerns past events, i.e. projects that have been concluded, interviews as opposed to observations are the appropriate method of data collection (Tracy, 2013).

By posing open questions, the respondents were given the opportunity to answer the questions as elaborately as possible, providing as much information as possible. These questions were posed in a semi-structured way, following the narratives of the respondents in a logical way, as to least disrupt the respondents storylines.

In total, 9 semi-structured interviews were held with professionals working in the social housing sector. At this number, saturation in the data was recognized, as the answers given by respondents became predictable in a general sense. Additional interviews, according to Tracy (2013), would provide little to no new insights on the topic of chain collaboration in the social housing sector.

3.3.2 Operationalisation

In this paragraph, the main theoretical concepts related to the successfulness of chain collaboration, i.e. the in-collaboration behaviours and the collaboration formation are further operationalised as to make these more applicable for the interviews and further analysis of the data gathered.

Figure 3.

Operationalization of 'Collaboration formation'.

Collaboration formation	Readiness to collaborate (Fawcett et al., 2008)	Discrepancy between current situation and desired situation Efficacy Motivation
	Partner selection based on partner-related factors (Cummings and Holmberg, 2012)	Partners are of similar size or strength Partners have shared norms and values Partners have similar orientations towards the environment, quality, innovation, customers, costs and employees
	Partners selection based on task-related factors (Cummings and Holmberg, 2012)	Partners have a similar degree of need in terms of skills or resources Partners have complementary resources and/or knowledge
	Alignment of goals	
	Alignment of performance measures	
	Alignment of incentive practices (Simatupang and Sridharan, 2008)	
	Clearly defined roles (Kampstra et al. 2006)	
	Clearly defined authorizations (Kampstra et al. 2006)	

Figure 4.

Operationalization of 'In-collaboration behaviors'.

In-collaboration behaviours	Collaborative engagement (Zacharia et al. (2011)	Level of involvement in the collaboration
	Information sharing (Einbinder et al., 2000; Johnson et al., 2003; Zacharia et al., 2011)	
	Collective planning (Ramanathan and Gunasekaran, 2014)	
	Collective decision making (Ramanathan and Gunasekaran, 2014)	
	Collective execution (Ramanathan and Gunasekaran, 2014)	
	Joint monitoring of progress (Zacharia et al. (2011)	
	Timely adjustment of process (Zacharia et al. (2011)	

Figure 5.

Operationalization of 'SCC success'.

SCC success	Tangible success	Project success	Time (Radujkovic and Sjekavica, 2017)	
			Costs (Radujkovic and Sjekavica, 2017)	
			Quality (Radujkovic and Sjekavica, 2017)	
		Strategic success	Innovation (Heringa et al. 2014)	
			Social goal achievement (Chen, 2008)	% Added housing stock
				Meeting the NEN-norm
				Tenant-satisfaction
	Intangible success		Shared knowledge (Heringa et al. 2014)	
			Mutual support for ideas (Heringa et al. 2014)	
			Joint programmes (Heringa et al. 2014)	
			Social capital (Chen, 2008)	Mutual respect
				Quality of working relations
			Shared meaning (Chen, 2008)	
			Increased power balance (Chen, 2008)	
			Future collaboration (Chen, 2008)	

3.3.3 Document study

While the operationalisation in paragraph 3.3.2 provides a solid, theoretical basis for the interview questions posed in this research, some of the interview questions were based on public documents published by the SHC's, as will be shown in paragraph 3.3.4. The document study done in this research

is mostly done to gain more in-depth insights into the SHC's prior to performing the interviews as well as to provide input for the SHC-related interview questions

The document study is performed on internal documents related to chain collaborations. Annual reports published by SHCs as well as quadrennial inspection reports are the documents that were studied. For SHC A, the annual reports of 2016 and 2017 were studied, as well as the inspection report concerning the years 2011 till 2015. The documents studied for SHC B were the annual reports of 2016 and 2017 and the inspection report concerning the years 2010 till 2013. For SHC C, the annual reports of 2016 and 2017 and the inspection report concerning the years 2012 till 2015 were studied. For SHC D, the annual reports of 2016 and 2017 were studied, as well as the inspection report concerning the years 2011 till 2014. Lastly, for SHC E, the annual reports of 2016 and 2017 were studied, as well as the inspection report concerning the years 2013 till 2016.

By paying close attention to text fragments concerning chain collaboration, regarding either the collaborations themselves, the number of partners, the outlook of the organisation itself on chain collaboration and the financial gains or losses related to the chain collaborations, the interview questions could be drafted with great specificity to each of the SHC's interviewed for this research.

3.3.4 Interview questions

Since it is not yet clear whether or not the theory mentioned in chapter 2 is fully applicable to the research context, the interviews are semi-structured. The interview questions (see also Appendix A) are partly based on the operationalisations as seen in Figure 3, Figure 4 and Figure 5, but will also inquire the unique experiences of interviewees. Furthermore, interview questions that were specifically posed for each SHC individually, were based on public documents (such as annual reports) published by the SHC's, as mentioned in paragraph 3.3.3. By supplementing the knowledge that is assumed in theory with narratives of respondents, the aim is to gain a thorough understanding of the whole process of chain collaboration, from formation to conclusion.

Since the main language in both the social housing corporations as well as of the respondents themselves is Dutch, the interview questions were posed in Dutch as to decrease the chance of misunderstandings or misinterpretations. The subjects of interview questions themselves can be divided into four categories: process of collaboration formation, process of the collaboration itself, organisational structure, and questions regarding the successfulness of collaborations. These categories are based on the three concepts shown in the conceptual model in Figure 2.

In order to be able to discover how successfulness of SCC is determined in SHCs, a number of questions were posed that relate to determining progress and judging end results of chain collaborations. These were posed to gain more insights into how SHCs, but also the professionals working in SHCs, determine the overall success of chain collaborations once these are finished, as well as success during the process of collaboration. Examples of such questions are (see also Appendix A):

"How is the level of success of projects, in which chain collaboration is used, determined in your corporation?"

"What measures are used to determine the performance in projects in which chain collaboration is used?"

Adding to these questions that are more aimed towards tangible success, a number of open questions were posed to discover what social or emotional factors play a role in the successfulness of chain collaborations. These questions were quite broad, as to not steer the respondents into certain directions. As with the questions shown above, the operationalisation as displayed in Figure 5 was not used to fully determine the interview questions, but rather as a guide to grasp some insights into what may be relevant factors in SCC success and to guide the data analysis. Especially since one cannot assume that the factors mentioned in Figure 5 are directly applicable to the social housing sector, broader interview questions were posed to give the respondents the opportunity to elaborate on their own experiences.

Besides the interview questions intended for discovering how successfulness of SCC is determined by SHC-professionals, a number of interview questions were drafted to attain a better understanding of common in-collaboration behaviours and formation processes within SHCs which have shown to have had successful chain collaboration projects. These interview questions are based on the operationalisations of both concepts, as displayed in Figure 3 and Figure 4. Moreover, drawing from the several public documents published by the SHCs, these questions regarded specific projects within each of the SHCs interviewed. Examples of these interview questions are (see also Appendix A):

"How does the process of forming a chain collaboration with partners unfold in Corporation X?"

"Does Corporation X set specific requirements when selecting partners?"

"How did the planning, when working with you partner, take place?"

Adding to these process related questions, some more organisation-oriented questions were posed to assess the overall attitude towards collaboration in the organisation, for example the readiness to collaborate in chain collaborations as well as the commitment to this type of collaboration. Examples of these interview questions are (see also Appendix A):

"Chain collaboration does require a different way of thinking and behaving of employees. How is this change in thinking and behaving handled in this corporation?"

"How do you ensure that employees want to work in this new way?"

When combined, these interview questions are believed to reflect both the conceptual model, as seen in paragraph 2.3, as well as the operationalisations in paragraph 3.3.2, providing means to gain the necessary insights into SCC in the social housing sector. The method of analysis of the outcomes of the interviews will be discussed in the next paragraph, paragraph 3.4.

3.4 Method of data-analysis

In order to prepare the gathered data for analysis, all recordings of the interviews held, were transcribed, contributing moreover to the transparency and controllability of this research (Boeije, 2012). The analysis of the data gathered can be described as iterative, creating a link between both the gathered theory on chain collaboration, and the data gathered through performing interviews (Tracy, 2013).

Since some key-themes could be defined before analysis, while flexibility was required to prevent data from 'slipping through the cracks', the choice was made to use template analysis as a general methodology for analysing the data gathered. As it provides the flexibility needed, facilitating constant iterations and revisiting of the data (King, in Cassell and Symon, 2004), template analysis was chosen over, for example, using open codes, axial codes and selective codes.

Using the qualitative data analysis software Atlas.ti, the analysis of the data started off with an initial template, involving three pre-defined codes: 'behaviours', 'formation', and 'success', based on the conceptual model (paragraph 2.3) and the operationalisation (paragraph 3.3.2). These codes were used to provide some more structure to the data and are defined as the highest-order codes (King, in Cassell and Symon, 2004). Next, the interview questions were used to form the first level of lower-order codes (see also Appendix B for the initial template).

The initial template was kept quite broad, as to not rule out any data in the analysis. During analysis using this initial template, some changes were made. While the more general interview questions provided support for coding the transcripts, they did not seem to describe the coded fragments in enough detail. By means of so-called 'insertion' (King, in Cassell and Symon, 2004), more level-two lower-order codes were added (see Appendix C). These were for the most part both based on the literature mentioned in chapter 2, but also on the data itself.

The final iteration (see Appendix D) was made on the basis of sector-specific characteristics and apparent differences between new build projects and renovations projects. Moreover, specific aspects of the collaboration process that seemed to hinder smooth chain collaboration between SHC and contractor were added to the final template. While these aspects were not directly related to the sub questions posed in chapter 1, there are believed to provide useful insights into what could lead to successful SCC in the social housing sector.

By applying the final template and by then linking theory to the gathered data, the sub questions as posed in paragraph 1.3 could be answered, as seen in chapter 4.

3.5 Research ethics

Since this research could potentially uncover sensitive data concerning the organisations involved, respondents were given the choice to have their interviews anonymized. The respondents were given the choice to either use their and their organisations own name, or to use pseudonyms, omitting any details of the organisations involved that could be used to identify said organisations.

Prior to performing the actual interviews, the respondents were informed that the interview would be recorded with a voice recorder, giving the respondents the opportunity to object. Furthermore, each of the respondents received the transcripts of their interviews, with the explicit intention for them to check the transcripts, making sure the respondents would agree to these prior to the data analysis. If respondents did not (fully) agree with the transcripts, they were given the opportunity to indicate this and make changes to the text, either omitting certain fragments or adding notes. In reporting the findings of this research in both chapter 4 and chapter 5, all respondents and the SHC they work for will be anonymized, especially when using quotes.

Besides giving the respondents the opportunity to leave the research at any time they wanted, as well as giving them the opportunity to approve, disapprove or add to the transcripts, they were also well-informed about the goal of this research, as well as the way in which it would be published and whom would be able to access this research report.

Another topic to be addressed is that of data management. While the topic of this research is not controversial in itself, it is nonetheless of the upmost importance to ensure no data was leaked. In order to prevent any data from leaking, all transcripts, voice recordings and draft versions of this report were saved on my personal internal database at the Radboud University Nijmegen. A backup was made on a cloud service requiring a two-step password-protected login procedure. Despite these measures, I am aware that I cannot guarantee one hundred percent security when it comes to the research materials gathered and drafted.

Lastly, reflecting on my personal position as a researcher, I would like to address my activities in the social housing sector. Working as a consultant at a consultancy and training organisation for the social housing sector, I am familiar with the general proceedings in this sector. In order to maintain objectivity, I approached each of the respondents with as little background information as possible, enabling me to see my respondents so-to-say as 'blank canvasses'. By completely separating my role as a researcher from my role as a consultant, treating my work as a researcher as completely unrelated to my work, I ensured my integrity as a researcher. Furthermore, the results of this research shall not be used as 'content' for any activities at my current employer, without consent of my respondents.

4. Analysis

In this chapter, the gathered data is analysed on the basis of the sub questions as mentioned in chapter 1.3. In paragraph 4.1, by means of analysing the relevant data, sub question 1 (*How is the level of successfulness of chain collaboration in SHCs determined?*) is answered. In paragraph 4.2, sub question 2 (*What are similarities in cases that show, according to the social housing sector, successful chain collaboration in SHCs?*) is answered. Lastly, in paragraph 4.3, after analysis of the relevant data, sub question 3 (*What are, according to professionals in the social housing sector, crucial success factors in chain collaboration?*) is answered.

4.1. Determining the success of chain collaboration

While the respondents were all quite clear in what they deemed critical success factors for chain collaboration, this was not so clear for determining the successfulness of said chain collaboration. The responses given varied, indicating success of collaboration both in the tangible sense and in the intangible sense. The tangible indicators of success were those that could be relatively easily measured and quantified. The intangible indicators of success on the other hand were more subjective, indicating positive emotions and feelings resulting from the collaborative efforts which could not be easily measured and monitored. With this mix of tangible and intangible indicators of collaboration success, only few respondents mentioned a consistent measuring and monitoring of these indicators of success.

4.1.1. Tangible success

Respondents did mention the aspects of time, quality and costs, as were also mentioned by Radujkovic and Sjekavica (2017). These concepts of time, quality and costs are used similarly in both theory and practice. The time efficiency for SHCs indicates the lead time of new build and renovation projects, cost efficiency indicates the degree to which the supply chain partners remain within the set budgets and the quality is that of the renovated or newly built homes. Radujkovic and Sjekavica (2017) indicate similar meanings of these concepts, though not specified for the social housing sector.

The Manager Real Estate from SHC A for example, answered the question 'When is a project successful?' with: "*When the goals are met. So, the customer satisfaction, staying within the costs we had in mind, and within the lead time*". (p.c. 06/06/2018). These more 'hard' outcomes are also mentioned by other respondents, for example the Project Leader from SHC E (p.c. 01/06/2018[a]), the Project Leader Construction and Restructuring (p.c. 11/06/2018), the Project Leader Chain Collaboration (non-planned maintenance) (p.c. 01/06/2018[b]) and the Program Manager Chain Collaboration from SHC C (p.c. 28/05/2018). In their answers they did however focus on the customer satisfaction as a part of successful chain collaboration. Several SHCs (SHC B, C and E) measured the level of customer satisfaction was measures by means of surveys during projects as well as after projects were finished, and indicated customer satisfaction on a scale from 1 to 10, with 1 being the lowest and

10 the highest score. SHC A and D determined the level of customer satisfaction based on the amount of complaints received from tenants.

Interesting to note is that only the Manager Real Estate from SHC A explicitly mentioned finances, i.e. staying within the predetermined budgets, as a means to determine success of chain collaboration. While Benavides et al. (2012) mention SCC as a means to increase financial and time efficiency, this does not appear to be a goal in and of itself for the SHCs involved in this research. The Manager Real Estate from SHC A for example did not only mention budgetary considerations as a measure for success. Upon being asked when a project is deemed successful, they stated: "*When the goals are met: the customer satisfaction, within the budget we set out and within the time limit*" (p.c. 06/06/2018). The Senior Purchasing Consultant from SHC E states: "*In social housing corporations, the customer satisfaction is really important*" (p.c. 08/06/2018). The Project Leader from SHC E adds to this: "*Every project is evaluated, during the project and at the end of it. And that starts with the customer.*" (p.c. 01/06/2018[a]). Since respondents repeatedly mentioned the customer satisfaction ratings as an indicator of success, perhaps the cost efficiency and time efficiency gained through SCC is regarded as a means to achieve greater service for the tenants, which would relate to Ramanathan's (2014) statement on how SCC, through increased efficiency, can increase service-levels. Several respondents did mention engaging in chain collaboration as a means to decrease operational costs, deemed necessary due to the decreasing financial means available to SHCs. The Technical Project Leader from SHC B explained: "*We have had a reorganisation here four years ago. In the past we achieved about 10 million in revenue, working with 8 fte. Now, we achieve 20 to 22 million in revenue with 2,5 fte. We are able to establish a lot more with less people. But it* [red. The reorganisation] *did mean we needed to find new ways of collaborating*" (p.c. 29/05/2018). The Project Leader Chain Collaboration (non-planned maintenance) explained similar considerations: "*It* [red. Implementing chain collaboration] *was really a process that happened under pressure. We all agreed that organising maintenance with about 250 suppliers was definitely an area that could greatly increase in efficiency*" (p.c. 01/06/2018[b]). While the respondents did clearly mention an increase in efficiency as an initial goal for engaging in chain collaboration, they did not explicitly mention how this increased efficiency would benefit the tenants. Perhaps the increase in available financial means could be used to prevent rents from rising, or could be used to increase the quality of homes. This was not explicitly mentioned by respondents, but upon studying the 2018 benchmark reports published by Aedes, all SHCs, except for SHC D, showed an increase in affordable housing as a percentage of the overall housing stock over the years 2014, 2015 and 2016. Moreover, all SHCs showed an increase in customer satisfaction ratings while operating expenses decreased (Aedes, March 2018). However, one cannot assume that these changes are a direct result of chain collaboration, since a myriad of other factors could be at play. In order to uncover whether or not increased efficiency due to chain collaboration positively affects service levels, more extensive research would be required.

4.1.2. Intangible success

The findings in paragraph 4.1.1 lead to the following point. Many respondents, while also mentioning the more measurable customer satisfaction, focussed on the more intangible aspects of collaboration as an indicator of chain collaboration success. Focussing more on indicators such as shared knowledge and mutual support, as also mentioned by Heringa et al. (2014) and on aspects of social capital, as mentioned by Chen (2008), the Organisation Strategist from SHC D mentioned: "*We are very aware that meeting the goals and performance indicators is no guarantee for success. In the end, the work is done by and for people. And the interaction between these people determines whether something is successful or not*" (p.c. 13/07/2018).

While the respondents did not mention specific ways to measure whether or not this interaction was as desired, some respondents did mention examples of indicators. The Technical Project Leader of SHC B for example explained: "*It's about how you treat one another. It's not even about wether or not a door is painted perfectly. But when you walk into a flat and the construction workers, because those are the ones who do all the work, are treated to soup, sausage rolls, cake and coffee, you know everything is all right. That to me is the indicator*" (p.c. 29/05/2018). The Project Manager from the same SHC mentioned a similar instance, in which the tenants sent Christmas cards and a 'Thank you'-cake after a renovation project (p.c. 25/05/2018), despite the extensive renovations that needed to be done. The Project Manager attributed these behaviours to a LEAN process and clear communication towards tenants. "*We saw that there was a lot a resistance amongst tenants at first, because they didn't know what was going to happen. So during that project, we put in place very clear communication, making it very LEAN, and we didn't deviate from our planning. […] We visited the tenants, the contractors visited them and we told them very early on what we expected them to do. […] We saw that after a month or so, tenants began to warm up to the renovation, and started to come up with ideas themselves. […] So in the end, you can see it all* [red. clear communication and sticking to the planning] *really helped*" (p.c. 25/05/2018).

While these examples provide some insights into the interaction between the SHC, the contractors, and the tenants, they can also be related to customer satisfaction. In this instance, these stories provide insights into the ways tenants express their level of satisfaction in ways outside of the usual ways in which SHCs and their partners measure customer satisfaction.

One final indicator of intangible success that was mentioned by respondents, was not mentioned as such in the literature studied. The Project Leader Construction and Restructuring from SHC C answered the question 'When is chain collaboration successful?' with: "*When, at the moment of house transfer to the tenant, you are proud of what you delivered*" (p.c. 11/06/2018). They explained: "*The moment the tenant indicates there's something wrong with their home, and you admit 'Oh shit, I didn't think about that', that you solve it together* [red. SHC and contractor(s)] *without wining about who'll have to pay for it. I have to say, with one of our partners I finished four projects in chain collaboration and those went so well, it was really pleasant. We were on a roll, I loved it!*" (p.c. 11/06/2018).

The Technical Project Leader from SHC B answered similarly: "*Being able to do your job to full satisfaction.* […] *Perhaps a somewhat unusual example is that a social event gets arranged for a neighborhood. In a couple of weeks time, there's a big sports event happening in town. One of our partners said, 'We love working with [SHC] so much, we want to give back.' So now they're going to hand out water bottles during the sports event, together with the tenants.*" (p.c. 29/05/2018).

These remarks can be seen as descriptors of job satisfaction, which in and of itself may not be directly linked to collaboration. But when viewing job satisfaction not only as being satisfied with the tasks one has to do, but also as a result of meaningful collaboration, as argued by Izvercian, Potra and Ivascu (2016), the relation with chain collaboration becomes clearer. In that case, job satisfaction can be viewed as an indicator of success of chain collaboration.

4.1.3. Difficulties measuring success

While the statements mentioned in paragraph 4.1.2 may indicate a successful collaboration, they are very difficult to measure. This is also a problem that was indicated by multiple respondents. They know when projects have been successful because of few complaints of tenants and smooth collaboration with their partners, but the instruments to monitor and improve these aspects appear to be lacking. Both the Senior Purchasing Consultant from SHC E (p.c. 08/06/2018) and the Organisation Strategist from SHC D (p.c. 31/05/2018 and p.c. 13/07/2018) mention difficulties measuring success of chain collaboration. The Senior Purchasing Consultant mentioned a difficulty in measuring the decrease in failure costs since the SHC implemented chain collaboration: "*We have monitored the customer satisfaction extensively. And we can show that that has improved. But I have not been able to find out what the attempted reduction in failure costs has brought us*" (p.c. 08/06/2018). They continued by stating: "*That is what's so difficult about chain collaboration: you know everything went well, but you cannot always point out what went well*". Interesting to note here is that while the indicators of success mentioned in paragraph 4.1.1 and 4.1.2 all concern the project level success, the statement above relates more to outcomes of long-term collaboration.

This lack of insights into what went well, or perhaps what went wrong as described by the Senior Purchasing Consultant, may stem from the low level of monitoring SHCs do during projects. The Project Leader Chain Collaboration (non-planned maintenance) from SHC C explained: "*It is difficult in the sense that we assume we only work together with the experts, the top of the bill of contractors in our area. We keep trying to find the right way: 'Do I need to check how it is going, or shouldn't I?'*" (p.c. 01/06/2018[b]), indicating apprehension to monitor progress during projects.

Still, one of the respondents provided some practical advice on how to deal with the intangible aspects of chain collaboration at the project level: "*The moment the planned work is done, the project leader and their team will judge the contractor on their performance. When I say performance, I don't mean quality, but I mean communication, how the contractor deals with the tenants and our vision on the collaboration*" the Technical Project Leader from SHC B explained (p.c. 29/05/2018).

4.2. Similarities in successful cases of chain collaboration

When comparing the five SHCs that were involved in this research, a number of things stand out. Setting common goals and aligning partners, facilitating communication between partners and establishing a similar level of knowledge on chain collaboration were all aspects of collaboration that were mentioned in theory (resp. Cummings and Holmberg (2013) and Wei-Skillern and Silver (2013); Zacharia et al. (2011) and Einbinder et al. (2000); Johnson et al. (2003) and Barratt (2004)) as well as in the data analysed. Two other similarities found in the cases analysed, however, were mostly overlooked in SCC literature.

4.2.1. Partner alignment

When it comes to the formation of chain collaborations with building partners, the majority of the respondents indicated that they, at the start of projects, presented their partners with an overview of goals that were to be met, and further expectations that the partners had to meet, as to 'align the partners'. Establishing of goals and rules was also mentioned by Cummings and Holmberg (2013), when it comes to determining whether partners were able to perform the tasks at hand, and by Wei-Skillern and Silver (2013), who advocate the setting of mutual goals.

While the goals are in this case mostly set by the SHCs themselves, it could prevent building partners from behaving opportunistically, which is what Wei-Skillern and Silver (2013) warn against. The setting of goals is not only done to establish a common direction for projects, but also to underpin the selection of partners. As the Project Leader of SHC E explained, "*We determine the things we want to achieve and inform our partners of these expected achievements, after which they get some time to give these* [red. expected achievements] *some thought.* […] *After about two weeks we meet up with our partners to gauge whether or not they interpreted our plans the way we did.* […] *When a contractor has completely misinterpreted our plans, we come to the conclusion that that company is not compatible with us*" (p.c. 09/07/2018). Thus, the practice of goalsetting can also be seen as a filter, to exclude parties from collaborations that would act mostly on their own behalf, or that would not keep the tenant top of mind.

The setting of clear goals also has another benefit, as the Organisation Strategist from SHC D explains: "*In maintenance projects, we use the NEN-norm. After these projects are finished, the homes of our tenants almost have the same quality as newly built homes, and this quality can decrease over the course of six years to a certain level. This way, they* [red. the contractors] *know exactly what needs to be done*" (p.c. 31/05/2018). The NEN-norm used in the social housing sector dictates the quality of homes, and provides a clear and common understanding of the requirements of the different quality-levels (p.c. 31/05/2018). By setting these types of goals, using a common guideline, all those involved know exactly what is expected of them.

Another type of collectively establishing goals and rules is described by the Manager Real Estate from SHC A. They explain how each of their projects starts with a kick-of, used to determine "*what is our mutual goal? What is your vision and what is our vision?*" (p.c. 06/06/2018). This method is not only useful to gain a mutual understanding of the task at hand, but, as the Manager Real Estate explains, has also another result. "*Because everyone is involved from the start, they will not cut back on quality and when there is a product available that costs 10 percent more, but increases quality and saves 20 percent time, they will choose that product*" (p.c. 06/06/2018). Thus, by involving all partners from the start, the commitment during the projects is prevented from dropping down.

Thus, partner alignment involves three aspects: the setting of project goals as a means to gauge partners' intentions and establish a common ground, enforcing institutionalised norms as a means to establish a mutual understanding of expectations, and harnessing enduring project commitment through early involvement of all partners.

4.2.2. Collective learning

In all cases, the importance of collective learning, was underlined. Especially the desire, from both the SHC and their partner(s), to accomplish collective improvement during projects or during collaboration was mentioned as something inherent to the collaborative efforts of the SHCs. This collective improvement takes place by means of the exchange of knowledge, skills, novel ideas and experiences.

While collective learning as such is not explicitly mentioned in the literature studied, Zacharia et al. (2011) do mention the exchange and synthesis of knowledge between partners as an important success factor. This exchange of knowledge can be seen in the following example. In SHC C, non-planned (short term) maintenance projects are usually executed by the SHC and one fixed main contractor, in collaboration with several fixed sub-contractors. In order to facilitate the improvement of the knowledge and skill levels of the partners involved, the Project Leader Chain Collaboration (non-planned maintenance) mentioned: "*We also like them* [red. the partners involved] *to get in touch with each other. This way, the contractor who has the lowest scores on the KWH* [red. Kwaliteitscentrum Woningcorporaties Huursector]*, can learn from the contractor with the highest scores.*" (p.c. 01/06/2018[b]). The KWH is the national centre for quality control and improvement for the Dutch social housing sector. Based on ratings from tenants, they score social housing corporations and their partners on customer satisfaction and quality (KWH, n.d.). By encouraging the building partners to engage in mutual learning, the overall level of knowledge and skills can be improved, increasing the KWH-ratings. While this research is focussed on project level collaboration, the development and improvement of knowledge as described by the Project Leader Chain Collaboration (non-planned maintenance) appears to happen over a more extended period of time.

An example of enabling mutual learning and the exchange of knowledge, at the project level, is presented by the Project Leader from SHC E. They explain how, during building meetings, they specifically ask each of the contractors and construction workers for input: "*I expect input from the*

entire chain. Not just from the director, but also, especially, from the guys at the building site. Can things be done differently? Is there a smarter way to do things?" (p.c. 01/06/2018[a]). By asking the construction workers to give each other feedback, the Project Leader facilitates mutual learning.

Perhaps more related to the concept of collaborative capacity, as presented by Einbinder et al. (2000), both the Organisation Strategist from SHC D, the Senior Purchasing Consultant from SHC E and the Project Leader Chain Collaboration (non-planned maintenance) from SHC C mention how they, at the start of implementing chain collaboration into their organisation, together with their future partners, engage in a learning process meant to ensure all partners had the same level of skills and knowledge concerning this type of collaboration. These respondents all underlined the mutual character of this learning process, in which they did not prescribe the interpretation of chain collaboration, but instead engaged in this learning process as equals. The Senior Purchasing Consultant from SHC E explains: "*With those suppliers with whom we wanted to engage in this process, we started training together. So, we didn't want to determine what to do by ourselves […] but we wanted to start this learning process together with our suppliers*" (p.c. 08/06/2018).

4.2.3. Inter-partner communication

Another aspect that was mentioned frequently by all respondents involved, was communication between partners and the different organisational structures that were put in place to facilitate this communication. The need for communication between collaborating partners in order to achieve successful chain collaboration was also underlined by Johnson et al. (2003) and Barratt (2004).

The communication between partners appears to take different forms in chain collaboration in SHCs. The Program Manager Chain Collaboration from SHC C explains: "*We have put in place a type of project organisation in which we meet every three months at Board level. […] We also put in place so-called 'buurtwinkels'. At this level numerous meetings take place on things that have to do with the operation. […] Every six weeks, we hold a meeting for all foremen and some people from this organisation, during which we discuss the daily course of events*". (p.c. 28/05/2018). The Organisation Strategist from SHC D described an organisational structure where they, together with the chain partners, the directors of the chain partners and the project leaders held meetings every two weeks, in order to streamline the collaboration process (p.c. 31/05/2018).

Not only enabling communication through organisational structures, but also creating a working environment in which those involved feel able to speak up and able to discuss feedback, is mentioned frequently by respondents. Creating psychological safety, especially during organisational change processes, is heavily underlined in organisational change theory (e.g. by Schein, 1987) but seems to be lacking in for example Fawcett et al.'s (2008) pleading on how supply chain collaboration should come about. The Program Manager Chain Collaboration from SHC C states that "*communication is indispensable: reaching out to each other in time, and being able to discuss things.*" (p.c. 28/05/2018).

The Project Leader from SHC E adds to this: "*Complete openness, that's where it all starts. And ensuring that everybody has a say, because only then you'll get the best results.*" (p.c. 01/06/2018[a]).

4.2.4. Tenant communication

A type of communication that was not specifically mentioned in literature, but that does seem to prevail frequently in the data gathered, is client communication, in this case tenant communication. While communication between partners seems to be highlighted frequently (e.g. by Johnson et al. (2003) and Barratt (2004)) the communication between contractor, SHC and tenant appears to be more of interest to the respondents in this research.

Especially nowadays, tenant communication is increasingly important, the Technical Project Leader from SHC B explains: "*During the preparation phase with the contractor, we establish a communication plan regarding the tenants.* [...] *Look, I've been working here for almost 16 years now. When I came here, people were simply told 'Make sure your windows and doors are opened, and make sure we can access your garden because we'll come over to do some painting'. That's definitely not the way it goes nowadays. People are much more empowered, and they want to be informed a lot better.*" (p.c. 29/05/2018).

The importance of being able to let tenants know what they can expect is also underlined by the Project Leader Chain Collaboration (non-planned maintenance) from SHC C: "*Especially towards the tenants communication is extremely important. That you let them know what you are doing, why it may take another week or so, or why there is no progress.*" (p.c. 01/06/2018[b]).

A reason why this type of communication is of such importance to the SHCs might be the particularly close relationship they have with their customers. As opposed to fast moving consumer goods or services and the like, the services provided by SHCs are usually used by the tenant for an extended period of time, during which the tenant and SHC remain closely linked through, for example, maintenance or renovation projects, which can take up to six months.

4.2.5. Division of roles and control

Another similarity that stands out is the division of roles during chain collaboration. While different scholars underlined the importance of collective planning, execution and decision making (e.g. Ramanathan and Gunasekaran, 2014), this does not necessarily seem to be the case for SHCs. While communication appears to be key, and frequent and open interaction is underlined, the division of roles shows a certain level of separation between SHC and partner(s). The SHCs and their partners do have an initial meeting before projects, but these meetings are merely to discuss the SHCs' expectations. A number of prerequisites are formulated by the SHC, after which the partner(s) give substance to these conditions based on their own experience and skills. This way of collaborating seems to relate more to supplier involvement in new product development [NPD], which is described by Johnsen (2009) as a means to involve suppliers from an early stage, providing a clear distinction between responsibilities,

based on mutual trust and risk-sharing. More specifically, this way of collaborating is described as 'black box' collaboration, which Le Dain and Merminod (2014, p. 688) describe as "*delegation to the supplier of full design responsibility for an outsourced product*".

The clear division in roles between contractor and SHC is also described by the Project Manager from SHC B: "*The most important thing is that we give the contractor the responsibility for the project design, to make sure that they have the liberty to give this design substance themselves*". (p.c. 25/05/2018). "*The only thing we do, is lay down the prerequisites*", the Project Leader from SHC E explains (p.c. 01/06/2018ª).

Although 'trust' is much advocated in supplier involvement literature (Johnsen, 2009), Smets, van Oorschot and Langerak (2013) advocate the use of equal measures of informal control measures, based on trust, and formal control measures in order to achieve the desired outcomes. This can be related to the data collected in this research, where the SHCs apply formal control measures on the output produced by their partners, which can be seen in the quotes mentioned in paragraph 4.2.1. Moreover, SHCs apply process related performance measures during projects, in order to gauge customer satisfaction and identify whether or not the projects are implemented in a desirable manner. The Technical Project Leader from SHC B and the Project Leader from SHC E for example mention the monitoring of tenant satisfaction during the renovation projects at their SHC in order to be able to adjust progress (p.c. 29/05/2018 and p.c. 01/06/2018ª). The monitoring of tenant satisfaction is done consistently by surveying tenants via telephone during and after renovation projects, in a formalised process, as both the Technical Project Leader from SHC B and the Project Leader from SHC E explain (p.c. 29/05/2018 and p.c. 01/06/2018ª).

Despite these more formal control measures, 'letting go control', was frequently mentioned by the respondents. The main idea is that SHCs let go of their control-function, giving the contractors much more freedom to do their job as they see most fit. The Organisation Strategist from SHC D explains: "*It* [red. chain collaboration] *requires that you switch from putting yourself above the partners, to standing next to them. And sometimes you have to put your partners in the lead, because they are truly knowledgeable about the execution* [red. of projects]" (p.c. 31/05/2018). And although customer satisfaction in SHC B is frequently surveyed, the Project Manager from SHC B states that the monitoring of technical quality is not done during the projects: "*We are not going to check things, because that is not our role. It has to do with responsibility, saying 'Contractor, this is your responsibility*" (p.c. 25/05/2018).

Perhaps the application of more informal controls stems from the desire to bolster trust, as informal controls and trust are seen as mutually reinforcing (Johnsen, 2009). As the SHCs involved in this research have had long-lasting working relations with their partners, even before implementing chain collaboration, these relations are valued greatly. Both the Technical Project Leader from SHC B, the Senior Purchasing Consultant from SHC E and the Organisation Strategist from SHC D mention the importance for them to work with local contractors with whom they have had these long-lasting relations

(p.c. 29/05/2018, p.c. 08/06/2018 and p.c. 31/05/2018). In line with Johnsen's (2009) statement that trust takes a long time to build, and is easily lost, the Technical Project Leader from SHC B stated: "*The moment the trust is there, you want to continue. It feels familiar, it feels good. You know what to expect from one another […] When you start with someone knew, you'll have to start from the bottom. Then you'll need to start building that trust up*" (p.c. 29/05/2018).

Interestingly, when reading the above, there appears to be a tension field between wanting to fully trust the collaboration partners and wanting to guarantee the desired results for the tenants. Especially interesting here is that wanting to achieve the set goals seems to be not primarily fuelled by financial interests, as one would expect in private organisations, but more by concern for the tenants. This paradox could be explained by the different levels of expertise of both the SHC and the contractor(s). While the SHCs have ample knowledge on what their tenants need and want, this level of knowledge is less prevalent when it comes to the technical aspects of projects. This is the area where the contractors excel, even though they may not be as much knowledge about the social side of projects, i.e. the tenants interests as the SHCs.

4.3. Crucial success factors in chain collaboration – professional perspective

When looking back at chapter 2.2.2., a few success factors that were mentioned in theory, are also mentioned by the respondents, while at the same time, some success factors mentioned in theory were not mentioned at all, or only by some of the respondents. These will be discussed in paragraph 4.3.5. Interesting to note is that all but one of the success factors mentioned have to do more with collaboration overarching the project level, while only one relates to the projects themselves (i.e. the impact of projects).

4.3.1. Trust and transparency

One of the main critical success factors mentioned by the respondents was having mutual trust amongst partners. The Technical Project Leader from SHC B, answering the question 'What is the most important thing for successful SCC?' answered: "*Trust. That is the only word: trust*" (p.c. 29/05/2018). All other respondents answered in a similar way, resolutely stating that trust is of the highest importance. The Project Leader from SHC E stated; "*Chain collaboration thrives or falls when trust is there or isn't there. It's as simple as that*" (p.c. 09/07/2018).

As Johnsen (2009) and Smets et al. (2013) mentioned, trust appears to be rather difficult to establish, and especially to maintain. This begs the question; how is trust gained in the chain collaborations SHCs engage in? Part of the answer to this question comes from the often long-lasting relations SHCs have with their partners. Having worked together with these partners for extended periods of time, and often working together with local partners who know the tenants, appears to be a

facilitating factor in generating trust. As Kwon and Suh (2004) mentioned, behavioural uncertainty and the perceived potential conflict with the partners are factors that diminish mutual trust. When having worked with the same partners for an extended period of time, perhaps the predictability of the partners' behaviour rises, while the perceived potential conflict with the partners lowers, increasing the level of trust between partners. This argument is supported by the statement that was also mentioned in paragraph 4.2.5, by the Technical Project Leader from SHC B: "*When a new partner comes along, you'll have to start all over. You'll have to start building up that trust again. Then, trust has to grow first.* […] *Also, when working with companies with whom you've already progressed in chain collaboration, you don't really have to meet up before projects. Everything is already ingrained.*" (p.c. 29/05/2018).

Another part of the answer may lie in the assumption from Hillebrand and Biemans (2004), who argue that when adaptations are made towards the suppliers, mutual trust is generated. In the data this can be traced back to the practice of letting the partners develop their own interpretation of the set goals. On a more overarching collaboration level, the Organisation Strategist from SHC D explained how their SHC now distributed projects amongst partners for a two-year period as opposed to a one-year period. Their partners indicated that the one-year period inhibited them from anticipating the future workload and making the necessary preparations for projects. "*They* [red. the partners] *said, 'If you want us to distribute our work more evenly, you'll have to solve this problem for us'. While talking,* […] *we came to a solution.* […] '*I can give you money for the following two years. This way, you'll be able to plan at least one full year. Is that enough?'. And that was enough*", the Organisation Strategist explained (p.c. 31/05/2018).

At the project level, the Project Manager from SHC B mentioned: "*The most important thing to me is that we give the contractor the responsibility for the designs, so that they have the liberty to give* [red. the project] *their own interpretation*" (p.c. 25/05/2018). The Program Manager Chain Collaboration from SHC C described a similar situation: "*As of July last year, we have transferred more and more tasks and responsibility to the chain partners. Because we saw that it would make much more sense, in respect to trust and openness, that they would do those things, instead of having us interfere.*" (p.c. 28/05/2018).

Lastly, trust may also be linked to open, transparent communication. As the Project Manager from SHC B stated: "*Trust also has a lot to do with openness and transparency.*" (p.c. 25/05/2018). Open communication was also mentioned by the respondents, as well as by Johnson et al. (2003) and Barratt (2004) in literature. Not only open communication, but also transparency in communication was deemed an important success factor, for example by the Project Leader from SHC E: "*Complete openness, that is the starting point*" (p.c. 09/07/2018). Being able to communicate "*openly and honestly*" (p.c. 11/06/2018), was mentioned as a critical success factor for SCC by the Project Leader Construction and Restructuring from SHC C. Open communication may also increase trust amongst partners because it increases the predictability of the partners' behaviour, as was reflected on by Kwon and Suh (2004).

4.3.2. Common goal

A success factor that was mentioned quite frequently by the respondents, and that was mentioned as well by Johnson et al. (2003) and Wei-Skillern and Silver (2013), was having a common goal or vision, and renouncing a focus on individual organisational growth. In the case of the SHCs this would be to always keep the tenants in mind during, for example, renovation projects. This differs from the establishing of goals and norms as mentioned in paragraph 4.2.1, which relates to quantifiable project goals. This paragraph relates more to a subjective element of collaboration. The Program Manager Chain Collaboration from SHC C explained: "*I think that what is needed for successful supply chain collaboration, is that you* [...] *don't look at just your own interests, but at the common interests*" (p.c. 28/05/2018). The Project Leader Construction and Restructuring at SHC C added to this: "*Indispensable in chain collaboration is* [...] *being absolutely sure that what you deliver is what our tenant, the client, wants*" (p.c. 11/06/2018). The Manager Real Estate from SHC A underlined the importance of a common goal in their statement: "*You start with the goals of the project, and your own goals are put to the side*" (p.c. 06/06/2018). Lastly, the Organisation Strategist from SHC D argued that "*breaking free from your own organisation*" (p.c. 31/05/2018), i.e. not focussing solely on organisational goals, but instead focussing on mutual goals, is an important contributor to the success of collaborations. This statement is especially congruent with the argument by Wei-Skillern and Silver (2013), who argue that the organisational goals should be subordinate to the mutual goals.

4.3.3. Collaborating like colleagues

A factor that was mentioned by the respondents as a critical success factor for SCC, but that was mentioned in literature as an outcome of successful SCC (Chen, 2008), is the working relationship between SHC and partners. Collaborating like colleagues working in the same company, was frequently mentioned by respondents as a critical success factor for SCC. The Manager Real Estate from SHC A mentioned the following as a means to achieve collaboration success: "*In fact, you operate as one business. You act as if you work for one business and in doing so you try to do your work as efficiently as possible*" (p.c. 06/06/2018). The Program Manager Chain Collaboration from SHC C also underlined the importance of working together as colleagues by stating: "*I think that that is really necessary for successful chain collaboration, to see each other as colleagues within the agreements you've made*" (p.c. 28/05/2018).

A sign that collaboration partners view and treat each other as colleagues, may be to what extent they feel free to confront each other on undesirable behaviour. The Project Leader Construction and Restructuring from SHC C explained this with the following example: "*During a project we, together, said: 'We don't want any hassle with any aftercare'. The result was that I didn't have to provide any aftercare, and the contractors' project leaders neither. Because we went for this quality improvement together* [...] *That also means that sub-contractors aren't afraid to speak up to one another. For*

example, when one sub-contractor just crams a pipe into a wall, that the other would call them out because that would lead to extra work" (p.c. 11/06/2018).

Related to working together as colleagues is, what is in this research called, 'going the extra mile', both for partners and for the tenants. This commitment to the mutual goal is also mentioned by Johnsen (2009), who stated that this commitment, which they equated to an absence of opportunistic use of power, could lead to lower costs, reduced production time and increased quality. This power balance, or lack of opportunistic behaviour was also mentioned by Kampstra et al. (2006). However, Kampstra et al. (2006) advocated a clear division of roles and positions to avoid misuse of power, while the respondents described how working together as equals was the *modus operandi*. Both the Manager Real Estate from SHC A and the Project Leader from SHC E told stories about how construction workers from different organisations worked together, did more than was strictly expected from them, in order to achieve greater results (p.c. 06/06/2018 and p.c. 01/06/2018[a]). "*An example is how the fitter would charge the carpenters' drilling machine. Then, you're truly collaborating.*" (p.c. 06/06/2018). The Organisation Strategist from SHC D mentioned: "*When you help each other without asking. That to me is an indicator of good collaboration*" (p.c. 31/05/2018).

4.3.4. Impact of projects on tenants

An interesting aspect of SCC in the social housing sector that was not necessarily mentioned in literature, was the effect the type of project has on the collaboration itself. Both the Manager Real Estate from SHC A (p.c. 06/06/2018), the Senior Purchasing Consultant from SHC E (p.c. 08/06/2018) and the Organisation Strategist from SHC D (p.c. 13/07/2018) explained how certain, more complex and long-lasting projects demand different action from partners than the more straightforward projects. Examples are: more extensive tenant communication (as mentioned by the Project Manager from SHC B, p.c. 25/05/2018), and attaining greater insights in the mental and physical abilities of tenants to cope with long-lasting and extensive renovations (as mentioned by the Manager Real Estate from SHC A, p.c. 06/06/2018). The Manager Real Estate from SHC A did however mention that especially those projects that were extensive or complex, were most suited for chain collaboration. The reasoning behind this may be that tenant communication is especially valued and emphasized in chain collaboration, and these more complex or extensive project require more tenant communication than other, more straightforward projects.

The above was not necessarily mentioned as a success factor, but it can be interpreted as such. The degree to which those involved are sensitive to the impact a (renovation-) project has on the tenants, can impact the overall success of a project. This is also underlined by several quotes in paragraph 4.2.4., describing the importance of tenant communication.

4.3.5. Discrepancies with theory

When analysing the gathered data, some discrepancies with the studied literature stood out. While both Ramanathan and Gunasekaran (2014) and Johnson et al. (2003) emphasized the importance of collective planning, collective decision making and collective execution in SCC, these types of 'collective action' were not mentioned as such by the respondents.

From the data it appears that the planning is done by the contractors, as well as the execution of the projects. The decision making seems to be split up: the SHC determines the framework within which the contractors should stay, and the contractor determines how this framework is filled in. This division appears to be more in line with supplier involvement literature than with SCC literature.

Two other described success factors that did not appear in the data were the 'willingness to collaborate' and the 'incentive to collaborate', both mentioned by Einbinder et al. (2000) and Johnson et al. (2003). Perhaps these factors were not of great relevance in this research, as it involved organisations who had already been involved in collaborations for an extended period of time. Moreover, one could argue that when there is neither an incentive to collaborate, nor a willingness to collaborate, organisations probably would not collaborate at all. This would make these factors unsuitable as success factors for chain collaboration, making them more suitable as descriptors of situations in which chain collaborations can come about.

4.4. Conclusions

What is interesting in the paragraphs above, is that, while respondents do mention clearly distinct success factors and separate indicators of success, there also seems to be some sort of mutually enforcing relationship between these. Chen (2008) did briefly indicate the possibility of such a relationship when mentioning the positive effect social capital has on future collaborations. As chain collaborations in the social housing sector usually involve long-term relationships between partners (even when working together on a project basis), perhaps this cyclical effect could take place in the social housing sector. This would mean that the success factors for chain collaboration (which lie mostly in the in-collaboration behaviour, as indicated in chapter 2) increase the chance of successful chain collaboration. Successful chain collaboration would then affect the in-collaboration behaviours during the following project, leading to more successful chain collaboration, and so on.

Collective learning is believed to increase the commitment to the collaboration as it enables partners to gain more understanding into why things are done the way they're done. An increase in commitment, subsequently increases collective learning as partners are increasingly invested in the collaboration. Transparency is deemed to increase the levels of trust as it increases the predictability of partners (as argue by Kwon and Suh (2004)). And increased level of trust subsequently increases transparency as partners feel their openness will not be abused. These newly found causality can be presented as follows:

Figure 6. Adapted conceptual model.

Collaboration formation

Aligning partners:

- o Create commitment towards collaboration
- o Ensure cultural fit between partners
- o Ensure strategic fit between partners
- o Establish mutual goals

Enable information sharing;

Collective training (pre-collaboration)

Successfulness of chain collaboration

- o Increased customer satisfaction
- o Meeting project goals
- o Increased job satisfaction

- o Increased quality of working relations

In-collaboration behaviour

Monitoring and adjusting the process

Inter-partner communication

Tenant communication

Collective learning
Commitment

Transparency
Trust

5. Conclusions

5.1. Findings

In this paragraph, the most significant findings will be discussed first, after which the main research question is answered in paragraph 5.2.

As appeared in paragraph 2.2.3., determining the success of chain collaboration has not yet been described clearly and in a uniform manner. Measuring success both on a project level and on the general collaboration level, uniformity in these measures seems to lack in literature. This was also an important finding in the data. With respondents mentioning both success on the project level, as well as the success of the overall collaboration, some ambiguity remained. This ambiguity seemed partially caused by a lack of suitable performance measures, even though quality control and the evaluation of customer satisfaction happened frequently and thoroughly. Especially when the overall goal of engaging in chain collaboration was the reduction of failure costs, the exact improvements appeared difficult to pinpoint.

Similarities in the chain collaboration processes of the different SHCs were to a certain extent related to the literature studied, but also provided some new insights into practices characteristic to the social housing sector. While the alignment of partners through the establishing of common goals and rules, as well as collective learning and inter-partner communication were described similarly in theory and by the respondents, two elements of chain collaboration in the social housing sector stood out. Firstly, the importance of timely and frequent communication with tenants was heavily underlined by multiple respondents, while this type of communication was not mentioned in the literature studied. Secondly, while the division of roles and control were described in theory, the actual manifestation of this division occurred quite differently in the SHCs than in SCC literature. It appeared there was almost no question of collective action (such as planning, execution and decision making) and respondents appeared to prefer informal control measures over formal control measures. Formal control measures were only applied to measure customer satisfaction during projects and to measure the quality after projects were completed.

The above mentioned factors of chain collaboration provide some important initial insights into what factors may underpin successful chain collaboration. Nevertheless, upon asking respondents what factors they deemed critical for chain collaboration success, more in depth insights were gained. When it comes to what the respondents find to be critical success factors in chain collaboration, three factors stand out. Firstly, most of the respondents emphasize the importance of mutual trust, generated either through long-lasting working relations or through open and transparent communication amongst partners. This open and transparent communication should then be used, according to the respondents, to establish common goals and to keep one another to these goals. The most general goal, it appears, in SCC in the social housing sector, is to improve customer satisfaction. Therefore, it is expected of all those involved, to keep the interests of the tenants in mind. Lastly, respondents mentioned the somewhat ambiguous concept of 'working together like colleagues' as a critical success factor. This concept

appears to consist of two different behaviours: speaking up to one another and 'going the extra mile' of showing commitment to one another. By having discussions with collaboration partners when necessary and simultaneously showing commitment and interest in the tasks of collaboration partners, the overall working relationship between employees of SHCs and collaboration partners is believed to improve.

5.2. Practical implications

When combining the findings of this research, as described in paragraph 5.1, the main research question can be answered:

Which factors are crucial in making chain collaborations in the social housing sector successful?

When answering this question, not only the success factors mentioned by the respondents were taken into account, but also the similarities between cases that were characteristic for the social housing sector.

Regarding the formation of chain collaboration in the social housing sector, the first success factor is to prepare both the intended partners, as well as employees of the SHC itself for this type of extensive collaboration. This could be done by providing training aimed at increasing the levels of knowledge and skills related to chain collaboration. Reaching a mutual understanding of what chain collaboration entails, as well as what is expected from both the partners and the SHC is regarded as a critical step in laying the foundations for successful chain collaboration in the social housing sector. Especially since the emphasis in chain collaboration in the social housing sector is on the overall satisfaction of the tenants.

Secondly, establishing mutual project goals and ensuring these goals are interpreted uniformly is an important success factor at the start of chain collaboration. Making sure all those involved have a similar interpretation of the specific goals enables a smooth collaboration process in which little adjustments are needed.

Concerning the in-collaboration behaviours needed for successful chain collaboration in the social housing sector, a multitude of factors are at play. Firstly, facilitating and encouraging communication, both between partners and between contractors and tenants, is key for successful chain collaboration. Communication between partners is pointed out as an important means to establish and ensure clarity on the task at hand and provides a means to adequately deal with any deviations from the desired process. Communication between contractors and tenants is emphasised heavily as a critical success factor as this is seen as an important means to ensure customer satisfaction, which in turn is believed to lead to a smooth project-process.

The second critical success factor related to in-collaboration behaviour is the facilitation of collective learning during the collaboration process. In order to achieve improvements in efficiency, not only collective learning prior to collaboration is underlined, collective learning during collaboration is also much emphasised. By having partners and employees of SHCs exchange knowledge and experiences, increased efficiency can be achieved.

The third critical success factor for chain collaboration, not just in the social housing sector, but also in general, is generating and bolstering trust amongst those involved. This trust is achieved over time, but can be strengthened by communicating openly and being transparent toward one another when it comes to, for example, goals, performance measures and feedback.

The fourth factor that is of importance to achieve successful chain collaboration is, as respondents describe, 'collaborating like colleagues'. While this factor may seem somewhat ambiguous, it entails putting the mutual goal over individual goals when collaborating. Additionally, a number of factors were indicated by respondents that would facilitate this way of collaborating. Firstly, ensuring psychological safety for those involved, ensuring that construction workers, project leaders, foremen and others feel free to provide their input into the process, without being hindered by hierarchical constructs. Related to this is ensuring co-workers speak up to one another when mistakes are made or when goals aren't met, treating projects as a team effort. Also, showing commitment to the common goal and helping one another, facilitating each other's work whenever possible, is seen as an important aspect of 'collaborating like colleagues' and thus, a critical success factor.

The last factor crucial in making chain collaboration in the social housing sector successful, relates to the nature of the service SHCs provide. Providing affordable housing at a certain quality level demands maintenance and renovations. Several respondents pointed out the importance of being mindful of the impact of these projects. While, for example, replacing doors in a home might be a simple project for SHCs and their partners, this may be seen as a very invasive renovation project by the tenant. As the end goal of the SHC and their chain partner(s) is to improve customer satisfaction, respecting and acknowledging the experiences of tenants is of crucial importance for the success of chain collaboration.

Especially given the current developments in the social housing sector, where an increased level of efficiency is not only desired, but also much needed, new methods of using the existing means available to SHCs are much needed. By engaging in chain collaboration, SHCs are able to decrease the amount of in-house expertise needed, increase cost- and time-efficiency during new build, renovation and maintenance projects and increase customer satisfaction. The results from this research provide useful support to those SHCs that wish to engage in chain collaboration, and doing so successfully. By gathering the experiences from those SHCs that have proven to be successful in this field, the learning process amongst SHCs is facilitated.

5.3 Further recommendations

Apart from the crucial success factors as mentioned above, in this paragraph some additional practical recommendations are listed. Especially when implementing chain collaboration as a means to increase efficiency, or to decrease failure costs, a recommendation would be to determine precisely the current failure costs for each type of project (so: new build, renovation and maintenance, both planned and non-planned). By determining the current failure costs periodically, detailed insights can be gained into what improvements in terms of efficiency are made, also indicating when the progress is less than desirable.

As mentioned in paragraph 4.1.3, as well as in paragraph 4.2.5, the level of implemented performance measures and monitoring mechanisms appears to be quite a bit lower in the social housing sector, compared to other sectors (as described by Smets et al., 2013). In order to develop these measures and mechanisms, SHCs could look to other sectors, applying those measures and mechanisms suitable for social housing. This would prevent SHCs from having to reinvent the wheel.

Another recommendation would be to critically assess the extent to which the intended partner has an understanding of the wants and needs of the tenants. While SHCs are very much used to communicating and engaging with their tenants, this is not necessarily the case for all contractors. Identifying and collaborating with those contractors that either know the tenants or fully grasp the needs of tenants, can decrease the chances of lowered customer satisfaction ratings.

6. Discussion

6.1. Theoretical reflection

As was mentioned in chapter 1, there was quite some uncertainty about whether or not the existing body of SCC literature would be applicable to the Dutch social housing sector, given the distinct character of the SHCs, and the specific regulations applicable to their work. Especially when it comes to predicting SCC success and the success factors leading to that success.

6.1.1. Applicability to SHCs

When comparing the gathered data to the literature described in chapter 2, a number of success factors mentioned by different scholars, were also mentioned by the respondents. For example, the importance of inter-partner communication, as described by Johnson et al. (2003) and (Barratt, 2004), was also underlined by several respondents. Moreover, trust appeared to be an important concept, both in theory and in practice. With several scholars underlining the prominent role of trust in chain collaboration (e.g. Johnson et al. (2003), Barratt (2004), Kwon and Suh (2004) and Wei-Skillern and Silver (2013)), and respondents stating that trust is of the upmost importance in chain collaboration (see paragraph 4.3.1.). The last factor that was prominently present in both literature and the gathered data, was the setting of common or mutual goals. Johnson et al. (2003) and Wei-Skillern and Silver (2013) both mentioned the establishment of mutual goals (as opposed to each actor having their own goals) as an import success factor for chain collaboration. Especially this element of setting aside individuals goals in order to, collectively, work towards the mutual goal(s) was also mentioned by several respondents (as can be seen in paragraph 4.2.1.).

One of the success factors that was heavily emphasized in theory (by e.g. Johnson et al. (2003) and Ramanathan and Gunasekaran (2014)), but that was hardly present in the data gathered was collective planning, collective decision making and collective execution. Perhaps this discrepancy is due to the type of 'production' that is done in chain collaborations between SHCs and contractors. Since SHCs have less and less personnel, especially technical personnel, the expertise needed to actually design and execute the goals as proposed by the SHCs lies mostly with the partners. Moreover, the respondents expressed an inherent drive to let their partners use this expertise freely in order to achieve the best possible results. While the project goals were discussed together with the partners, the SHCs were the actors to determine these goals. When it comes to the execution, the partners were the responsible party. Regarding the decision making, the SHCs were responsible for decisions concerning the expected performances and budgets, while the partners were expected to take responsibility on matters concerning the technical aspects of the building-, maintenance- or renovation projects.

This division of roles and responsibilities was much better explained by supplier involvement literature, which explicitly underlined the separation of the roles of different actors and the required

mutual trust for said separation (as mention by Johnsen (2009) and Smets et al. (2013)). While supplier involvement theory did seem to match the general course of events as described by the respondents, one important aspect missing from all theory studied, was the position of the customer in chain collaboration. The respondents emphasized the importance of continuous communication between SHC and tenant and between contractor and tenant, while there was no mention of this type of communication in the theory studied.

This leads to the following point: the explicit societal function SHCs fulfil in Dutch society also impacts the supplier-customer relationship, in this case the relationship between SHC and tenant. Most tenants who live in social housing are heavily dependent on the services SHCs provide, of which SHCs are very much aware. This dependence of tenants on one hand and the institutionalized societal function of SHCs on the other hand creates a dynamic that is quite different from the traditional supplier-customer relationship. Apart from the fact that housing is one of the main primary necessities, many tenants of SHCs are only able to afford said housing of sufficient quality because of the role SHCs fulfil in society. Perhaps this specific characteristic of the Dutch social housing sector affects the level to which more general SCC literature is applicable to SCC in the social housing sector.

6.1.2. Theoretical contribution

The paragraph above leads to the theoretical contribution of this research. As is shown, the more general SCC literature is not plainly applicable to the Dutch social housing sector. By providing more insights into the mechanisms that are at play specifically in this sector, such as the importance of tenant communication, the body of SCC literature has been broadened.

Apart from the added focus on the importance of customer communication in the social housing sector, the somewhat more social and cyclical character of SCC in the social housing sector has been elaborated on. Especially due to the societal function of SHCs, the emphasis appears to be much more on the social skills of partners, besides their technical expertise. Moreover, since SHCs often work together with the same partners for an extended period of time (as explained in e.g. paragraph 4.3.1), engaging in multiple projects, the chain collaboration they engage in acquires a more cyclical character.

While Chen (2008) did point out that collaboration, if done well, could result in more collaborations with the same partner, they did not elaborate on the effect successful collaboration would have on the behaviour in the following collaborations. Keeping in mind the often long-lasting collaboration between SHCs and their partners, successful chain collaboration (reflected in e.g. increased quality of working relations) can subsequently affect the in-collaboration behaviours to be more favourable, resulting in turn in more successful chain collaboration. This underlying mechanism in chain collaboration in the social housing sector, had not yet been described in this manner.

6.2. Methodological reflection

6.2.1. Research process

Reflecting on the research process, a number of aspects are worth mentioning. Firstly, when conducting the literature study for this research a number of lacuna in current theory stood out. While much research on SCC has been done, as mentioned in paragraph 2.1 and 2.2, there seemed to be a lack of uniformity in theories on how SCC should come about. By integrating multiple theories related to creating readiness for change, partner selection in strategic alliances and other collaborative forms, and theory on SCC design, a roadmap to SCC could be constructed. While literature on SCC success factors appeared to be prevalent, there appeared to be some ambiguity on what actual SCC success entails. Only after broadening the scope of the literature study to project management literature and more general collaboration literature, some more insights into the successfulness of SCC could be gained. This leads to the following point.

While the prescribed method of chain collaboration formation and the factors that would theoretically lead to successful chain collaboration were clear before data gathering, this could not be said for the actual successfulness of chain collaboration itself. These insights were only gained after data gathering and after broadening the scope of the literature study. While the intention was to keep interview questions quite broad as to not steer respondents into a certain, by theory prescribed, direction, more clear insights in successful chain collaboration prior to data gathering could have resulted in more detailed insights. Nevertheless, by allowing respondents to tell stories on what they deemed most relevant factors for successful chain collaboration, and by allowing respondents to provide their interpretation of what successful chain collaboration in their context entailed, the mechanisms that are specifically at play in the Dutch social housing sector, could be uncovered.

With respect to gaining and maintaining access to the respondents, one could say that this process took place quite expeditiously. By selecting those SHCs that had proven to be successful in SCC, and explaining the research goal upfront, many intended respondents showed quite enthusiastic to participate in this research. Moreover, each of the respondents indicated the willingness to participate in further interviews, if necessary. With both the Organisation Strategist from SHC D and the project leader form SHC E, additional interviews were held to gain more detailed insights into the specifics of the collaboration within their SHC. For the other respondents, these additional interviews weren't deemed necessary as the initial interviews provided sufficient insights.

6.2.2. Validity and transferability

Concerning the internal validity of this research, a number of measures were taken to assure that internal validity was achieved. Firstly, in each of the initial interviews, the same interview protocols were used, and those questions based on the SHC's specific situations were posed in similar wording and were based on the same types of public documents, as is elaborated on in paragraph 3.3.3. Moreover, by using different types of documents (i.e. annual reports, quadrennial inspection reports and benchmark reports)

that were all published by different institutions, in addition to the interviews performed, triangulation was used as a means to increase internal validity (Yin, 2011).

Achieving external validity was sought by selecting SHCs of different sizes (in terms of number of housing units) and SHCs active in different regions of the Netherlands. However, it must be noted that no access was achieved in the SHCs active in the most northern provinces of the Netherlands and in the most south-east of the Netherlands. Moreover, only 5 SHCs were involved in this research, which, especially compared to the roughly 400 Dutch SHCs, is quite likely to impact the overall generalisability of this research. On the other hand, given that these corporations have shown their success in the field of chain collaboration, one could also argue that the selected SHCs provide a representative sample of those SHCs that were successful in chain collaboration, making their methods a so-to-say example for other SHCs.

This leads to the concept of transferability, described by Guba and Lincoln (1990, p. 57) who argue that "*transference can take place between contexts A and B if B is sufficiently like A on those elements or factors or circumstances that the A inquiry found to be significant*". In this case, this research would be transferable to those SHCs that are of similar size and that are active in the same regions as those SHCs involved in this research. SHCs that are significantly smaller in size or that are active in regions with rapidly decreasing populations, may find this research less transferable to their specific context. Resource constraints, in terms of finances as well as personnel, and contrasting social challenges may decrease transferability.

6.2.3. Recommendations for future research

With regards to future research, a number of aspects of supply chain collaboration in the social housing sector could be researched more thoroughly.

Firstly, given the geographical distribution of the selected SHCs in this research, of which none were included from the most northern provinces of the Netherlands, nor from the most south-east provinces of the Netherlands, a more diverse pool of SHCs could be included. Especially since the different working areas SHCs are active in come with different social challenges and foci. By extending research to those SHCs that work in regions in which populations are decreasing rapidly, demographic characteristics could be included as possible independent variables affecting SCC success.

Moreover, in the current research, the majority of respondents were either project leaders or program managers. These respondents were mostly active on the operational level of the organisation, and, inherent to their function, worked closely with the collaboration partners. Including for example policymakers and contract managers could provide a more differentiated view on chain collaboration in the social housing sector. Furthermore, including the collaboration partners of SHCs as well, will most likely provide even more in-depth insights into the process of chain collaboration in the social housing sector. By determining what factors would attribute to SCC success from a contractors' point of view, an increased mutual understanding between SHC and contractor can be facilitated.

Reflecting on paragraph 4.1.1. (on tangible success) and paragraph 4.1.3 (on difficulties measuring success) the following recommendations for future research come to mind. As shortly discussed in paragraph 4.1.1, while all SHCs involved showed a decrease in operating cost and an increase in customer satisfaction over the years 2014, 2015 and 2016, this cannot be directly labelled as a result of successful chain collaboration. It would however prove interesting to research whether or not these positive developments can be attributed to chain collaboration. Especially since several respondents pointed out that they themselves lacked these insights, as discussed in paragraph 4.1.3. Another interesting research topic related to paragraph 4.1.1 would be to research the extent to which engaging in chain collaboration actually decreased unnecessary building- and renovation costs (the so-called 'failure costs'). Subsequently, the extent to which improvements in cost-efficiency benefit tenants could be researched. This research could add to the overall transparency and level of accountability of SHCs.

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Appendices

Appendix A – General interview guide

U bent zelf [functie], kunt u uitleggen hoe u binnen uw functie invulling geeft aan de projecten die middels ketensamenwerking tot stand komen bij [Corporatie]?

Proces gerelateerd

Hoe verloopt het proces van het vormen van samenwerking met ketenpartners?

> Kunt u hiervan concrete voorbeelden geven?

> Heeft [corporatie] bepaalde eisen voor het selecteren van partners?

> Worden voorafgaand aan de samenwerking gezamenlijke doelen gesteld?

> Worden voorafgaand aan de samenwerking gezamenlijke prestatie indicatoren vastgesteld?

> Worden voorafgaand aan de samenwerking gezamenlijke beloningssystemen ingesteld?

> Is het voorafgaand aan de samenwerking duidelijk wie welke rol speelt? Of is dit juist meer fluïde? Is hierbij duidelijk wie welke verantwoordelijkheden draagt?

Jullie hebben al verschillende samenwerkingen, dan wel projecten achter de rug. Kunt u vertellen hoe de samenwerking met deze partners in zijn werk ging?

> Hoe ging de planning in zijn werk?

> Hoe ging de besluitvorming in zijn werk?

> Hoe ging de uitvoering in zijn werk?

Organisatiestructuur-gerelateerd

Ketensamenwerking vergt een andere manier van denken en doen van medewerkers. Hoe wordt daar binnen [corporatie] mee omgegaan?

> Hoe wordt ervoor gezorgd dat medewerkers van [corporatie] en haar partners op een andere manier willen werken?

Succesvolheid

Wat is naar uw mening onmisbaar om tot goede ketensamenwerking te komen?

> Waarom?

Hoe wordt bij [corporatie] het succes gemeten van projecten waarbij ketensamenwerking wordt gebruikt?

> Gebruikt [corporatie] hier bepaalde instrumenten voor? Waarom wel/niet?

> Worden deze instrumenten ook gebruikt om bij te sturen?

Wat is in uw ogen succesvolle ketensamenwerking?

Wat zijn lessen die [corporatie] geleerd heeft van minder succesvolle projecten?

Appendix B – Initial template

1. **Collaboration formation**
   - o Changing thoughts and work mode
   - o Partner selection
   - o Collective establishment (goals and 'rules')

2. **In-collaboration behaviour**
   - o Explicitly collective action
   - o Division of roles and authorities

3. **Collaboration success**
   - o Performance measures (project level)
   - o Success factors (professionals point of view)
   - o What is success

Appendix C – Second template

1. **Collaboration formation**
    1. Changing thoughts and work mode
        1. Collective training / learning
            1. Equal in knowledge and understanding
            2. Being on the same page
        2. Mutual adjustment (culture)
    2. Partner selection
        1. Cultural match
        2. Knowing each other
        3. Strategic match
    3. Collective establishment (goals and 'rules')
        1. Uniformity of processes

2. **In-collaboration behaviour**
    1. Explicitly collective action
        1. Collective planning
        2. Collective decision making
        3. Monitoring of progress
        4. Adjustment of progress
    2. Division of roles and authorities
        1. Letting go control
    3. Continuous improvement / innovativeness
    4. Communication / interaction
    5. Openness / information sharing

3. **Collaboration success**
    1. Performance measures (project level)
        1. Time- efficiency
        2. Cost- efficiency
        3. Quality
        4. Contractor – tenant relations
    2. Success factors (professionals point of view)
        1. Keeping the client (tenant) in mind
        2. Open communication
            1. With contractor
            2. With tenant

3. Mutual trust

4. Organisational support

5. Good working relationship

     1. Working together like colleagues

     2. Going the extra mile

3. What is success

     1. Tenant-rating

     2. Little complaints from tenants

     3. Project level goals are met

Appendix D – Final template

1. **Collaboration formation**
   1. Changing thoughts and work mode
      1. Collective training / learning
         1. Equal in knowledge and understanding
         2. Being on the same page
      2. Mutual adjustment (culture)
   2. Partner selection
      1. Cultural match
      2. Knowing each other
      3. Strategic match
   3. Collective establishment (goals and 'rules')
      1. Uniformity of processes

2. **In-collaboration behaviour**
   1. Explicitly collective action
      1. Collective planning
      2. Collective decision making
      3. Monitoring of progress
      4. Adjustment of progress
   2. Division of roles and authorities
      1. Letting go control
   3. Continuous improvement / innovativeness
   4. Communication / interaction
   5. Openness / information sharing

3. **Collaboration success**
   1. Performance measures (project level)
      1. Time- efficiency
      2. Cost- efficiency
      3. Quality
      4. Contractor – tenant relations
   2. Success factors (professionals point of view)
      1. Keeping the client (tenant) in mind
      2. Open communication
         1. With contractor
         2. With tenant

1. Project type
   1. New build
   2. Renovation
   3. Maintenance

     3. Mutual trust

     4.Organisational support

     5.Good working relationship

        1. Working together like colleagues

        2. Going the extra mile

3.   What is success

     1. Tenant-rating

     2. Little complaints from tenants

     3. Project level goals are met