



Trust on Distance

Investigating trust on interpersonal level
in cooperation with limited physical interaction

M.Sc. Thesis

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Applied Communication Science [Wageningen UR](#)

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ABSTRACT

Trust has been considered to be an essential component for cooperation (Rempel et al., 1985), although there is a gap in knowledge on how participants develop trust in cooperation with heavy reliance on modern communication technology aided interaction. How do participants within a cooperative network with limited physical interaction develop and apply trust on interpersonal level with fellow participants to cope with uncertainty and (inter)dependence?

This interpretative exploratory research applies frameworks of trust, trust development and influencing factors of trust development to analyse the data of semi-structured interviews held with professionals in the field of health and environment. Research methodology *Frame analysis* is used to interpret their experiences and perceptions of trust on interpersonal level in cooperation with limited physical interaction.

The findings suggest that this type of cooperation may only require trust based on the ability and integrity of fellow participants, rather than trust based on benevolence. Trust is considered necessary in this type of cooperation to cope with potential conflicts of interest and to support initiating a cooperation right from the very beginning.

Trust is further perceived following the increase of certainty through estimation of the trustworthiness of fellow participants, a clear structure, process and content of the cooperation, as well as the alignment of interests among participants. Cooperation with limited physical interaction and the behaviour of its participants are perceived with a strong focus on their functionality, similar to the metaphor of a well-designed machine with well-functioning parts.

1. INTRODUCTION

1.1. Trust and cooperation and the use of modern communication technologies

The advanced complexity of human cooperation could be one of the fundamentals of our civilisation. Joint efforts of humans are one of the most common aspects of society: individuals forming collaborative efforts to gain benefits in ways that would be less easy or impossible on an individual basis. Cooperation comes in different formations and takes place on all levels of interaction: on interpersonal, organisational, regional to multi-national level. Successful cooperation can either lead to common results that benefit participants, or provide opportunities to achieve individual goals. The motivation to engage in any cooperation is the potential payoff, but it also requires input of various kinds, and that is where problems most often begin (Axelrod, 1997).

There is certainly no shortage in scientific literature about the successful factors of cooperation in political, business and personal environments (McDonough, 2000; Whipple & Frankel, 2000; Trkman, 2010). There are various external and internal factors mentioned in literature, such as among many others: availability of resources, the change of institutional and social environment, the nature of competition and competitors, compatibility of organisational structure and culture, alignment of norms and values, quality of management and leadership, planning, communication and coordination (Mattessich & Monsey, 1992).

Yet one of the most frequently encountered challenges of any cooperation is the uncertainty caused by conflicts of interest: personal interest may not align with the 'common goal' (Herre et al., 1999). We all come across many examples in daily life: cheating spouses; back stabbing colleagues; and lying politicians. Participants may be tempted to act in their own interests that harm the collective goal of the cooperation when given the opportunity. The 'common goal' may be beneficial to all, but freeloading or sabotage may benefit even more to individuals at the expense of achieving shared interests (Axelrod, 1997).

Various disciplines and scholars have studied this dilemma of self-interest versus collective interest (Axelrod, 1997), such as mathematics (von Neumann, 1913; Flood & Drescher, 1950; Nash, 1951), biology (Fisher, 1920; Haldane, 1933; Kenichi & Feldman, 2014), psychology (Tajfel & Turner, 1979; Pruitt, 1998; Moore & Loewenstein, 2004), sociology (Druckman & Zechmeister, 1973), economics (Schelling, 1960; Axelrod, 1967), political science (March & Olsen, 1983; Hall & Taylor, 1996; Marks & Steenbergen, 2004).

With the main focus on mechanisms that may restrict the temptation of acting on self-interests, many theories on cooperation in various disciplines, such as Game Theories, Principal Agent Theory (Eisenhardt, 1989) and Integrative Model of Organisational Trust (Mayer et al., 1995), focus heavily on incentive and reward (Gambetta, 2000), with the assumption that people will act rationally to maximise their own interest. Although these theories, with their emphasis on rationality and self-interest, often ignore one critical factor that is frequently mentioned as a potential remedy against conflict of interest in cooperation, the concept of trust (Möllering, 2006).

Trust as a the foundation for social order spans many intellectual disciplines and levels of analysis (Putnam, 1995; Fukuyama, 1995), such as social psychology (Deutsch, 1962; Worchel, 1979; Rempel et al., 1985), sociology (Gambetta, 1988), political science (Barber, 1983), economy (Axelrod, 1997), anthropology (Ekeh, 1974), and organisational behaviour (Kramer & Tyler, 1996). The key role played by trust as a foundation for effective collaboration (Barnard, 1938; Blau, 1964) emphasizes our recognition of the multiple motives of self-interest, moral principles, shared values and mutual benefits that shapes cooperation (Lewicki et al., 1998).

In all social domains, trust in the relations between parties is considered critical for successful collaboration (Hinde & Groebel, 1991). Yet while incentives to collaborate and reasons to trust certainly exist in many cases, there are simultaneous reasons to distrust partners in relationships (Nalebuff et al., 1996). Remarkably, both trust and distrust appear to be necessary in functioning collaborative relations (Arrow, 1974; Axelrod, 1997; Lewicki et al., 1998).

There is consensus among scholars that trust is required in situations where the trustor is dependent on the trustee to act in the interest of the trustor in situations where the actions of the trustee are uncertain (Shockley-Zalabak et al., 2000; Hardin, 2002; Barbalet, 2009). Trust is needed to overcome this uncertainty before the trustor puts oneself in a position of dependence. In other words, there is no need for trust if one is not dependent on others, or if there is no uncertainty about how others will act. The uncertainty often originates from the different interests or priorities people have in (inter)dependent relationships. It may be in the interest of the chief that the subordinate finishes the proposal before the deadline, but the subordinate may have a higher priority to go to the beach on a sunny day instead of finishing the proposal on time. This form of discrepancy in interests or priorities could be considered as 'conflict of interest'.

Not entirely unexpected, trust (and distrust) has been studied from a wide array of approaches. Many scholars focus on the definition of trust and wonder what it really is (Deutsch, 1958; Rotter, 1967; Lewicki et al., 1998; Möllering, 2009). Others are more interested in the conditions for creating and maintaining trust (Scott, 1980; Gambetta, 1998; Noorderhaven, 1992). Some are interested in the various possible objects that are being trusted, such as individuals, groups, institutions, regulations, norms and cultures (Currall & Judge, 1995; Tyler & Degoey, 1996; Grandison & Sloman, 2000). Yet other researchers and practitioners are interested in the effects and consequences of trust (and distrust) in cooperative relations (Luhmann, 1982; Lewicki et al., 1998; Lewicki et al., 2006).

While there is no shortage of researches on trust, there are almost just as many disagreements about this phenomenon. What is trust? How can it be created and applied? What are the benefits and drawbacks?

On interpersonal level, some scholars have also indicated that trust needs 'touch' (Hardy et al., 1998) and that trust can only be created and applied effectively if participants in collaboration have significant opportunities for face to face interaction. It is argued that, among many other organisational skills, a significant amount of 'same-time-same-place' interactions is required to cope with low individual commitment, communicative ambiguity, role overload, role ambiguity and social loafing (Handy, 1995; Walter et al., 2008). Paradoxically, trust is also advanced by other scholars as the countermeasure to deal with the lack of face to face 'touch', due to geographical and organisational distances in cooperative networks (Johnson & O'Hara-Devereaux, 1994).

The functioning of trust on interpersonal level in cooperation seems to have become even more complex with the current and emerging communication technologies (Jarvenpaa & Leidner, 1998; Wildman et al., 2012). People increasingly rely on new ways of communication to coordinate tasks and relations within and between organisations of all sizes and nature, often in different physical locations and time zones with diminishing physical interaction. Existing and emerging new technologies like smartphone, SMS, e-mail, video conferencing, social media (WhatsApp, Facebook, Twitter, Instagram) and many others, all seem to enable communication on a distance to resolve the (potential) logistic problem of meeting physically and the time required for travel accordingly.

How does this development impact the way participants apply trust on interpersonal level to cope with the potential conflicts of interest in cooperative networks? What does the role of trust play under these circumstances where physical interaction is lacking? In short, how much do we know (or not know) about how individuals apply trust in cooperative networks when these individuals rarely or never meet each other because of organisational or geographical constraints?

Although there are researches abound on conflicts of interest in cooperation and the role of trust on interpersonal level in cooperation, the knowledge often is fragmented and restricted to each specific domain of academic disciplines (Möllering, 2006), with each academic domain looking at the specific issue from their traditional history of academic points of view. Furthermore, many of the theories on conflicts of interest in cooperation and trust are often normative and theoretical in nature, aiming to illustrate the 'best method' to deal with conflicts of interest, to create and apply trust and to cope with cooperation (Möllering, 2006).

It would provide new insights to critically examine the practical experiences of people developing and applying trust on interpersonal level in cooperative networks with heavy reliance on modern communication technologies and (to a great extent) without physical interaction. And then to compare the findings with existing theories with trust in cooperation in other settings. And to examine the possible discrepancies, enabling further understanding of the growing trend of cooperative networks using communication technologies with limited possibilities for physical interaction.

1.2. Problem statement

Evaluating the considerations earlier in this Introduction (see Section 1.1), the Problem statement for this investigation has been formulated as follows:

'There is a gap in knowledge on how participants in cooperative networks with heavy reliance on existing and (emerging) new communication technologies, aiming to eliminate the need for meeting physically, and shorten the time required for interaction in situations where uncertainty caused by conflicts of interest may occur, develop and apply trust on interpersonal level to cope with uncertainty and (inter)dependence.'

1.3. Main research question

Following the Problem statement (see Section 1.2), the Main research question has been formulated as follows:

'How do participants within a cooperative network with limited physical interaction develop and apply trust on interpersonal level with fellow participants to cope with uncertainty and (inter)dependence?'

1.4. Sub research questions

In addition to the Main research question (see Section 1.3), a number of sub research questions have been identified:

- What is perceived as trust on interpersonal level in cooperations with limited physical interaction?
- What are the reasons for participants to apply trust on interpersonal level in a cooperative network with limited physical interaction?
- Which factors do participants consider when making a decision to trust on interpersonal level in a cooperative network with limited physical interaction?
- Which problems do participants perceive to encounter when applying trust on interpersonal level in a cooperative network with limited physical interaction?
- Which strategies do participants apply to cope with the problems of applying trust on interpersonal level in a cooperative network with limited physical interaction?
- What are the similarities and discrepancies between trust on interpersonal level in cooperation with limited physical interaction and trust in professional environments as described in existing literature?

1.5. Research objectives

As a consequence of the above (see Sections 1.2 to 1.4), the Research objective has been defined as follows:

'To investigate the practices of participants in cooperation with limited physical interaction to develop and to apply trust on interpersonal level in order to cope with uncertainty and (inter)dependence.'

This objective will be achieved with the following research activities:

- To examine how trust on interpersonal level in practice is perceived by participants in cooperation with limited physical interaction.
- To explore the perceived reasons for participants to apply trust in practice on interpersonal level in cooperation with limited physical interaction.
- To assess the considerations of participants when applying trust on interpersonal level in a cooperative network with limited physical interaction.
- To appraise the problems participants perceive when applying trust on interpersonal level in a cooperative network with limited physical interaction.
- To inquire the strategies participants applied to cope with the problems of applying trust on interpersonal level in a cooperative network with limited physical interaction.
- Determine the similarities and discrepancies between trust on interpersonal level in cooperation with limited physical interaction in practice and trust in professional environment described in existing literature.

1.6. Scientific Relevance

The scientific relevance of this research is recognized as:

- To increase the knowledge on trust development and application on interpersonal level in cooperative networks with limited physical interaction.
- To further develop theoretical understanding on usage of existing and (emerging) new communication technologies in trust application in cooperation on interpersonal level.
- To contribute to the existing theories relating to trust on interpersonal level in cooperation in general.

1.7. Social Relevance

The following statements illustrate the social relevance of this investigation:

- To develop understanding of the possible drawbacks and advantages of the usage of existing and emerging technologies regarding trust application in cooperation on interpersonal level.
- To enable possible social and organisational improvements in cooperation on interpersonal level, related to applying trust.
- To enable possible technological improvements related to applying trust in cooperation on interpersonal level.

2. ANALYTICAL FRAMEWORK

2.1. Introduction

The motivation to cooperate is often aiming to achieve a positive result that cannot be achieved by individual efforts only, well described by Aristotle as 'the whole is greater than the sum of its parts'. Although cooperation potentially generates benefits, it is only too common to hear about conflicts when things going wrong. Conflicts in cooperation could arise about the identification of the right party or parties to cooperate with, the negotiation about contributions and pay-offs, the search for required resources, the coordination of tasks and responsibilities, how to cope with changing situations, competitors and other external challenges (Axelrod, 1997). And all these factors might derail the cooperation.

Trust is often mentioned as an essential ingredient in cooperation, especially in situations where the potential for opportunistic behaviour is abundant. However, trust is not as easy to come by as one often wishes: it takes effort to create and it could appear fragile when conflicts occur. The challenge to create trust may be hindered further regarding cooperation with geographical dispersion, with participants working in different locations, and the usage of technology aided communication (Handy, 1995).

In this chapter, the conceptualisation of the three most relevant constructs in this research will be discussed, including:

1. Cooperation and uncertainty;
2. Trust in cooperation;
3. Trust development on interpersonal level.

The constructs of cooperation and uncertainty will be introduced first, before going further into examining the concept of trust in cooperation. After examining the theoretical background of each construct, frameworks of the definition of trust, trust development and influencing factors for trust development will be presented in order to examine how people apply trust in practice and to answer the research questions as specified in Sections 1.3 and 1.4.

2.2. Cooperation and uncertainty

Cooperation is the process of individual entities acting together for mutual benefit, often (but not necessarily always) achieving a partially shared goal or common goals, as opposed to working alone or in competition with each other (Gintis & Bowles, 2011). The basic idea behind cooperation often is expressed in ways like 'self-help and mutual help' and 'each for all and all for each' (Hardin, 2002). In short, participation in cooperation may lead to benefits that cannot be achieved (efficiently) when individuals work separately to achieve the same goal.

Cooperation seems to have the following basic aspects (Axelrod, 2006):

- More than one participant;
- Contributing efforts and/or resources;
- To achieve mutual benefits.

However, the unpredictability of the future in general also leads to risk and uncertainty in cooperation. Uncertainty in cooperation can be caused by many factors, political, economic, social and natural changes on global, national and local levels are all possible causes for uncertainty in cooperation (Bendor, 1993). On interpersonal level, uncertainty in cooperation can be generated by discrepancies of interpreting the reality by different participants, leading to different ways to define problems and different ideas about acceptable solutions (Hardin, 2002).

Another possible cause for uncertainty in cooperation on interpersonal level is the tension of the participants between self-interest and collective interest (Herre et al., 1999). Participants in cooperations often have mutual interest to achieve the collective objectives of the cooperation, or else they would not voluntarily participate in the cooperation. Yet in many cases, there is tension between the collective interest and the individual interest. An individual may be tempted to act in a way to benefit oneself, but this action will harm others in the cooperation. This conflict of interest can lead to opportunistic behaviours, when combined with lack of internal control, such as a sense of morality, or external control, such as monitoring, threat of punishment (Tajfel & Turner, 1979).

Conflict of interest can lead to opportunistic behaviour that may threaten the collective objectives of the cooperation, and the potential for opportunistic behaviour can lead to unreliable and unpredictable actions of others that creates uncertainty (Luhmann, 2000). Many academic disciplines study the phenomenon of cooperation in relation to conflict of interest and uncertainty, and different approaches have been put forward to examine the possible causes and potential problems. E.g. a neurophysiological and biological approach of cognitive and affective processes of individuals in social interactions (Adolphs, 2002; Evans & Krueger, 2011; Lount, 2010), social psychological behaviour in dyadic relationships (Rempel et al., 1985; Shallcross & Simpson, 2012), behaviour within groups (Yamagishi, 1988; Yamagishi & Cook, 1993), intergroup interactions (Insko et al., 2005; Serva et al., 2005), a sociological and political science approach of the workings of institutions and markets (Bottazzi, et al., 2006; Fukuyama, 1995) and on international conflicts resolution (Kressel & Pruitt, 1989; Bercovitch & Houston, 2000; Coleman & Deutsch, 2001).

However, there is a lack of consensus concerning the conceptual structure and the mechanism of cooperation and conflict of interest (Rousseau, 1998). Three prominent, but interconnected academic disciplines focus on the mechanisms coping with conflict of interest:

- Conflict resolution and management researches, mostly related to negotiation and mediation and cultural aspects of conflict and cooperation (Mohr & Spekman, 1994; Reuveny & Kang, 2003; Coleman & Deutsch, 2011);
- Game Theory, focuses on mathematical strategies to maximise interest or utility of participants in cooperation and conflict of interest (von Neumann & Morgenstern, 1944; Nash, 1950; Aumann & Shapley, 1974; Smith, 1982), and
- Economics and political science on design of agreement, more related to markets and contracts (Coase, 1960; Williamson, 1981; Axelrod, 1986; Milgrom, 1992).

This research focuses specifically on trust on interpersonal level in cooperation with limited physical interaction due to geographical and/or organisational limitations. In comparison, previous researches have been conducted on the functioning of *virtual teams*: temporary groups of geographically, organisationally and/or time dispersed knowledge workers who coordinate their work predominantly with electronic information and modern communication technologies in order to accomplish one or

more organisation tasks (Ale Ebrahim et al., 2009). Those researches mainly focus on the design and the process of virtual teams (Powell et al., 2004). Several studies have been carried out about the role of trust in virtual teams (Jarvenpaa & Leidner, 1998; Jarvenpaa & Leidner, 1999), in which trust is conceptualised in the form of swift trust (Meyerson et al., 1996), measuring trust levels and team performances (Peters & Karren, 2009). The concept of swift trust will be discussed in the further sections of this chapter (see Section 2.3 and 2.3.2, respectively).

This research investigates **cooperation with limited physical interaction**, which is defined in this research as (Gibson & Cohen, 2003):

- A functioning network of individuals having (inter)dependent task oriented relationships,
- Collectively managing relationships across organisation boundaries,
- In order to achieve well defined (individual and collective) objectives in a professional environment and
- With participants relying on modern communication technologies to interact with limited physical interaction.

2.3. Trust

In this section, three different aspects of trust related analytical frameworks in this research will be introduced.

- Conceptualising trust (Section 2.3.1);
Introduction of the theoretical discussion and the chosen conceptualisation of trust in this research.
- Conceptualisation of how trust is developed (Section 2.3.2);
Discussion of four different concepts of trust development, namely:
 - Cognitive trust development approach (Lewicki & Bunker, 1996; Lewicki et al., 1998);
 - Reason-routine -reflexivity routed trust (Möllering, 2006);
 - Swift trust theory (Meyerson et al., 1996) and
 - Trust development in professional environment (Shapiro et. al, 1992).
- Conceptualisation on factors influencing trust development (Section 2.3.3);
Combination of factors found in current literature that may influence trust development and application in cooperation.

2.3.1. Conceptualisation of trust

Diversity of theories on trust conceptualisation

Trust is seen as a foundation for cooperation and essential to initiate, establish, and maintain social relationships. Scholars have seen trust as an essential ingredient for the foundation for interpersonal relationships (Rempel et al., 1985). Trust also facilitates the flourishing of groups (de Jong & Elfring, 2010), organisations (Dirks & Ferrin, 2001; McEvily et al., 2003; Zaheer et al., 1998) and nations (Knack & Keefer, 1997; Labonne & Chase, 2010). Trust can even promote the stability and quality of social networks by strengthening norms that favour cooperation and catalyze the inclusion of new members into existing social networks (Fukuyama, 1995; La Porta et al., 1997; Putnam, 1993) as the basis for stability in social institutions and markets (Arrow, 1974; Williamson, 1974; Zucker, 1986). Many theories of trust also emphasize

that trust is most relevant to behaviour in situations in which uncertainty and conflicts of interest occur (Balliet & van Lange, 2012). Trust encourages the initiation of mutual cooperative relationships (Deutsch, 1958; McKnight et al., 1998) and brings greater relationship commitment and satisfaction (Campbell et al., 2010; Righetti & Finkenauer, 2011). In short, trust is considered to be a main ingredient for a range of possible social relationships and sounds almost 'magic' to cope with problematic social interactions and conflicts.

Most scholars agree that the basic function of trust is to cope with uncertainty in a situation where (inter)dependence is required: A depends on B to perform action X when A cannot be certain that B indeed will perform action X. Thus, trust is needed to cope with uncertainty in situations where parties are (inter)dependent on others, often but not necessary in cooperation. There is uncertainty because of possible conflict of interests: A's interest is not exactly the same as B's, so there are reasons for B to act in a way that is not in the interest of A.

Development across disciplines has generated many different conceptualisations of trust (see Appendix 6), but it appears that there is no consensus on one definition of trust. It even has been defined in so many different ways that much confusion is the result (Lewis & Weigert, 1985; Young & Wilkinson, 1989; Romano, 2003). Confusion about the meaning of trust begins with conflicting assumptions among existing definitions about what type of construct trust is (Hardin, 1998; Mayer et al., 1995; Möllering et al., 2004; Perry & Mankin, 2004). For example, some theories refer to trust as a behavioural intention (e.g. Deutch 1958; Currall & Judge, 1995, Rousseau, et al., 1998) while others consider it as a psychological state (Möllering, 2001; Luhmann, 1979; Baier, 1986; Lewicki et al., 1998). Still others view trust as a facet of personality that develops early in life and remains relatively stable through adulthood (Rotter, 1967; Webb & Worchel, 1986). Furthermore, trust is conceptualised as attitude, expectation, process or willingness to risk taking (Möllering et al., 2004).

The conceptualisation of trust in this research

With the variety of trust definitions, it is important to choose a definition of trust which is both scientifically sound and appropriate with respect to the objectives of this research. Moreover, given the nature of this research, it should be interpretative and centred on the subjectivity of the reality. A definition that is clear and guiding, yet not too restricting, is likely to be suitable to investigate the role of trust in cooperation and coordination. The selected definition will be used more as a reference to identify 'perceived trust' during the stages of data collection and analysis.

The following definition (Hardin, 2002) is chosen in this research. This definition appears to fulfil the aforementioned requirements, as it conceptualises trust as a mental state of expectation, in a three part relation in what Hardin calls encapsulated interest:

'A expects B to perform X, under a specific set of conditions Z, due to encapsulated interests of B to A.'

With this definition, trust is a mental state of expectation, where participant A in cooperation (with limited physical interaction) trusts his or her fellow participant(s) B to perform an action or actions, under the specific set of characteristics of the cooperation. The cooperation and the characteristics (such as cooperating with reliance on technology aided communication) influence the nature of the relationships

and corresponding interactions between participant A and its fellow participants, as well as their interests in this cooperation (Hardin, 2002).

Encapsulated interest indicates a belief from participant A in cooperation, that his/her fellow participant(s) B has strong reason to act in his/her interest, such as to maintain a relationship with participant A, or to maintain B's own reputation. Or simply a need to maintain fellow participant B's own moral sense of obligation.

In this case, participant A's interest is encapsulated in fellow participant B's interest because B has an incentive to act both in A and B's own interest. The application of trust by participant A is to overcome uncertainty and dependency (Shockley-Zalabak et al., 2000; Barbalet, 2009; Hardin, 2002).

According to Hardin, the main factor that distinguishes trust from other mechanisms to coordinate cooperation, is the concern of the trustee to the trustor's interests. It is hardly 'trust' when we expect others to cooperate with us, simply because it is beneficial for them to cooperate for the sake of their own interests (Hardin, 2002). In that case, the only issue left is the competence of the trustee to perform the required action(s). Trust, however, entails a stronger claim and requires *both* competence *and* a reason for doing so. That reason is not merely fulfilling the own interest of the trustee, but includes concern with the interests of the trustor as well.

So there are *two* relevant issues in this rational account of trust: incentives and the competence of the trustee to fulfil the trust, *and* the trustor's knowledge of the trustee's incentives and competence.

Hardin's definition clearly draws attention to the following aspects of trust:

- What is the nature of the relation between A and B?
- What are the interests of A and B?
- How much resemblance or rather conflicts are there between A's interests and B's interests? In other words, why and how far are A's interests encapsulated in B's interests?
- What are the conditions that influence the relationship between A and B?
- What are the conditions that influence the level of encapsulated interests of A and B?

Trust and trustworthiness

There is often confusion about the conceptualisation of trust and trustworthiness. Trust, as being explained above, is often defined as a mental state of willingness, expectation and/or intention, while trustworthiness is a set of characteristics of the entity which is about to be trusted by the trustor (Mayer et al., 1995). In other words, someone or something is considered trustworthy if he/she or it fulfills a set of criteria. In literature, trustworthiness on interpersonal level is often defined as the estimated ability, integrity and benevolence of a person (Mayer et al., 1995). The aspect of *ability* indicates the competence of cooperative partners to perform their tasks and relates to knowledge, skills and expertise. *Integrity* assumes the reliability of the cooperative partners about agreements, e.g. to deliver results on time and up to standard. The *benevolence* of cooperative partners indicates the aspect to resist the temptation against opportunistic behaviour and to harm the interests of the cooperation and/or other cooperative participants for personal gains. Therefore, trustworthiness is the cause and trust is the result. Trust is developed on the basis of trustworthiness (Mayer et al., 1995).

2.3.2. Trust development

After the previous section about the conceptualisation of what trust is, four theories of trust development will be presented here. Trust development refers to the mechanisms in social interaction that enable trust to establish and evolve. These theories have different, yet overlapping approaches about how trust is developed. They are required to interpret the findings of this research.

Cognitive trust development approach of Lewicki

Lewicki and colleagues with similar ideas have proposed a view, that can be considered a cognitive approach to trust development, based on conscious awareness/calculation of reward to trust the potential trustees and the risk to be vulnerable and dependant on the intention or behaviour of the trustee (Shockley-Zalabak et al., 2000; Lewicki & Bunker, 1996; Lewicki et al., 1998)

According to the theory of trust analysis (Lewicki et al., 1998), there are four factors that determine the level of trust:

- Personality predispositions: one's individual character developed by nature and nurture.
- Psychological orientation: one's state of mind at the moment, also influenced by external factors.
- Reputations and stereotypes: associations and expectations on the object of trust.
- Actual experience over time: individual's interpretation of interactions in the past.

Furthermore, unlike *essentially* being merely more or less of the same thing, Lewicki and colleagues with similar view consider trust and distrust fundamentally different:

- Trust: confident positive expectations regarding another's conduct.
- Distrust: confident negative expectation regarding another's conduct.

While the existence of trust and distrust can both have various (low to high) confidence level of the expectation, trust or distrust as such affects the direction (positive or negative) of the expectation.

In addition, Lewicki and colleagues distinguish two kinds of (dis)trust (see Figure 1):

- Calculus-Based Trust (CBT)
This kind of trust is based on economical calculation of which the value is determined by the outcomes of the result and maintenance of the relationship.
- Identification Based Trust (IBT)
This kind of trust is based on identification of each other's values, desires and intentions, developing mutual understanding where one can effectively act in favour of the other.

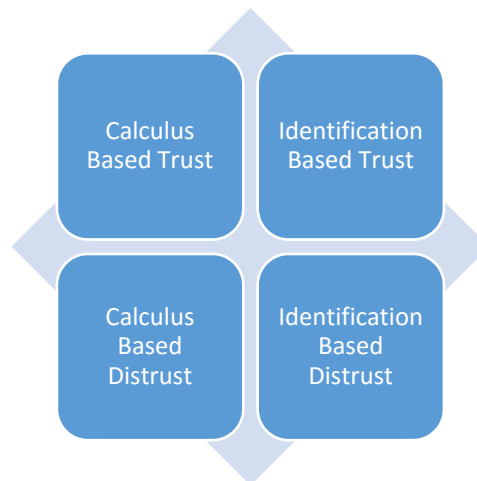


Figure 1 - Typography of (dis)trust

Calculus Based Trust is more common in pure business relationships, while Identification Based Trust is more likely to happen in personal relationships (Lewicki et al., 1998). In reality, most relationships show a mixture of both types of trust. Relationship is also multifaceted and depends on the issue, one may trust his mother to provide love and attention, while one may not trust her to keep a personal secret. So trust and distrust can also coexist without tension in a relationship according to this theory.

Trust as reason, routine and reflexivity of Möllering

Another approach to examine trust development is advocated by scholars like Möllering, who argue that there are other ways people apply trust, besides cognitive approach and rational calculation (Möllering, 2006). He identifies three types of mechanisms to trust development: reason, routine and reflexivity (see Figure 2).

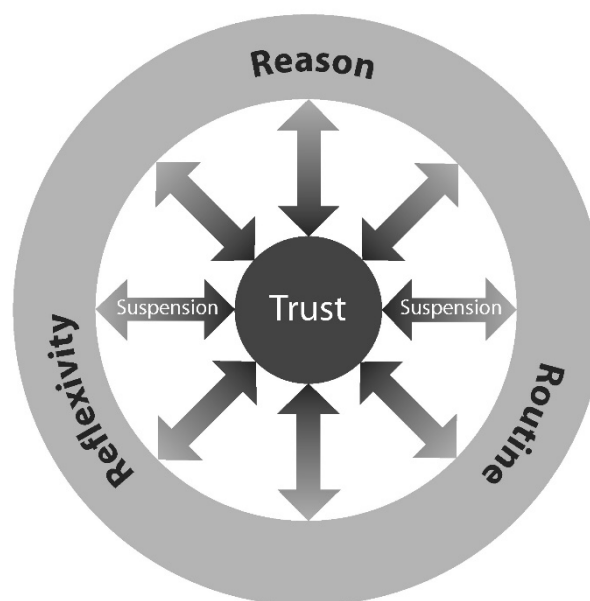


Figure 2 - The Trust Wheel - An integrative Framework (Möllering, 2006)

Reason

The 'reason type' of trust development is derived here from rational calculation. People consciously weigh about the pros and cons of applying trust to others based on available information. (Both routine and reflexivity indicate a lesser conscious mechanism to apply trust than reason.)

Routine

The 'routine type' of trust is based on an institutional approach to trust as a matter of 'taken for granted' routines, as a mechanism of applying trust based on familiarity that things have gone well in the past. So it may keep on going the same way next time since there is some kind of supposed institutional backup as a basic fundament to trust.

Reflexivity

The 'reflexivity type' of trust explains the occurrence of trust as the outcome of a gradual process of interaction beginning with small steps, leading to a further self-reinforcement with further input, signalling and communication from actors involved in a reflexive way to enhance the potential of trust application. This mechanism requires actors to engage actively in the processes to create trust and by doing so modifying the processes and assumptions that were in place initially. In this manner, cooperative participants can move closer and closer to 'blind trust', and hope through an 'as if' state that trust will develop from the situation in which there were insufficient data to be 'reasoned', or from situations where there are no 'routines' perceived to be meaningful to the potential trustor.

Although Möllering identifies these three mechanisms, he proposes that the mechanisms are often combined and hard to identify individually in social interaction. So an act to trust is often a combination of reason, routine and reflexivity. While people often arrive at a point of trust based on all these mechanisms, these mechanisms just enable different ways for trust to develop, they fail to explain how trust deals with the irreducible uncertainty and vulnerability. In his theory, trust is what Möllering describes as suspension of disbelief: that the trustor decides to take the 'jump' to overcome the uncertainty as if there were certainty. Möllering also mentioned trust itself as 'a leap of faith'.

Swift Trust

Swift trust is a conceptualisation of trust on interpersonal level in temporary organisation structures.

There are not many researches related to trust in cooperation with limited physical interaction. The idea of 'swift trust', however, is one conceptualisation of trust that actually matches this criterion. Swift trust, according to literature, can take place in temporary organisational structures such as project teams, which may require quick starting groups of people performing under (time) pressure (Meyerson et al., 1996).

Traditionally, trust has been studied in long time relationships, in which the development of trust is time dependent, relying on the history of the group and the interaction of its members. This view has become problematic with the increase of globalization, change in technologies and an increased dependency of organisations on temporary teams (Meyerson et al., 1996).

Some scholars (Meyerson et al, 1996; McKnight et al, 1998; Costa, 2003; Jarvenpaa et al, 1998) developed the 'initial trust' model to explain the presence of relatively high initial trust levels in newly formed relationships, such as cooperative networks across multinational organisations.

High initial trust has been observed in new organisational relationships - even at an initial stage, before members had a chance to interact (Iacono & Weisband, 1997; Jarvenpaa et al, 1998; Meyerson et al, 1996). This explains why cooperative participants do not need a specific judgement about other participants, but form an expectation that in general is based on their own pre-existing dispositions, institutional expectations and social categorisation to make attributions about the trustworthiness of other participants. Swift trust is 'a unique form of collective perception that is capable of managing issues of vulnerability, uncertainty, risk and expectations' (Meyerson et al., 1996).

Swift trust is created by *category* driven processes instead of *evidence* driven information. This means that people rely on their general expectation and impression of an individual or of certain categories of people, based on their perceived (group) characteristics (Kohler & Schilde, 2003). Swift trust is considered to consist of two components: a cognitive component and a normative component.

Cognitive component of swift trust relates to collective perceptions of the group which are immediately apparent and are based on expectations that are based on social identities and self-categorisations (Meyerson et al., 1996; Hogg & Terry, 2000). With the lack of evidence and prior interactions, group members rely on social categorising to form trusting beliefs. These early trusting beliefs appear to be self-reinforcing, members of the group focus more on evidence that affirms the expectation of their trusting beliefs, while the contradicting evidence may be ignored (McKnight et al., 1998). Cognitive components of swift trust are important for the initial stage of team forming but are insufficient to maintain trust on a significant level as time goes on (Crisp & Jarvenpaa, 2013).

Normative component of swift trust relates to the expectations on behaviour in the group that become norms, promoting adaptive behaviour by providing guidelines for what is considered acceptable in temporary work teams. Swift trust will erode with 'deviations from or violations' of group norms related to competence and behaviour (Crisp & Jarvenpaa, 2013).

Normative and cognitive components of swift trust interact by working in conjunction with one another: cognitive categorising continues to create and reinforce norms, which in turn confirm (or not) the normative expectations, although not replacing one another (Crisp & Jarvenpaa, 2013). With a low level of cognitive components of swift trust, strong group norms may be perceived as controlling instead of confirming and coordinating (Crisp & Jarvenpaa, 2013).

Trust development in a professional environment

The cognitive approach of trust development has been traditionally advocated by scholars from the domain of organisation and management studies (Webber, 2008). Scholars such as Shapiro, Sheppard and Cheraskin have proposed a framework based on three types of trust that are developed in sequential stages in which achievement of trust at the one level enables the development of trust towards the next level. The three types of trust identified by Shapiro and colleagues (Shapiro et. al, 1992) in a professional environment are:

- Deterrence based trust;
- Knowledge based trust and
- Identification based trust.

This framework can be seen as an expansion of the framework from Lewicki and colleagues (Lewicki et al. 1998) that is presented previously.

In this trust development framework for a professional environment, trust development begins with *Deterrence based trust*, where trust is based on assuring consistency of behaviour, and where individuals will act consistently because they fear the consequences. Trust in this stage is based on possible punishment and negative consequences for oneself and others. Therefore, the threat of punishment needs to be clear and likely in this stage.

Knowledge based trust is the next level of trust, grounded in the predictability of the behaviour of others that is based on the knowledge of others, including their patterns of behaviour and motivation. This type of trust relies more on information than deterrence by punishment. To maintain knowledge based trust requires regular update of information through frequent interaction in cooperation.

The last type and the highest level of trust in a professional environment is *Identification based trust*. This type of trust, similar to Lewicki's framework, is based on the understanding and sharing of values. It permits a participant in a cooperation to serve as the other's agent and to act as the other's substitute in the social interaction in a professional environment.

Four additional activities are required to develop identification based trust according to this framework: to develop a collective identity (a joint name, title, logo etc.), to work in the same location or neighbourhood, to create joint goals and to commit to commonly shared values.

Integrated framework of trust development

There are various type of trust discussed in different trust development theories, the table below provides an overview of them (see Table 1).

Table 1 - Various types of trust according to trust development theories

Theory	Type of trust	Definition
	Ability based trust	Trust on the competence of others
<i>Trustworthiness</i>	Integrity based trust	Trust on the reliability of others to deliver results on time and up to standard
	Benevolence based trust	Trust based on others defending your interest
<i>Lewicki's trust development</i>	Calculus based trust	Trust based on rational calculation of probability of others to act in your interest
	Identification based trust	Trust based on others acting in your interest based on shared values
	Deterrence based trust	Trust based on the knowledge of fear from others for negative consequence of false behaviour
<i>Trust Development in a professional environment</i>	Knowledge based trust	Trust based on the knowledge of others' motives and past behaviour
	Identification based trust	Trust based on others acting in your interest based on shared values
<i>Swift trust</i>	Cognitive component based trust	Trust based on a generally accepted impression/stereotype of a social group
	Normative component based trust	Trust based on following and reinforcing group norms
	Trust developed with reason	Trust based on a rational calculation of the probability of others to act in your interest
<i>Möllering's trust development</i>	Trust developed with routine	Trust based on a subconscious reliance on 'things have always been like that'
	Trust developed with reflexivity	Trust based on iterative social interactions confirming initial expectations

In this research, these theories are merged into a single framework (see Figure 3).

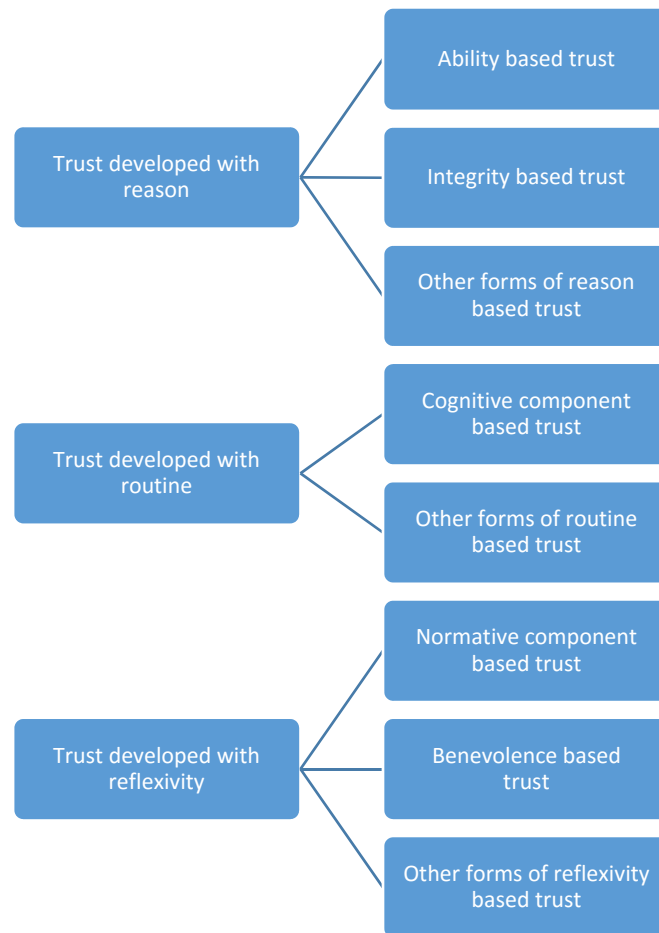


Figure 3 - Integrated framework for trust development

Ability and Integrity based trust is 'trust' based on cognitive understanding of the estimated competence and reliability. This includes the cognitive component based trust (from the Swift trust theory) relying on generally accepted social categorisation and impression of social groups, which is similar to the 'taken for granted' routine trust.

The normative component based trust (also from the Swift trust theory) and Benevolence based trust are grounded in creating and reinforcing group norms, values and expectations, similar to the 'reflexivity' trust which is based on social interactions confirming expectations of others.

Other forms of trust may also exist besides trust based on ability, integrity, benevolence, cognitive component and normative component. This framework provides the possibility to include those forms of trust that occur (in this research), but not yet clearly defined by the chosen theories of trust development.

2.3.3. Influencing factors on trust development in cooperation

Introduction

One of the aims of this research is to understand how participants develop trust in cooperation with limited physical interaction. Therefore, an understanding of the possible influencing factors on trust development is needed. There are various models in literature such as the MCC model (McKnight et al., 1998), the Distributed Trust Model (Abdul-Rahman, 1997), as well as the popular and often used model of Mayer (Mayer et al., 1995) to explain the factors that are involved in the process to apply trust. Many of these models are based on (perceived) trustworthiness and trust propensity of the trustor towards the trustee. But there are also other factors that are mentioned in the literature as possible aspects influencing trust development. In this section, the following six factors from trust literature and theories will be discussed and examined:

1. Trust propensity;
2. Perceived trustworthiness;
3. Institutional and societal monitoring and sanctioning;
4. Potential conflicts of interest and credible commitment;
5. The importance of the outcome and consequences;
6. Difference in power and dependence.

Eventually, they are combined into Influencing Factors on Trust Development, to be examined in this research to understand the process of trust application on interpersonal level within cooperative networks with limited physical interaction in practice.

Factors 1 and 2: Trust propensity and trustworthiness

Trust propensity of the trustor and the perceived trustworthiness of the trustee are most often mentioned as the basis for trustor's intention to trust (Colquitt et al., 2007). Trust propensity is a dispositional willingness to rely on others, often based on individual psychological characters and past experiences (Colquitt et al., 2007). Some people are more 'trusting' than others under the same conditions. This form of 'personality based trust' has been referred to by other scholars as 'dispositional trust' (Kramer, 1999).

Trustworthiness is based on the perceived ability, integrity and benevolence of the trustee (Mayer et al., 1995)(see Section 2.3.1). *Ability* refers to an assessment of the other's knowledge, skills, and/or competences. This dimension recognizes that trust requires some sense that the other is able to perform in a manner that meets your expectations. *Integrity* is the degree to which the trustee adheres to principles that are acceptable to the trustor. This dimension leads to trust based on consistency of actions in the past, credibility of communication and the congruence of the other's word and deed. *Benevolence* is the trustors' assessment that the individual to be trusted is concerned enough about our welfare to either advance our interests, or at least not to impede them. The perceived intentions or motives of the trustee are most central. Honest and open communication, delegating decisions and sharing control indicate evidence of one's benevolence.

Although these three dimensions are likely to be linked to each other, they each separately contribute to influence the level of trust in others within (interpersonal) relationships. However, ability and integrity are likely to be most influential early in a relationship, while information with respect to one's benevolence needs more time to

emerge. According to theories of trustworthiness (Mayer et al., 1995), the effect of benevolence will increase as the relationship between the parties grows closer.

Factor 3: Institutional and societal monitoring and sanction

According to trust related literature, sometimes our expectations for other's behaviours are based on rules dictated by legislative and regulatory institutions to reduce the risk of failed trust. Some scholars on trust have also indicated the importance of strong and efficient institutions to support trust in (cooperative) relations (North, 1990; March & Olsen, 1998; Gillespie & Dietz, 2009). They argue that institutions are needed to regulate and enforce norms and rules. When, in cooperation, trust is broken, there will be 'authorities' to enforce punishment. These authorities could include both formal institutions and less formal societal groups, such as a formal justice system, private organisational regulations and informal social groups (colleagues, friends, families), leading to formal punishment, social isolation or simply accruing a bad reputation that could be harmful to take part in cooperation in the future (Möllering, 2001; Lewicki et al., 2006).

Factor 4: Potential conflict of interest and credible commitment

Another factor being mentioned as a possible factor for trust application is the perceived conflict of interest, and the other side of the coin: the demonstration of credible commitment to cooperate (Riker, 1980, Lewis & Weigert, 1985). The estimation of the degree of conflict or rather commitment in cooperation, generally influences the perceived level of uncertainty. If cooperative partners have conflicting interests, meaning he or she may gain more by displaying opportunistic behaviour instead of going through with the intended cooperation, the risk and uncertainty may increase. On the other hand, a display of 'commitment' to cooperate by showing a shared interest to achieve mutual goals can reduce this uncertainty and the risk to trust.

Factor 5: The importance of the outcome and consequences

The willingness to be vulnerable and dependant on the actions of others can also correlate to the importance of the outcome of the cooperation. Matters of perceived low importance may lead to higher willingness to be vulnerable and to depend on others, and therefore the trustor might be more ready to 'trust'. While highly important matters may require a higher level of certainty and may result in a lower willingness to take risk (Lewis & Weigert, 1985; McAllister et al., 2006).

Factor 6: Difference in power and dependence

Power inequality is ubiquitous in most if not all facets of societies. Difference in power can undermine the possibility of voluntary and unenforced participation in 'cooperation' (Bradach & Eccles, 1989). In political science, power often is defined as having (access to) various resources to be used to influence others (Emerson, 1962). Much of the trust literature (often implicitly) assumes equal power relations (Baier, 1986, Kramer, 1996). Power inequality also creates unequal dependence in relationships. Many scholars consider power inequality as a barrier for trust formation. Relationships formed with actors on the similar hierarchy level may more often involve trust and cooperation, and relationships formed with actors from different hierarchy levels often involve power and compliance (Baier, 1986). Although it is not impossible that trust emerges in power unequal relationships if all parties involved are interdependent on others, plenty of researches have examined trust in relationships

between physicians and patients (Thom & Campbell, 1997; Zolnierek et al., 2009). Institutional constraints can further restrict power imbalance in many types of relationships (Baier, 1986)

Influencing factors of trust development in this research

All six factors that are discussed in Section 2.3.3 above are frequently mentioned as possible aspects to influence the intention to trust, although there is no existing model yet to include all of these factors in an integrated model of trust development. This research will combine all these factors to examine the development of trust on interpersonal level in cooperative networks with limited physical interaction. Some or all of these factors may be considered by the trustor, rationally or less consciously, before he/she forms the intention to trust, thereby taking risk by putting oneself in a position of dependence and uncertainty. This model is intended to be a 'rough guide' to conduct the data analysing phase of this research, and at the same time as the basis for the theoretical comparison of the findings gathered in practice. However, not all of these factors might be found as relevant for this research (see Figure 4).

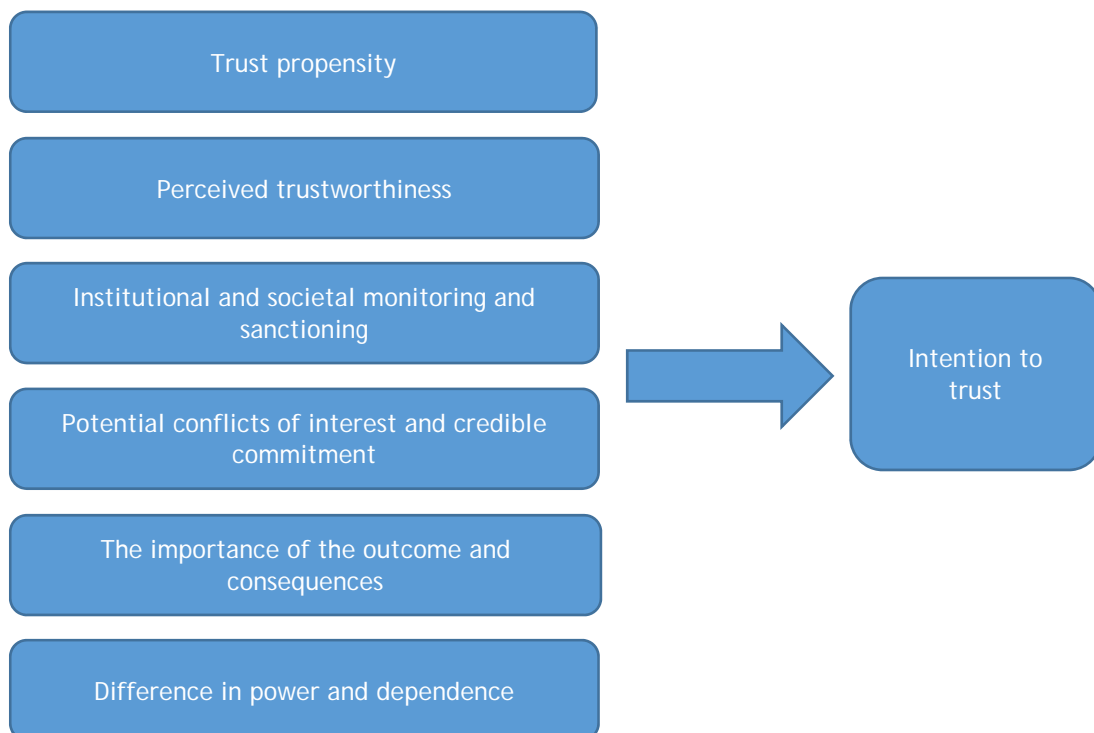


Figure 4 - Influencing Factors on Trust Development

2.4. Summary of the analytical frameworks in this research

In this chapter, several theoretical constructs that are relevant to this research have been presented, including:

- The concept of cooperation with physical limited interaction;
- The concept of trust;
- Trust development and
- Possible factors influencing trust development.

Cooperation with limited physical interaction is broadly defined as a network of individuals having a formal (contractual) arrangement to engage with each other in a co-dependent collaborative relationship, in order to achieve well defined (individual and collective) objectives in a professional environment and with participants relying on modern communication technologies to interact under (self-perceived) limitations on physical interaction.

The conceptualisation of trust has been divided into three aspects (see at the begin of Section 2.3):

- The conceptualisation of trust itself;
- The conceptualisation of trust development and
- The conceptualisation of factors that may influence trust development.

'Trust in this research is considered as a mental state of expectation, in a three part relation which is characterised by encapsulated interests: A trusts B to do X, where A is the trustor and B is the trustee, with X the specific action that A trusts B to perform, under a specific set of conditions Z.'

'Encapsulated interests' indicates that the trustee has concerns for the interests of the trustor but that he/she is not acting out of self-interest only (e.g. parents and offspring). This definition of trust is chosen for its clear focus on relational interaction in cooperation with specific characteristics, while at the same time not being too strict for the interpretative and exploratory nature of this research.

In this research, trust development is conceptualised in an integrated framework using concepts from four different theories that may contribute to the understanding of trust development in cooperative networks with limited physical interaction. Three mechanisms of trust development have been adopted (see Figure 3):

- Trust development based on reason
Trust is formed based on rational calculation, such as ability and integrity based trust, with estimation of the competence (ability) and reliability (integrity) of others.
- Trust development based on routine
Trust is formed based on a sense of 'taken-for-grantedness' about trustworthiness of other social groups, such as cognitive component based trust that is formed based on generally accepted reputation and past experiences with certain social groups, instead of actual knowledge of and experience with certain individuals.
- Trust development based on reflexivity
Trust is formed based on confirmation of expectations through iterative social interaction, such as normative component based trust to conform expectations, and benevolence based trust to develop shared values and identities.

Several prominent theories have been put forward to identify the factors which can influence trust development in cooperation. This research has combined six factors found in existing literature into **Influencing Factors on Trust Development** (see Figure 4). It includes factors such as trust propensity, perceived trustworthiness, institutional and social monitoring and sanctioning, conflicts of interest and credible commitment, importance of cooperation outcome and differences in power and dependence among cooperative participants.

3. METHODOLOGY

3.1. Introduction

In this chapter, the methodology of this research will be introduced. First, the methodology of interpretative research and exploratory nature of the research will be discussed, followed by an explanation of the selected method of Frame analysis to guide, analyse and interpret the collected data. After that, the research strategy and the data collecting method of semi-structured interviews will be reviewed, with details of the interview protocol that was used. Finally, the data analysis and the formulation of the coding method in this research will be discussed, followed by the adopted strategy of the further interpretation of the findings.

3.2. Research methodology and research method

Research methodology

For this research, an exploratory interpretative approach has been chosen. The exploratory character of the approach is required due to the lack of previous researches on trust development in cooperative networks with limited physical interaction. An exploratory approach is suitable when there is not enough knowledge available to formulate conceptual distinctions or testing explanatory relationships (Shield & Rangarajan, 2013). This research approach is appropriate if a phenomenon needs to be understood when little is known about which variables to examine and/or if existing theories do not apply with the particular sample or group (Morse, 2000). The research concentrates on examining trust application 'in practice' and aims to provide insights into a general 'ground level' view on trust development and application in cooperative networks with limited physical interaction.

The 'interpretative' approach of the research has been selected based on the underlying ontology claim of this research, in which reality is socially constructed and embedded in the context. This approach has the epistemological assumption that individuals seek understanding of the world in which they live and where they develop subjective meanings of their experiences. These meanings are varied and multiple, leading to a complexity of views rather than narrowing meanings into a few categories and ideas (Creswell, 1994). Interpretive research is distinctive in its approach to research design, concept formation, data analysis, and standards of assessment (Bevir & Kedar 2008, Yanow & Schwartz-Shea, 2006). It encompasses an experience-near orientation that sees human action as meaningful and historically contingent (Bevir & Kedar, 2008).

Here the interpretative approach has been chosen to answer the research question of 'what (reasons) and how' participants apply trust to cope with dependence and uncertainty in practice. This approach is chosen to align the nature of 'street level' and 'subjective meaning making' of applying trust as a solution to cope with uncertainty in cooperative networks at one hand and with limited physical interaction at the other: how participants perceive trust development and application, what they see as problems and how they deal with them. This research approach also aims to understand the specific and deviant 'experience' as comparison to the existing knowledge and understanding of trust application in general.

With its focus on subjective meaning making practices, this research approach can provide an insightful contrast to the cognitive and rational nature of most theories regarding conflicts of interest, trust and cooperation with limited physical interaction, and thus can lead to possible new understanding of the application of trust to cope with cooperation and conflicts of interest, to both improve the knowledge in normative theories and practical everyday application.

Research method

This research aims to investigate the socially constructed understanding of applying trust to cope with (inter)dependence with uncertainty in cooperative networks with limited physical interaction. The subjective meaning of trust application, dependence and uncertainty are starting points in this research. Therefore, an analytical framework is needed that can examine the socially constructed nature of the perception. The research methodology and research method of Framing is chosen to address the subjective and constructed view of the cooperating participants and their experiences with trust in cooperative networks with limited physical interaction.

Frame analysis is a research method that is used to analyse how an issue is defined and/or problematised. Framing is defined as creating a schema of interpretation, evoking a collection of stereotypes that individuals rely on to understand and respond to events (Entman, 1993). According to Entman, Framing essentially involves selection and salience. Framing is 'to select some aspects of a perceived reality and make them more salient in a communicating text...' (Entman, 1993). The concept of frames refers to the process of constructing and representing the world around us. We use different schemes of interpretation to understand an event by 'imparting' meaning and significance to elements within the frame and setting them apart from what is outside the schema' (Buechler, 2000). There are different ways to explain the same event, it depends on what and how we attach meaning to certain elements in this event. In short, Framing could be seen as explaining an event, based on an individual's mental model, which is different for each individual and is shaped by many factors, such as past experiences and interactions.

According to the ideas of Barbara Gray on the concept of Framing (Gray, 2003), there are different types of frames related to issues such as identity, characterisation, conflict management, views on nature, views on social control, power, loss and gain, ethics and risk. Frames may have many different functions:

- To define issues;
- To shape identities;
- To shape actions;
- To distribute rights;
- To justify actions;
- To mobilize others.

Entman (1993) has indicated the functions of Framing as 'promote a particular problem definition, causal interpretation, moral evaluation, and treatment or recommendation.' In short, Framing enables one to:

- Define problems;
- Diagnose causes;
- Make moral judgement;
- Suggest remedies.

In the initial stage of this research, the Framing approach of Entman was chosen to guide and analyse the collected data, as well as for interpretation and analysis. But after the first stage of data analysis, it turned out that Entman's Framing approach, focusing on problems and conflicts, was not suitable for this research during the data analysis stage. The participants in this research suggested no perceived problems and conflicts related to trust in cooperation with limited physical interaction. While it is certainly relevant to examine the possible causes of this perception, it is less possible to analyse this phenomenon as a problem with a corresponding moral judgement and recommended solutions. Therefore the decision was made to adjust the approach of Framing and to examine how the participants in this research perceived and constructed meanings about the cooperation, the individuals in the cooperation and the function and meaning of trust in cooperative networks with limited physical interaction, identifying coherent elements and aspects that are selected and made salience into the schemes of interpretation. This approach was adapted at the second stage of data analysis.

3.3. Case selection and selection of participants

Most participants for this research were part of the existing network of the researchers in the domain of health and environmental science. Others were selected and approached on e.g. recommendation of early interviewees to provide others that fit the selecting criteria (snowball sampling). Potential interviewees were first approached and invited by e-mail to participate in the research (see Appendix 2), with explanation about the objective of the research and the criteria for participation (see below). Non-respondents were contacted later again by telephone at their work place. Participants were selected, based on the following criteria:

- Having (previous or current) experience with participation in (a) cooperative network(s) with heavy reliance on non-face to face communication technologies such as e-mail, telephone, video conferencing with
- Limited physical interaction, due to geographical location or other possible limitations.

For this research 18 participants, of which 10 males and 8 females, were selected. Participants all are academically educated professionals with a background in the field of health and environmental science and currently still professionally active in this field (see Table 2 below and Appendix 1). Of all 18 participants,

- 9 participants are working in a semi-governmental research institute with tasks e.g. to conduct scientific researches and to assist the national government to formulate and implement national health policies;
- 6 participants are employed in knowledge and research institutes such as universities;
- 3 participants are employed directly by local or national governments on health and environmental policy development and implementation;
- 11 participants have work related to the coordination or management of projects related to health and scientific researches;
- 7 participants have a position related to the coordination or management of health and environmental policy development or implementation.

Table 2 - Participants (interviewees) in this research

Gender of participants	Female	Male
Number of participants	8	10

Type of profession	Research project coordinator	Policy project coordinator
Number of participants	11	7

Employing organisation	Semi government research institute	Non-government research institute	Local and national government
Number of participants	9	6	3

3.4. Research strategy and data collection

Data collecting method: literature review

In the preliminary stage of the research, an extensive literature study was conducted on cooperation (with limited physical interaction) and trust (development) (see Sections 2.2 and 2.3). The purpose of this study was to identify and to review the ongoing academic development of the chosen research topic and to investigate the current gap in knowledge (Crewell, 1994).

Data collecting method: semi structured interviews

The qualitative data collection method of semi-structured interviews was selected as the data collecting method for this research. The purpose of the interviews was to explore the views, experiences, beliefs and/or motivations of individuals on specific issues. Semi structured Interviews can provide a 'deeper' understanding of social phenomena, allowing interviewees freedom to express their views in their own terms, yet providing relatively reliable and comparable data (Bernard, 2011). In this research the adopted data collection method is deemed appropriate, as upfront, little is known about the study phenomenon, and requires detailed insights from individual participants. The semi structured interviews are also suitable for exploring sensitive topics (Gill et al., 2008), such as experience with trust in a work environment.

Identification and formulation of key questions and themes

Key questions and themes were identified and formulated based on the selected analytical frameworks in this research (see Section 2.3.3 and Appendix 4), with topics such as trust, trust development and influencing factors of trust development. These questions aim to understand the trust application of the interviewees. Questions have been focused on their perceptions about trust application and their experience with solutions. Interviewees are questioned about concrete experiences in the past about trust application with colleagues and other parties they had or have to work with in their work environment and working relations. Special attention is paid to the

experiences as regard to working and collaborating with others using modern communication technologies such as (smart)phones, e-mail, video conferencing, and various forms of social media.

Organisation of interviews held

Face to face appointments with the selected participants were set up on an individual basis, most often at their work location where privacy could be obtained in meeting rooms. Interviews were carried out from April to May 2016. To start with, interviewees were explained about the background and objectives of the interviews, and were asked for permission to record the interviews for the use on behalf of this research. Confidentiality was provided and explained to the participants due to the sensitive nature of the topic about experiences of trust in a professional environment. Interviewees were asked to sign a permission form, informing them about the nature of the research and for their permission for the voice-recording of the interviews. Each interview took approximately 45 minutes. Voice-recording devices were used to record the interviews and transcripts of the interviews were sent back to the interviewees for verification. The protocol of the interviews with the main questions can be viewed in Appendix 4.

3.5. Data analysis

Interviews were transcribed and sent back through email to the research participants to review for accuracy. The transcripts were analysed with the use of the data analysing software ATLAS.ti version 7.0. This exercise was carried out in three steps with different approaches.

In the first step, the data were analysed using a preliminary coding system, formulated based on the combination of the selected analytical frameworks of trust, trust development and influencing factors of trust development, and the research method of frame analysis to identify the concepts and interpretations used by the interviewees to define the cooperation, the behaviour of participants and trust in cooperation. In the next step, the coding was made with a less structured system, aiming to discover less obvious elements and themes without the restrictions of pre-assumed structures and themes of the first approach. Attention was paid to possible unexpected elements and themes not yet described and explored in existing theories about trust and trust development. In the final step of the first stage, the two approaches were combined. The individual codes were then categorised into various code families into the coding system or code tree and possible new or notable elements were further registered with coding, and added to or integrated in the earlier defined coding system (see Appendix 5). Finally, the transcript data with the coding results were reviewed again for accuracy.

3.6. Data interpretation

The analysis of the data resulted in primary findings of relevant elements related to cooperation with limited physical interaction and trust application (see Sections 4.2 to 4.4). The findings were further examined, looking for underlying patterns and logic, and grouped into four coherent themes to explain trust development and application in cooperation with limited physical interaction (see Sections 5.2 to 5.5). The results and emerging questions are further discussed.

Finally, conclusions have been formulated (see Section 6.1), based on the findings and the analysis in order to answer the research questions (see Sections 1.3 and 1.4). Furthermore, based on the research results, recommendations have been formulated on two aspects, see Sections 6.2 and 6.3. In Section 6.1, advices and suggestions are presented on organising cooperation with limited physical interactions with regard to trust application. In Section 6.2, possible future researches are suggested based on new questions that emerged from the results of this research in relation to trust and cooperation with limited physical interaction.

3.7. Potential limitations of the research

Although this research was designed and executed with conscientiousness, there are limitations that should be taken into account with interpretation of the research results.

Possible influences of various characteristics of selected cases

Although the focus of this research is to investigate trust application on an interpersonal level in cooperation with limited physical interaction, it is hard to exclude the possible influences of the diverse characteristics of the cooperation in which the selected interviewees have participated from the findings. These characteristics may affect the way trust develops or being applied in cooperation with limited physical interaction.

Characteristics such as (perceived) power inequality, the level of hierarchy, the degree of knowledge and expertise focused on, the presence of academic qualified participants and the specific domain of health and environment (see Section 3.3) are characteristics that are identified by the interviewees and/or the researcher. Many other possible factors such as the diversity of cultures among the participants, the size of the cooperation, the characteristics of the used communication technologies, the degree of uncertainty or conflict of interest, the ambiguousness of the cooperative objective or political sensitivity (and many more) all may influence the findings related to trust application in cooperation with limited physical interaction. The possible occurrence of these factors has been taken into account while drafting the questions for the interviews. During data analysis and interpretation as well, special ample attention has been paid to possible indications from interviewees about possible influences on characteristics on trust development of the cooperation.

Potential weakness of the data collection method

The research data were collected by interviewing health and environment professionals that have experiences with participation in cooperation with limited physical interaction, although this method has several drawbacks in this particular research. Trust is a fairly abstract concept and interviewees could have problems to fully understand their own psychological motives related to trust development and application, or lack the awareness and/or the required capacity to adequately express the psychological processes in words. Experiences related to trust might be difficult to recall accurately, or might be hard to distinguish from experiences from cooperation with no limitations to physical interaction, leading to possible bias. This potential weakness has been addressed as far as possible with a careful formulation of the interview questions and the interpretation of the data afterwards. The reliability and validity of the findings could be further improved by introducing different forms of data collecting methods such as participant observation or document analysis to

triangulate the data. However, these approaches were not chosen due to the scope and constraints of this research.

Potential weakness of case selection

The interviewees selected in this research are project/policy coordinators with health and environmental background. They have experience to manage and contribute to (international) projects, which are coordinated with heavy reliance on modern technology aided communication. Nevertheless, working 'on distance' may not necessarily be the only way to perform their professional activities. It would have improved the validity of the research results if interviewees work exclusively in projects with limited physical interaction were selected. Furthermore, the selected interviewees working for health and environmental organizations or issues may not be representative to cooperation with limited physical interaction in other professional fields. These problems amounted from the scope of the research, and practical limitation of the researcher of not having access to networks and candidates that might have been be more suitable to be selected for this research. However, interpretation of the data requires awareness of these limitations. These potential limitations has been taken into account, both during the formulation of the research questions, as well as while analyzing and interpreting the data, trying to detect and avoid possible detection, reporting and analytical biases. More researches in other professional fields may needed to further verify the results of this research.

4. RESULTS

4.1. Introduction

In this chapter, findings are presented, based on the analysis of data of the eighteen interviews with health and environment professionals with experiences of participation in cooperation with limited physical interaction. The further analysis of these findings will be presented in Chapter 5.

The findings are derived from the data after the coding of the interview transcripts with a coding system, which was created on the basis of a combination of selected theoretical frameworks in this research, the methodology of Framing, and taking into account emerging trends that came up when reviewing the transcripts. (See Sections 3.5 and 3.6).

The findings are classified into three groups, related to how the cooperation with limited physical interaction is perceived, how participants in the cooperation perceived themselves and others and how trust in cooperation with limited physical interaction is perceived by the selected interviewees.

These are the main findings after the initial analysis of the interview data:

The cooperation with limited physical interaction is perceived

1. low in the level of hierarchy and power inequality;
2. to have a clear structure, process and content, leading to a perceived predictability of the cooperation;
3. as knowledge and expertise driven.

(Fellow-)participants in cooperation with limited physical interaction are perceived

1. reliable as an expert or specialist to contribute their knowledge to the cooperation;
2. as having a low level of conflicts of interests among each other;
3. to have a strong tendency to trust others in cooperation with limited physical interaction.

Trust in cooperation with limited physical interaction is perceived

1. to be ability and integrity based, but not benevolence based;
2. to have a significant level at both the initial stage of and throughout the cooperation, without trust related problems;
3. to have the function to 'kick start' the cooperation and to cope with potential conflicts of interests among participants;
4. to be caused by a (perceived) clearness of the structure, process and content of the cooperation, estimated trustworthiness of other participants based on ability and integrity and absence of conflicts of interests among participants;
5. to be facilitated by (more frequent) physical face to face interactions, that are seen as opportunities to minimize the threshold for communicating using modern non-face to face communication technologies, to cope with possible conflicts, to foster commitment to the cooperation and to encourage creative processes.

4.2. How the cooperation with limited physical interaction is perceived

During the process of conducting the interviews, it has emerged that the various cooperation participated by all interviewees, are perceived to be characterised by low in power inequality and hierarchy. Many expressed this as characteristics of the cooperation with limited physical interaction. As illustrated by the following quote:

'It is just not the way here, 'pulling your rank' ...it's really not accepted here, sure you have supervisors and higher ranked colleagues, or colleagues with more experiences, that's a good thing...but mostly it's about your expertise, I personally have no one using their rank on me, ...yes of course someone will make the final decision...it's all done with consultation and accepted by others. I guess it's kind of organisation we have here, it could be different in other places, I am not sure.'

- Project coordinator national health organisation.

Many of the interviewees have expressed that the existence of a clear structure, process and content is a contributing factor to the viability of the cooperation with limited physical interaction. Some interviewees also mentioned a clear definition of tasks, roles and planning as a necessity in cooperation of this kind:

'The polder model you know, it's in our gene, consultation, consultation, consultation. It helps to make everyone knows about the direction (of the cooperation), but not only that, on one side people feel the need to contribute (to the decision making of the cooperation), but the consultation also has focus on the time schedule and tasks, kind of a back-up. It's clear, and it's agree-upon, and it helps that everyone knows about the whole picture.'

- Policy coordinator on health from municipality.

Some interviewees indicated that this clearness of structure, process and content leads to predictability of the cooperation:

'The structure of the project but also the content, it's very important. It's about the predictability, you know what you can expect from others, if they can deliver, instead of wasting time to double check, you can't like pulling a dead horse.'

- Project coordinator of health and environment knowledge platform.

Many interviewees considered their experience in a cooperation with limited physical interaction to be very expertise and knowledge driven. All cooperations in which the interviewees participated are described to focus on health and environmental issues, utilising up to date scientific knowledge to develop and implement health and environment policies or issues, often together with local and/or central governments and other knowledge institutes as stakeholders, as illustrated by the following quote:

'I see myself as the interface between policy makers and scientists within (name organisation) and outside, I translate the questions to concrete researches, and (translate) knowledge into answers'

- Project manager at research institute.

4.3. How the fellow-participants are perceived

As previously mentioned, interviewees have indicated the cooperation as expertise and knowledge driven, but many of them also expressed confidence in the ability of other participants who possess the knowledge to contribute to the cooperation as an expert or specialist, as illustrated by the following quote:

'I get (scientific information)... most often to my colleagues here, but sometimes to people outside (the organisation), ones that are specialised in that field. I am qualified myself of course, I am trained as (field in health science) and do my own researches, at least I understand the data and arguments, but I am not really specialist in the specific area. And when I receive the answer, I will just send it back to my clients, I trust them to be accurate, I can't double check at all, you know, or I can better find it out myself without asking.'

- Municipality health policy advisor from research institute.

When being questioned about how this trust in ability was obtained, interviewees frequently mentioned general trust in colleagues or people from the familiar professions (health and environmental scientists), or the reputation within the respective profession or organisation:

'Yes, there were these boards members in a project I last did, you don't have to worry about them not keep their words, they have the final responsibility, there to make sure... stuff like the planning going smoothly and we make the deadlines, talk to people if there were problems. They simply deliver, you tell them that things needed to happen before that and that time, and those are the people involved. You can count on them that they will fix it on time.'

- Project coordinator of health and environmental knowledge platform.

Many interviewees identified the perceived absence of conflicts of interests among participants as a relevant factor for them to trust fellow-participants. The interviewees considered other participants as experts that enjoy their work of producing and contributing their knowledge to the project. They are mainly part of the cooperation because they want to participate in cooperation related own interest or expertise, as project manager stated:

'You notice it very quickly, are people being here just to be interesting to be with the group? And further...not doing anything, that happens too but not often, but they go quickly too because...people notice. But all in all, most people are there because they want to, they all find it interesting to be part of this... and that creates confidence.'

- Project manager at research institute.

There was yet another reason given for the perceived absence of conflicts of interests among participants. Many interviewees indicated that there is a mechanism of 'reputation' in their professional circle. People may know each other and bad reputation of opportunistic behaviour may be harmful in the future for individuals who have displayed such behaviour. It was perceived to be in everyone's own interest to display cooperative behaviour in cooperation to contribute to the objectives of the cooperation, as was made clear by a project coordinator:

'I make sure that I can get the people involved that have the same goals as the project, but you can hear from others if they are competent or not, or have the time to invest (here in this project), I would still like to know more about that, you go around asking if anyone can recommend someone that is good, someone you trust.'

- Project coordinator on health policy from municipality.

Trust propensity, the personal disposition to trust someone, is mentioned in literature as one of the factors influencing trust development and application. Although during the course of the interview no interviewee mentioned this as a trust creating factor, at the end of the interview they were asked to give an estimation from a score from 1 to 9. '1' being extremely distrusting and '9' being extremely trusting in other cooperative partners in the working environment in general. This question was not meant in any way to quantify the trust propensity of the interviewees objectively. However, it was asked in order to roughly identify the self-perception of the interviewees about their own tendency to trust others in their own work environment.

Two interviewees gave themselves a score of 7 and four of them gave themselves the maximum score of 9, all others evaluated themselves with a score between 7 and 9.

'I am someone who is quite fast to start with a 9, that is how I usually begin, I think. Very trusting, probably naïve. That is how I begin, and it must takes a lot, almost, to think: Ho...something is not right.'

- Project coordinator of health and environmental knowledge platform.

'I assume that everyone gets out of bed in the morning and think: "I will act conscientiously..." well maybe not consciously thinking that but...I don't assume people get up in the morning and think: "look who I can deceive (today)."

- Project manager at research institute.

4.4. How the development and function of trust is perceived

According to the conceptualisation of trust in literature, trusting others could be applied in three different dimensions, namely the ability, the integrity and the benevolence (Mayer et al., 1995). At the initial stage of the interview, the interviewees were questioned to provide an example of a cooperation in which they had developed a high level of trust. Further elaboration and clarification were then inquired. All interviewees gave an example based on the dimension of integrity, in which they emphasized the predictability on fulfilling assignments on time and up to the agreed quality level:

'Yeah, you talked about the tasks you intended to fulfil, but also the tasks you could not fulfil, you have to communicate clearly about... it's also about being honest and transparent in the way you work. That I find very important to be able to work together.'

- Advisor on national health policy coordination.

Further in the course of the interview, about half of the interviewees also mentioned the competence of others in the cooperative networks as a dimension of trust, which is illustrated by the following quote:

'Of course it is relevant, it's about investment, you invest your time and energy in it (the cooperation), and you need to know who are these people, of course they are selected for their competence first, what you don't want is someone just freeloading on the rest.'

- Project manager at research institute.

The researcher explicitly questioned the interviewees about the dimension of benevolence in cases where, after the questions of giving examples of trust and distrust, the interviewees did not mention this theme by themselves. No one of the interviewees was able to provide an example of trust based on benevolence in cooperation with limited physical interaction. Some of them gave explanations on why it was NOT considered as an aspect of trust in their experience:

'I can't recall a situation where people (need benevolence), I mean, it's their interest too you know, to get things done, or they got into trouble if not (performing the task). Of course you trust people, but you don't expect them to put their own interest aside for you.'

- Municipality health policy advisor from research institute.

'It's about having the same interest in it, not benevolence, people can be benevolent but you still get into conflict with them, because it's work, not personal. If they want something that bothers you. It's not... it doesn't have to mean they are bad.'

- Policy coordinator on health from municipality.

More than half of the interviewees expressed the need for trust to cope with possible conflicts of interest. It is interesting that interviewees expressed this function in theory, since many of them were unable to recall any significant occurrence of conflicts of interests, nor were they able to provide an incident of conflicts of interests that was solved by the existence of trust, as can be seen in the following quotes:

'It's... you don't want to let people down, and you don't want them to think you have some secret agenda...that I was using them, but yeah, of course the best way is to talk it out, make it explicit. But there are situations, you know. You can't do that on the phone. That is the case then with trust.. they know I am not like that.' (Interviewer asked if that ever happened) '....not that I can recall...'
- Project manager at research institute.'

'An example of trust? To be honest I haven't actively thought much about if I trust people (I work with) or not, of course you're right, but you would need it... once there is misunderstanding... I guess you need that (trust) not to let it escalated.'
- Project coordinator health and environmental knowledge platform.

Some interviewees further expressed the need for trust at the initial stage of the cooperation to 'kick start' a cooperation:

'You can feel the energy, that helps to have the trust at the very beginning, it's really necessary to have that 'click' that we are all going for it, that we can achieve it.'
- Policy coordinator on health from municipality.

Many interviewees indicated what they perceived as a significant amount of trust throughout the cooperation, also was there already at the initial stage of the cooperation:

'There wasn't any moment...no I can't recall any situation where I think: 'wait here, if only we trust each other...no...of course sometimes things go wrong, but you just take it that they (other participants of cooperation) have a good reason, too busy maybe. I don't know, they always...most of the time they deliver, and that is pleasant. I don't know, of course I expect minor problems and delays, but things have always turned out well eventually.'
- Project manager from research institute.

Upon explicitly asked for by the interviewer, many interviewees also have not perceived any significant problems related to trust. Examples of problems were mentioned as not being trust related, as illustrated in the following quote:

'Mmmm... the financing of the project...this is an international research project, but we have made arrangement in the Netherlands that we shared the tasks and the working hours, but that didn't work, they couldn't keep the deadlines and there was lots of pulling and pushing. They have good intention I am sure, they are partners we have been working together in other projects, And it was always problem free, this time it is just not important enough for them.'
- Advisor on national health policy coordination.

Previously mentioned findings, such as perceived clearness in structure, process and content of the cooperation, estimated trustworthiness of other participants and the perceived absence of conflicts of interests among participants, all are indicated by many interviewees as reasons for them to trust others:

'We went through many stages (together), also the stage where we needed to first set up the process with the partners, there you got to learned about each other, and I was the project manager, and that...the objective there, and we go there, and we have to make clear, what can we do for each other and how can we get it started, and having a clear process to go through the stages, you get to learn about each other, you get to learn about the problem issues on hand...you also get to learn about the situation on hand, and the roles and tasks we need to work on, that...is trust inducing.'

- Project manager from national health organisation.

As mentioned before, many of the interviewees have indicated trust in the ability of other participants to be a motivation/motive/reason for them to contribute their knowledge and expertise to the cooperation, as explained by a project manager:

'Most often with this kind of projects, people already have the paper (qualification), sure they have the expertise, at least I trust that they have the expertise for it.'

- Project manager from national health organisation.

The perceived absence of conflicts of interests, or a perceived alignment of individual and collective interests, is a main cause for many interviewees to trust other participants as well:

'Especially with the government, working with other parties, you all have the shared interest, that shared interest...shared priority, but it's win-win, of course they also benefit from a good outcome of the project. But it's so important knowing that, sometimes people forget to communicate that. Why we are all here.'

- Project manager at research institute.

'Having a stake is most important, especially with this kind of project. They need to be able to be willing to bring it (the cooperation) to a good end, sometimes you have people having just small contract of 100 hours, it isn't as important for them, it's a side job for them and that didn't work. You can't have many people all having a small part in it, that would not work. It's not priority for them, it's not on their to do list.'

- Project coordinator national health organisation.

Although, due to geographical or organisational constraints, physical face to face interaction was not common in cooperations participated in by the interviewees, it was still considered relevant to solve anything related to possible conflicts and sensitive issues, although according to the most interviewees, those problems seldom occurred in cooperation with limited physical interaction, as mentioned by a project coordinator:

'It was that time I had a project with (organisation related to environment science), it felt so strange to emails and calling back and forth, and it only got worse. I decided, talked to (name of the supervisor), I said I needed to go to (city in United States), the head quarter to sort it out. That was the only way...but fortunately, I didn't have to do that too often.'

- Project coordinator national health organisation.

Physical interaction in the form of gathering, by many interviewees is also seen as useful to facilitate further technology aided communication, such as the use of telephone, e-mails and video conferencing by lowering the perceived threshold to contact each other:

'Once you met someone, you know their style. Is he more formal or more informal, does he have the same type of humour? You can adjust your communication, and you have more confidence to do it the right way. I don't know, maybe it's just me. I feel like it's easier for me to contact them if I know them personally.'

- Policy coordinator on health from municipality.

4.5. Summary of the findings

This chapter has presented the relevant findings from this research, based on the analysis of collected data, obtained from interviews with 18 health and environment professionals who have experience with participation in cooperation with limited physical interaction.

The findings are subdivided into three categories:

1. Perception about cooperation with limited physical interaction;
2. Perception about the fellow-participants in cooperation with limited physical interaction, and
3. Perception about trust in a cooperation with limited physical interaction.

The cooperations with limited physical interaction in which the interviewees have participated in, are perceived to be low in hierarchy and power inequality, knowledge and expertise driven and characterised by having a clear structure, process and content.

Interviewees indicated other participants as experts or specialists, contributing their knowledge to the cooperation with limited physical interaction. Most of them perceived no significant mutual conflicts of interests, based on the intrinsic motivation of interest to take part in the cooperation, or on the perceived alignment between individual and collective interests. Many of the interviewees also indicated a high level of self-reported trust propensity and assumed other participants to be both trusting and trustworthy.

The selected interviewees have defined trust in cooperation with limited physical interaction as having the knowledge and expertise to adequately fulfil the task (ability based trust), and to fulfil the tasks on time and up to standard (integrity based trust). However, benevolence based trust, the trust on fellow participants not displaying opportunistic behaviour to harm the interests of others, was not considered present or relevant in cooperation with limited physical interaction.

Most interviewees have perceived a significant level of (ability and integrity based) trust, without problems related to trust in cooperation with limited physical interaction. (Ability and integrity based) trust in cooperation with limited physical interaction is considered to have the function to initiate or 'kick start' the cooperation in the early stage, to cope with potential conflicts of interests. Nevertheless, none of the interviewees recalled actual cases of conflicts of interests in cooperation with limited physical interaction.

According to the interviewees, the three factors previously mentioned by them are the main causes of trust to occur in cooperation with limited physical interaction, namely perceived trustworthiness on the ability and integrity of other participants, perceived clearness on structure, process and content of the cooperation, and perceived absence of conflicts of interests among participants.

Some form of physical face to face contacts with other participants are still considered desirable or even essential to cope with potential conflicts and sensitive issues, to create commitment to the cooperation and to lower the threshold for further technology aided contacts.

5. ANALYSIS AND DISCUSSION

5.1. Introduction

In this chapter, the findings as presented in Chapter 4 will be further analysed. The findings will also be discussed in relation to possible implications for further theoretical development of trust and trust development.

There are four themes that emerge from the analysis of the findings:

- Discrepancies of the findings of this research and chosen trust development frameworks;
- The recognition that cooperation with limited physical interaction requires certain types of trust;
- The perception of trust based on (perceived) certainty in cooperation with limited physical interaction;
- A well-designed machine as a metaphor for cooperation with limited physical interaction: the emphasis on *functionality*.

5.2. Discussion about the chosen trust development frameworks and the findings

One of the objectives of this research is to assist further development of the understanding about trust in cooperation. Therefore, it is relevant to examine the similarities of and discrepancies between the findings and the conceptual framework of trust development and the influencing on trust development factors (see Section 2.3.3).

Influencing factors on trust development

There were six factors selected from the preliminary literature review:

1. Trust propensity (Colquitt et al., 2007);
2. Perceived trustworthiness (Mayer et al., 1995);
3. Institutional and societal monitoring and sanctioning (North, 1990; March & Olsen, 1998; Gillespie & Dietz, 2009);
4. Potential conflicts of interest and credible commitment (Riker, 1980; Lewis & Weigert, 1985);
5. The importance of the outcome and consequences (Lewis & Weigert, 1985; McAllister et al., 2006);
6. Difference in power and dependence (Baier, 1986; Bradach & Eccles, 1989).

From these six factors, only perceived trustworthiness (based on ability and integrity) and perceived absence of conflicts of interests were mentioned as relevant factors for participants in cooperation with limited physical interaction to form trust. These two factors will be discussed further in the following sections of this chapter. One of the findings that has emerged from this research about the factor 'influencing trust development', is the (perceived) clearness of structure, process and content of the cooperation, leading to a perceived certainty to increase trust. This could be an additional factor that influences trust development in cooperation (with limited or less limited) physical interaction, although further researches are needed to examine this possible correlation.

Although participants in this research have not indicated significant influence of the other four factors on trust development based on the available data, it cannot be deduced that these factors have no influence on trust development in cooperation with limited physical interaction. Participants have pointed out the characteristics of a low level of power inequality and hierarchy in the cooperation with limited physical interaction they have participated in. Although they have not mentioned them as a factor influencing trust development, in literature it is indicated that this is a factor. Other factors may play a role in cooperation with limited physical interaction as well, although this research has not provided conclusive data.

The integrated model of trust development

The findings of this research appear to confirm the rational 'reason' mechanism of trust development from several trust development theories with assumption of rational cognitive approach of trust development (Shapiro et al., 1992; Lewicki et al., 1998; Möllering, 2006), namely that a trustor mentally estimates the benefits and drawbacks of engaging into a cooperation. Trust is created to the extent that a rational calculation of various factors will indicate a significant level of certainty to obtain reward from a cooperation. And according to what trust development theories suggest, this type of trust is built on displaying consistent behaviour on meeting deadlines and promises, and by managing own reputation (Lewicki et al., 1998). Findings of this research show that trust appears to rely on the perceived trustworthiness based on the estimated ability and integrity of other cooperative partners. Trust found in this research is further based on the compatibility of perceived mutual interests. Or in another words, based on the lack of potential conflicts of interests, with the rational assumption that there is also self-interest to encourage people to cooperate. The perceived clear structure, process and content of the cooperation also contributes to a rational calculation of predictability. The absence of accounts from the interviewees on benevolence based trust could be an indication that a high level of shared values and identification is not a significant aspect of trust development here (see Section 5.3).

Differences between existing theories and the findings

Trust development is often viewed as time dependent, beginning at a low level at the start of a cooperation (but high enough to be able to initiate the cooperation) when there are many unknown factors and therefore, when there is a relatively high level of uncertainty (Deutsch, 1962; Luhmann, 1979; Rousseau et al., 1998). The findings show that there is a perceived relatively high level of trust within the context of this type of cooperation with limited physical interaction. This perceived relatively high level of trust needs to be confirmed at the initial stage instead of developing to a higher level. In this research, this high level of trust is perceived to occur due to the perceived absence of conflicts of interests among cooperating participants, the perceived clearness about the structure, process and the content of the cooperation, as well as the perceived trustworthiness of other participants, based on their estimated ability and integrity to fulfil tasks on time and up to standard.

Trust is thought to require physical face to face interaction to develop (Shapiro et al., 1992; Handy, 1995). The trust found in this research appears to be based on initial estimation of ability and integrity based trustworthiness of others, the perceived absence of conflicts of interests and the expected clearness of structure, process and content of the cooperation. According to the interviewees, there is no evidence of the existence of benevolence based trust (Mayer et al., 1998) in the type of cooperation that this research has concentrated on, this point will be further discussed in the next

section (see Section 5.3). For the time being, it remains unclear if this type of trust can be developed in cooperation with limited physical interaction.

Further discussion

Although the findings in this research appear to support the cognitive calculation approaches of trust development from several trust development theories (Shapiro et al., 1992; Lewicki et al., 1998; Möllering, 2006), this assumption of rational calculation to trust may have some limitations.

Other mechanisms have been revealed by the findings of this research as well. The 'routine' mechanism, as a less conscious way to create trust by depending on a sense of 'taken for granted' attitude or 'things have always been like that' (Möllering, 2006), has been indicated by some interviewees to form trust, caused by social categorising. E.g. by identifying trust in other participants based on their perceived ability as an expert of a certain scientific domain, or based on working with certain organisations with a positive reputation on professionalism and neutrality (Meyerson et al., 1996). This type of trust could be seen as routine route trust, based on 'taken-for-grantedness' of the reputation of certain social groups. The reflexivity route as discussed by Möllering (Möllering, 2006) also has been brought up by the interviewees as another way of trust to emerge. The initial high level of trust needs to be confirmed iteratively through e.g. 'fulfilling tasks' or 'demonstrating expertise'.

The emphasis on the cognitive approach in some of these trust development theories (Shapiro et al., 1992; Lewicki et al., 1998; Meyerson et al., 1998) excludes the possibilities of trust to develop in a less rational and calculative way. In fact, these rational 'reason' trust development theories could possibly explain trust in cooperation more fully if they would include more than just the cognitive aspects of trust development.

The conceptualisation of swift trust (Meyerson et al., 1996) in temporary work groups could possibly be better understood using Möllering's approach to trust development (Möllering, 2001). Meyerson and her colleagues were fascinated by the paradox of 'temporary teams' acting as if trust is present, yet their histories seem to preclude its development (Jarvenpaa et al., 1998). Findings in this research show that swift trust in temporary teams can be developed with 'reason' as discussed by Möllering (Möllering, 2006): participants in temporary teams understand that their interests are encapsulated in the cooperation's success and other participants based on the lack of conflicts of interest, with a well-defined cooperation with a clear structure, process and content. Above all, most participants have interest to protect their own professional reputation within their professional networks. Findings in this research also shows that swift trust can include an aspect of 'routine' (Möllering, 2006), when participants taking part in a new cooperation will rely on many unwritten rules of interaction, taking their existence for granted. They understand what is expected from them from past experiences and social norms, and they form initial trust on the ability and integrity of others in the cooperation based on the general reputation of a social group and their own experience in the past with these social groups. Yet another mechanism for swift trust to form in temporary groups could be due to reflexivity. Both the swift trust theory and the findings of this research suggest an iterative mechanism of trust development, by confirming expectation through social interaction. The initial 'taken for granted' expectation about ability and integrity of fellow participants needs to be confirmed through iterative social interaction in cooperation. With cooperation in which the interaction is intensive at the initial stage, trust (or distrust) can build up reflexively very quickly and the stakes can be raised

highly in a short period of time (Möllering, 2006). Furthermore, findings also show that the participants in this research consider an amount of trust (based on ability and integrity) at the initial stage important to 'kick start' this reflexive iterative process of displaying actions that confirm expectations. This confirms the idea from Möllering that first encounters is crucial to set the trust building process in motion (Möllering, 2006).

Findings in this research appear to show that there are other mechanisms for trust to develop except the cognitive rational calculation approach (Shapiro et al., 1992; Lewicki et al., 1998; Meyerson et al., 1998). It may be justified to question the underlying assumption of some trust development theories with the emphasis on cognitive awareness on trust development. Further researches may be needed to further investigate the possibilities of less cognitive mechanisms to develop trust.

5.3. Cooperation with limited physical interaction may require different types of trust

From the findings, it appears that only certain types of trust are perceived to be present in cooperation with limited physical interaction. The prominent definition as given by all interviewees was 'fulfilling tasks' on time and up to standard, followed by examples related to the knowledge and expertise of other participants, required to perform their roles and tasks. These two types of trust correspond with the conceptualisation of trustworthiness (Mayer et. al, 1995) in the literature, based on:

- Ability (possessing the required skills and knowledge to fulfil the tasks to be performed);
- Integrity (keeping promises on delivering results);
- Without mentioning past experiences related to benevolence based trust (trust based on commonly shared values and not harming the interests of other participants with opportunistic behaviours).

With the findings suggesting only the presence of integrity and ability based trust, and participants indicate no perceived trust related problems, it is plausible to assume that the type of trust required in a cooperation with limited physical interaction is more often *integrity related* and *ability related*. The emphasis on ability and integrity based trust in cooperation with limited physical interaction also corresponds with other findings, e.g. that the fellow-participants often are viewed as experts and specialists, as such contributing to the cooperation, and that the cooperation is regarded to be expertise and knowledge driven.

All these perceptions are related to the (adequately and reliably) *functioning* of the individuals and the cooperation as a whole. As regards the initial state of the cooperation, the interviewees' estimation of ability and integrity based trustworthiness is based on two major mechanisms: a well-known reputation in the existing network, and the social categorising derived from the generally accepted reputation of certain professions or organisations.

Participants of this research also perceived no *benevolence based* trust in the cooperation with limited physical interaction. They were not able to recount significant incidents or problems, either related to uncertainty due to conflicts of interests and occurrences of opportunistic behaviour or related to trust based on shared identities and common values. The danger of 'cheating or being cheated' in cooperation under this specific context, was perceived to be absent.

Thus findings from this research reveal demand for ability based trust and integrity based trust in cooperation with limited physical interaction only, excluding benevolence based trust. In extension, doubt remains if all types of trust can be developed in cooperation with little or no personal face to face interaction anyway.

Further discussion

The analysis above also leads to the question of why benevolence based trust is perceived to be absent in this type of cooperation. Could it be possible that it is considered *unnecessary* in cooperation with limited physical interaction? A possible explanation for the absence of benevolence trust, could be the perceived high level of certainty which, among others, is caused by the perceived absence of conflicts of interest among participants. This may reduce the tendency to opportunistic behaviour, and accordingly lessens the necessity for benevolence trust. Another possibility is presented by Mayer and colleagues in their conceptualization of trustworthiness, in which they argue that information about the benevolence of cooperating participants may require more time to emerge in cooperation, compares to the information related to the ability and integrity of others in cooperation (Mayer et al., 1995). This could be a possible explanation for the absence of benevolence based trust in the results of this research. However, more than half of the cooperation participated by the interviewees in this research were projects with duration of longer than 2 years, which can be considered as significant duration for cooperation in professional environment. It is possible that duration of the cooperation is only one of influencing factors of the development of benevolence based trust, other factors such as the frequency and intensity of interactions may affect trust development as well. Möllering has discussed the possibility for trust to develop (reflexively) quickly in a short period of time if the interaction is intensive at the initial stage of the cooperation (Möllering, 2006).

The possibility of other factors influencing the development of benevolence based trust may lead to another interesting question: how possible is it to create benevolence based trust in cooperation *with a high level of uncertainty and with significant conflicts of interest*? Trust is often viewed as hard to be created in situations where there is high level of conflict of interest (Lewicki et al., 1998; Luhmann, 2000). What if benevolence based trust can only be created when the level conflicts of interest is *low*. Paradoxically, benevolence based trust is estimated to be less needed when level of conflicts of interest is low (Luhmann, 2000). Although there is much research on the possibility to build trust in relationships instrumentally, there are scholars who have doubts about the instrumentality of trust in relations at all (Möllering et al., 2004; Breeman, 2012). According to them, to deal with conflicts of interest, developing benevolence focused trust instrumentally and calculatedly among participants in cooperations will *defeat* the purpose of (benevolence focused) trust itself. One cannot develop benevolence based trust instrumentally to defend its own interest, by defending the interest of others when there is a conflict of interests. The best option in such instance is to act predictably and reliably and to keep promises, which is similar to integrity based trust (Lewicki et al., 1998). Findings from this research provide no evidence to neither support nor falsify the possibility to build benevolence based trust (instrumentally) with high or low level of certainty, further researches may be needed to investigate this assumption.

A third question that can be asked about benevolence based trust in cooperation is: how possible is it to develop benevolence based trust in a cooperation environment *with limited physical interaction*, where participants have little physical face to face contacts. Theory about trust development in a professional environment (see Section 2.3.2) suggests that this type of trust requires participants to have a collective

identity, to commit to shared values and to work in the same location or neighbourhood (Shapiro et al., 1992). There is no evidence that these factors were present in the cooperation with limited physical interaction, examined in this research. And the findings do not provide evidence that benevolence based trust is possible with little or no physical interaction. Further research may be needed to examine the possible correlation between the characteristics of the cooperation, and the type of trust that is needed, as well as to investigate the possibility of benevolence based trust to develop in cooperation with limited physical interaction and a high level of conflicts of interest and/or uncertainty.

5.4. Increasing certainty to develop trust

The interviewees explained that the trust they have in both other participants and the cooperation was based mainly on three factors: estimated (ability and integrity based) trustworthiness of other participants; perceived clear structure, process and content of the cooperation; and perceived lack of conflict of interest among participants. There are various theories on trust explaining the correlation between perceived trustworthiness and trust development (Mayer et al., 1995; Hardin, 1998; Levi & Stoker, 2000), but all three factors indicated by the interviewees to cause trust (e.g. see Section 5.3), seem to relate to an increase of *certainty*.

The (perceived) certainty that other participants have the ability and reliability to deliver results on time and up to standard is one factor, which makes their actions more predictable. This also applies to clearness of the structure, the process, and the content of the cooperation, again leading to predictability and hence certainty. Aligning the individual interests of various participants with the collective interest of the cooperation also increases certainty according to the findings of this research. Many interviewees consider this aspect as the main reason to have trust in the cooperation. The alignment of interests among participants may reduce the temptation to opportunistic behaviour, thus reducing uncertainty. Perceived absence of conflict of interest in cooperation may contribute to the regulation of cooperation in two ways. The elimination of conflict of interest as such will be seen as a direct mechanism to influence the actions of the participants. A mutual understanding of the absence of conflict of interest will create predictability of actions among participants about each other. Additionally, it becomes a kind of back and forth interplay, based on the mutual understanding of: 'I know you would not cheat me, so I would not be afraid of you cheating me, and you know that I am not afraid because I know...'. This mechanism could lead to a form of self-reinforcement to increase trust among participants (Gambetta, 2000).

Many theories in literature about trust focus on the cognitive aspect of rational calculation and scholars with similar views on trust (Deutsch, 1962; Blomqvist, 1997; Lewicki et al., 1998) identify trust as the part that is based on rational calculation of (perceived) certainty and risk. But there are also scholars who think that trust starts where certainty ends, scholars such as Möllering. They describe trust as a 'suspension of disbelief'. These scholars identify trust as compensation for the component of uncertainty that cannot be reduced, but can only be overcome, so not with more certainty, but with 'a leap of faith'. (Möllering, 2005).

Notwithstanding the above, interviewees perceived to obtain trust from a high degree of certainty. The strategy of the interviewees to create trust is to have a relatively high level of certainty in the trustworthiness of the fellow-participants and a clear

structure, process-orientation and content of the cooperation, as well as the lack of conflict of interest among participants.

Further discussion

Close examination of this 'trust from certainty' perception appears to create some questions. At first sight the importance of certainty, brought up by the interviewees, does not seem to be that unusual. In many situations of cooperation to cope with uncertainty and risk, increasing certainty often is a conscious strategy, e.g. as in the form of an agreement or contract. However, it is quite another issue if increased certainty really leads to more trust on interpersonal level.

When we look at the factors indicated in this research, they were perceived to contribute to a higher level of certainty, which is equal to lowering the level of uncertainty and risk in a particular situation. The question arises if a lower level of uncertainty and risk is the same as a higher level of trust on interpersonal level in cooperation with limited physical interaction.

With the three certainty and trust inducing factors indicated by the interviewees, only the estimated (ability and integrity based) trustworthiness of fellow participants is clearly linked to trust development. According to literature, trust development and perceived trustworthiness are closely linked (Mayer et al., 1995). But can the same be said about the perceived clearness on structure, process and content of the cooperation? Is this not a factor that only reduces the uncertainty and the amount of risk? Does it really contribute to the growth of trust in fellow participants in the cooperation? The same could be asked about the third factor: perceived alignment of interests among participants in a cooperation. Is it, again, just a factor that decreases the uncertainty and risk in the cooperation, or does it also contribute to the further development of trust on fellow participants? If these factors indeed contribute to trust development, how exactly do decreased uncertainty and risk contribute to a higher level of trust on interpersonal level? (See Figure 5.) Further researches are needed to investigate this perception.

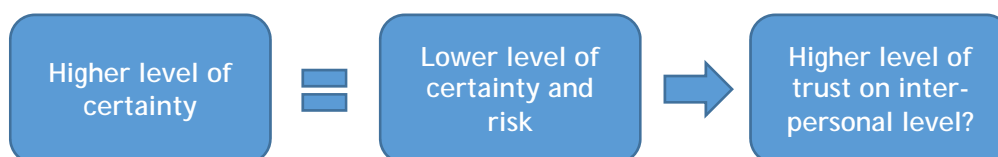


Figure 5 - The unclear relations between level of (un)certainty and trust

Another point about trust and certainty in cooperation with limited physical interaction, is the availability of other alternatives to create certainty and trust.

Although trust is often mentioned as a vital component in cooperation to prevent and to solve many problems, trust is also known to have several drawbacks. One of the well-known characters of trust is that it is hard to develop and easy to destroy, the so called 'asymmetry principle' of trust (Poortinga & Pidgeon, 2003). Researches also have shown that negative events have a much greater impact on self-reported trust than positive events do (Slovic, 1993). In this sense, trust is fragile. Some scholars indicated that trust building requires time and personal interaction to foster, and therefore consuming time and effort to develop (Shapiro et al., 1987; Handy, 1995). However, the findings from this research, in line with the swift trust theory (Meyerson et al., 1996), indicate that trust (of certain kinds) can already be acquired in the

initial stage of cooperation. Still, this conventional 'time and effort investment' view on trust also imposes an obvious question: Under what circumstances is an investment of time and effort in trust worthwhile, and what are alternatives?

One alternative for trust to regulate cooperation is increasing the certainty with 'control'. The Principal Agent Theory (Eisenhardt, 1989), a theory from the domain of economics, suggests punishment (and/or reward) as a mechanism to indirectly align the individual and collective interests on behalf of increasing the certainty. Other ways of reducing uncertainty in cooperation include the monitoring of actions and improving information accessibility to and information sharing by all participants to reduce information asymmetry (Eisenhardt, 1989). These mechanisms, however, may have their pluses and minuses and have limitations on their application, depending on the context. It may also be relevant to consider the effect of control on trust development. Overuse of control is often considered to have a negative effect on trust development (Das & Teng, 1998).

Although trust is often being considered as an essential component in cooperation to solve conflicts, it is also known to have limitations, and under specific conditions there are other alternatives that may replace 'trust' to 'reduce uncertainty' and vice versa. Trust can cope with uncertainty to regulate cooperation only up to a certain level. In that sense, trust may function as a 'resource' like a financial reserve. The lack of finance is not always the cause of many problems, but many problems can be solved by providing financial support. The same may be true with trust.

5.5. Cooperation with limited physical interaction: a well-designed machine

The findings show that there is a strong emphasis on *functionality* of cooperation with limited physical interaction. The interviewees consider themselves and other participants as experts and specialists to contribute knowledge and skills to the cooperation, while the cooperation itself was described in terms of structure, process and content. This way of looking at cooperation and its participants appears to underplay the more personal dimensions of human interaction: the social aspects and subjective experiences with, and meanings of the interactions. None of the selected interviewees has mentioned their awareness about the tendency to describe the cooperation in terms of *functionality*, at the same time not indicating their perception of the lesser focus on the social experience from human interactions.

This functional way of thinking about cooperation can be compared with the metaphor of a machine. Participants are seen as individual parts brought together to contribute to the main function of the machine. Thereby trust is being defined as the expectation on their ability and reliability to perform the tasks they are supposed to do, on time and up to standard. Furthermore, their 'interests' in participating in the cooperation is perceived to be encapsulated in the collective interest of the cooperation. It is in a participant's own interest, both to participate in projects related to their expertise, and to keep an eye on the more practical financial and career related gains, to fulfil the collective interests. Furthermore, there is no perception of possible conflicts of interests among these parts of the machine, they simply are meant to work together. The perception of the cooperation in terms of structure, process and content further underlines this 'machine thinking'. It is a design with a well-defined construction, procedures and tasks. This focus on increasing clearness, predictability and certainty also appears to confirm the machine metaphor instead of the more dynamic, less predictable and subjective experience with human interaction.

Trust, according to the findings from this research, can be seen as a presumptive product of the positive expectation of the outcome of the cooperation, based on the aforementioned perception of a well-functioning machine, with well-designed clear structures, consisting of parts that are not conflicting as regards goals and interests, contributing on time and up to standards and on the basis of well-determined processes and well-defined tasks.

The strong focus on functionality could be the result of many factors, such as the desire for certainty and predictability. However, neglecting the social aspects of human interaction may have possible drawbacks, such as missing opportunities to develop shared values and identity, which in turn may be needed for trust development to cope with conflicts of interest and opportunistic behaviour. This approach may also lead to motivation problems if the well-being of group members is being overlooked.

With hindsight, one may question if this emphasis on functionality is correlated with this specific form of cooperation with limited physical interaction. More in-depth research is needed to further examine this aspect. Nevertheless, it is notable to observe that the functionality aspect of cooperation with limited physical interaction in this research has been accentuated by the interviewees.

Further discussion

Scholars have recognised the tendency to perceive an organisation as a machine (Grint & Woolgar, 2013). Organisations are not established as ends in themselves but as instruments that are created to achieve *other* ends (Morgan, 1998). The rise of industrialisation in the 18th and 19th century, required factories to organise in ways that were similar to the design of a machine (Perrow, 1991). German sociologist Max Weber, who observed the mechanization of the society and the proliferation of bureaucratic forms of organisations, noticed the characteristics of organisations focusing on precision, clarity, regularity, reliability and efficiency (Morgan, 1998). According to literature, the strength of this approach works best when:

- Tasks are straightforward;
- The environment of the organisation is stable;
- The requirements of the outcomes don't change;
- Precision is at a premium;
- Humans are compliant and behave according to what they are 'designed' to do.

Clearly these conditions are also drawbacks in situations when they are not fulfilled, such as the existence of (a high level of) uncertainty in the organisations and their environment that requires flexibility to cope. This approach also neglects the human aspects, social interactions, and the potential of conflicts of interest in many cooperations.

Following these conditions, the finding in this research about the trust developing strategy by reducing uncertainty in cooperation with limited physical interaction may work, only if the cooperation and its environment are stable. However, organisations with a 'mechanical' structure and ditto processes will encounter difficulties when they have to deal with changes and will have only limited creativity and innovation power (Morgan, 1998).

In the domain of organisation studies, researches have been conducted related to task oriented groups versus relation oriented groups (Forsyth & Nye, 2008). Task oriented groups focus on structure, roles and tasks, emphasize on work facilitation, prioritise desired results, with clear plans to achieve goals. Relation oriented groups focus on relationships, well-being and motivation, emphasize on interaction facilitation and prioritise positive relationships. In practice, most cooperative groups are a mixture of both. Findings in this research suggest that cooperation with limited physical interaction have many characteristics of task oriented groups, likely due to the lack of face to face contacts among participants, reducing the chance for social interaction and relationship building. Different theories suggest that the need for task or relation oriented groups depends on factors such as the level of clearness of the tasks, the level of conflicts (or the lack thereof) among the participants and the role of the leader (Fiedler, 1964; Forsyth & Nye, 2008). Mixed conclusions are found from researches trying to determine the effects of both types of groups, although relation oriented groups are more often found to have a greater cohesion within the group, as well as greater team learning skills (Burke et al., 2006), while task oriented groups create a greater group efficacy (Arana et al., 2009).

However, this mechanical perception of cooperation may create a potential drawback for cooperation. This perception can become a self-reinforcing mechanism: the more focus is put on the 'machine-like' character of the cooperation, the more 'machine like' the cooperation will become, which in turn will only confirm the perception of a machine. While cooperation with limited physical interaction may be likely to be more task orientated due to limitations on socializing among participants, this might not necessarily be the only way. Researchers and participants of cooperation 'on distance' may be able to learn from more conventional cooperation in regard to the balance between professional and social interaction, and finding ways to 'compensate' the limitations on physical interaction.

Furthermore, the tendency from participants in cooperation with limited physical interaction to focus on functionality and neglect the social dimension, could be addressed by emerging new communication technologies, which may increase the possibilities to encourage participants to engage with each other more socially, overcoming the limitations of current communication technologies such as e-mails, telephone and video conferencing.

6. CONCLUSIONS AND RECOMMENDATIONS

This chapter will be divided into two sections. In the first part (Section 6.1) the research questions will be answered, based on the findings and the analysis of this research. In the second part (Section 6.2) recommendations are made about trust development in cooperation with limited physical interaction, as well as on further researches related to this issue.

6.1. Conclusions

This research aimed to investigate how trust on interpersonal level is developed and applied within cooperative networks with limited physical interaction on the basis of the following questions (Sections 1.3 and 1.4):

- What is perceived as trust?
- Which are perceived to be the reasons to trust?
- Which factors are considered when making decisions to trust?
- Which problems are encountered when applying trust?
- Which strategies are applied to cope with these problems?
- Which are the similarities and discrepancies between the findings of this research and trust as described in literature?

The research results suggest that trust is perceived as being based on the ability and the integrity of other participants in a cooperation with limited physical interaction. Fellow participants are expected to have the knowledge and skills to perform their tasks and to fulfil their tasks on time and up to standard. The presence of ability and integrity based trust in a (intended) cooperation with limited physical interaction is perceived to be necessary to initiate the cooperation at the beginning and to cope with potential conflicts of interest. Participants consider several factors when making decisions to apply trust in a cooperation with limited physical interaction. These include: a perceived trustworthiness of fellow participants based on estimation of their ability and integrity, a perceived clearness of structure, process and content of the cooperation, and a perceived lack of conflict of interest among fellow participants. Findings further suggest that there are no perceived problems related to trust in cooperation with limited physical interaction, as a significant amount of trust is perceived at the initial stage of and throughout the research. Problems in the cooperation are rather seen as caused by something else than by trust related issues. The (perceived) significant amount of trust and the lack of problems are considered to be created by a strategy of increasing the certainty of the cooperation. This (perceived) certainty is caused by previously mentioned factors, such as the estimated trustworthiness of the ability and integrity of the fellow participants; (perceived) clearness on structure, process and content of the cooperation, and the (perceived) alignment of interests among participants.

In addition to the above, the following results related to trust application in cooperation with limited physical interaction have been found

Compared to the existing literature about trust and trust development, there are several similarities and differences. The results in this research suggest that ability and integrity focused trust in cooperation with limited physical interaction mainly comes down to rational calculating (Deutsch, 1962; Axelrod, 1984; Gambetta, 1988; Lewicki & Bunker, 1995), but there are also a 'routine' nature of trust based on

'taken-for-grantedness' of the situation (Möllering, 2001), and a 'reflexivity' mechanism based on confirmation of expectations through experiences of interaction (Möllering, 2001).

Trust of certain kinds, namely ability and integrity based trust, can occur at the initial stage of a cooperation with limited physical interaction. This is contrary to the assumptions of some trust theories in literature about trust requiring time to develop up to a significant level (Deutsch, 1958; Rotter, 1967; Lewicki et al., 1998; Handy, 1995; Luhmann, 2000), as well as trust requiring frequent physical interaction to develop among participants in a cooperation (Shapiro et al., 1992; Handy, 1995). However, there is no evidence found in this research that benevolence based trust, to cope with potential opportunistic behaviour by having shared values and shared identity among participants, is either possible or necessary to develop in cooperation with limited physical interaction.

The findings of this research show that trust is *perceived* by the participants to develop on interpersonal level in cooperation with limited physical interaction, based on the previously mentioned factors of perceived ability and integrity based trustworthiness of fellow participants, perceived clear structure, process and content of the cooperation and perceived lack of conflicts of interest among fellow participants and the objectives of the cooperation. The findings also show that these three factors increase the (perceived) certainty, and therefore reduce the uncertainty and the amount of risk in a cooperation with limited physical interaction. However, it is unclear if these factors, which contribute to reduction of uncertainty and the amount of risk in a cooperation, will also contribute to trust development on interpersonal level, even though they are found to contribute to the *perception* of developing trust on interpersonal level in this research.

Participants in this research appear to focus heavily on the aspect of functionality when depicting a cooperation with limited physical interaction, perceiving fellow participants mostly as experts and specialists having the function as such to contribute to the cooperation, and defining the cooperation in terms of a clearly defined structure, process and content. They appear to 'frame' the cooperation as a well-designed machine. It is unclear if this emphasis on functionality is correlated with the characteristics of the cooperation with limited physical interaction found in this research.

6.2. Recommendations to increase certainty within cooperation

Increase certainty with clear structure, process and content

The results of this research indicate that a perceived clearness of structure, process and content for participants in cooperations with limited interaction is a main factor to develop trust. Interviewees assign importance to this aspect due to the perceived predictability and certainty it creates. Management of a cooperation with limited physical interaction should seriously consider this aspect, to make the planning, tasks and roles clear to the participants. What is expected from them, what they can expect from others, and how the work of the participants will contribute to the objective of the cooperation. While it seems like stating the obvious to have clear communication to the participants about these aspects of the cooperation, management should be

alert on early signals from participants indicating problems with the clearness of in particular the above aspects of the cooperation.

Increase certainty with interest alignment

A perceived alignment of interests has been emphasized by the interviewees as another major factor to trust other participants. It could be important for those initiating and managing a cooperation with limited physical interaction from the very beginning to pay attention to this aspect: to critically investigate and examine the possible conflicts of interest among potential participants during the selection stage, and to resolve them using adequate management tools if deemed necessary and possible. There always will remain a certain degree of (potential) conflicts of interest, requiring alertness, awareness and options to mitigate, or at least to manage these conflicts should they materialize. It is also important to pay attention to communicate about the proactive alignment of interests with participants regularly and appropriately. The absence of conflicts of interest alone is not enough, participants need to be aware of the alignment of interests for trust to develop.

Facilitate reputed networks to assist trustworthiness estimation

Perceived trustworthiness based on the ability and integrity of other participants is also considered as contributing to trust development in cooperation with limited physical interaction. Interviewees indicated two mechanisms to estimate the trustworthiness of other participants at the initial stage of the cooperation: by social categorisation or by a general 'good perception' of certain social groups or professions, and by the recognized existing reputation of individuals or specific organisations within the network. While it is harder to change the social categorisation and/or general impression of certain social groups, it is certainly possible to pay attention to register and to communicate the reputation of individuals and organizations. Therefore, it is important to pay attention to create, to improve and to extend existing formal and informal networks to capture and communicate 'good' and 'bad' functioning (in a fair and honest way, of course). This approach has two obvious functions: to keep record of information about the trustworthiness of potential (future) participants, and the awareness of such approach may function to prevent from 'bad' behaviour to avoid reputation damage.

Create opportunities for physical meetings

Although the focus of this research is trust application in situations in which cooperative participants have limited opportunities to physically meet one another, it is important for the management of the cooperation to create physical meetings, if possible. Interviewees have expressed the importance of physical interaction, in order to (better) deal with potential conflicts and sensitive issues, to create familiarity, bonding and commitment, and to lower the threshold to benefit from further technology aided communication development by better knowing and understanding the person they are dealing with behind the phone or computer screen. With cooperation with limited physical interaction, these physical meetings may be less focussed on tasks and results, but rather on (better) knowing each other. Humans are still social creatures, even in the age of ongoing advancing communication technologies. Video conferences may be effective to discuss planning and results, but they will be easier and more productive if the individuals already know each other as people, not as just an image on the screen.

The findings of this research may suggest that trust does not always *need* 'touch', but it is likely to help if it is there.

6.3. Recommendations for further researches

Influences of characteristics of cooperation on trust application

One of the problems, encountered in this research, is the possible influence of the different characteristics of the cooperation on, and how they may affect the development and application of trust in cooperation with limited physical interaction. Several influencing factors actually can influence trust development and trust application. These factors include the trust propensity of the participants, the existence of institutional and/or social monitoring and sanctioning of trust, the level of conflicts of interest, the level of credible commitment and the level of power inequality. Other factors, such as cultural background and diversity, political sensitivity, size and duration of the cooperation and many other factors may have an impact as well. Additionally, results of this research are derived from the data from cooperation with health and environment professionals working in research and policy related projects, this specific characteristic of cooperation may have influenced the results of trust development and application in cooperation with limited physical interaction. Many researches have been executed about these characteristics on trust development, but were concentrated on cooperations within different contexts than the one selected for this research. It is for future research to examine if those findings can be extrapolated to cooperation with limited physical interaction as well.

Benevolence based trust and limited physical interaction

Another question remains about the absence of benevolence based trust in the cooperation participated in by the selected interviewees in this research. Is the finding about the emphasis on ability and integrity based trust confined only to the cases in this research? Or could it be, that the absence of benevolence based trust is correlated with the limitation on physical interactions? Is it plausible to assume that the limitation on face to face interaction may hinder socialising amongst participants in cooperation, which in turn may obstruct the development of shared values and a shared identity, and therefore the development of benevolence based trust (Shapiro et al., 1992; Lewick et al., 1998)? On the other hand, is it also possible that the emphasis on tasks and functions, and a high level of certainty in a cooperation may prevent possible opportunistic behaviour, and diminish the need for benevolence based trust? Further researches are needed to either confirm or falsify these assumptions.

Further researches on conceptualisation of trust and trust development

Scholars have identified many different conceptualizations of trust (see Appendix 6), and confusion and lack of consensus of trust definition have been recognised (Blomqvist, 1997; Romano, 2003). Although researchers have undertaken attempts to integrate the respective conceptualisations of trust coming from different domains (Blomqvist, 1997; Möllering, 2006), the results of this research has led to questions about the relation between perceived increase in certainty and the perceived development of trust on interpersonal level (see Section 5.4), our understanding of trust is yet incomplete (Möllering, 2006). So whilst the debates about what trust *is* are still going on, and attempts are still being made to unify approaches of trust in

different scientific principles, researchers may need to go back to the basics to discover what trust really is.

Furthermore, the strong emphasis of many theories on the calculation and cognitive awareness aspects of trust formation and application appears to be incomplete, because the more 'reflexive' and subconscious way of trust development is being ignored. With techniques and knowledge from other science domains such as neuropsychology, new research methods could be used to examine the less conscious aspects of trust development and application, to enable a fuller understanding of trust and trust development.

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APPENDICES

APPENDIX 1 PARTICIPANTS (INTERVIEWEES) IN THIS RESEARCH

	sex	Employing organisation	Type of profession
Participant 1	F	semi government research institute	research project coordinator
Participant 2	M	semi government research institute	research Project coordinator
Participant 3	F	local municipality	policy project coordinator
Participant 4	F	non-government research institute	research project coordinator
Participant 5	M	non-government research institute	research project coordinator
Participant 6	M	semi government research institute	policy project coordinator
Participant 7	M	non-government research institute	research project coordinator
Participant 8	F	Ministry of Public Health	policy project coordinator
Participant 9	M	semi government research institute	policy project coordinator
Participant 10	F	non-government research institute	research project coordinator
Participant 11	M	semi government research institute	research project coordinator
Participant 12	M	semi government research institute	research project coordinator
Participant 13	F	semi government research institute	research project coordinator
Participant 14	M	non-government research institute	research project coordinator
Participant 15	F	Ministry of Public Health	policy project coordinator
Participant 16	F	semi government research institute	policy project coordinator
Participant 17	M	non-government research institute	research project coordinator
Participant 18	M	semi government research institute	policy project coordinator

APPENDIX 2 INVITATION TO PARTICIPATE IN THIS RESEARCH

I am a student of Applied Communication Science at Wageningen University, working on my master thesis, a qualitative exploratory research about trust in cooperation with heavy reliance on existing and emerging communication technology and the absence of face to face interaction. Sabina Super has recommended you to me as possible candidate for this research. I am looking for people working in health policy-making and implementation organisation, who is willing to be interviewed for their experience with trust related problems at work. The research may provide new insights in the way trustworthiness and trust building function in cooperation, in the time of increase use of emails, WhatsApp, skype and also many form of social media to negotiate and coordinate roles, tasks and results.

I would be really grateful if you could take part in this research. The interview will take part in time and place that is convenient for you. It is an interviews of 45 minutes about your experiences of trust building and estimating trustworthiness in cooperation, with reliance on communication technology. The context of the interview will stay confidential. The results could lead to recommendations to improve the application of communication technology and trust in cooperation.

Your cooperation in this research will be highly appreciated. I hope to hear from your reply soon. You can contact me through email kai.chung@wur.nl or Phone: 0655-121 220.

Best Regards,

Kai Yin Chung
Student Applied Communication Science

APPENDIX 3 CONSENT FORM ('TOESTEMMINGSFORMULIER')

Toestemmingsformulier

Deelname interview:

Onderzoek 'Vertrouwen Op afstand'

Hierbij geef ik,(naam deelnemer), toestemming aan Kai Yin Chung, student Communicatiewetenschappen van Wageningen Universiteit, om mij te benaderen voor een interview in het kader van het onderzoek over toepassen en opbouwen van vertrouwen bij samenwerking op persoonlijk niveau met beperkte persoonlijke contacten.

Ik ben op de hoogte van het feit dat:

- deelname geheel vrijwillig is;
- een geluidopname gemaakt wordt tijdens het interview;
- verstrekte informatie uitsluitend gebruikt wordt voor *dit* onderzoek;
- mijn bijdrage aan dit onderzoek anoniem blijft.

Naam onderzoeker: Kai Yin Chung

Handtekening onderzoeker:

Naam deelnemer van onderzoek:

Plaats:

Datum:

Handtekening deelnemer van onderzoek:

APPENDIX 4 INTERVIEW PROTOCOL AND MAIN QUESTIONS ASKED

Interview guide onderzoek 'vertrouwen bij samenwerking op afstand' April – Juni 2016

Aanleiding voor de interviews

Onderzoek voor de master thesis Toegepaste Communicatiewetenschappen' van student Kai Yin Chung. Het interpretatief en verkennend onderzoek gaat over het toepassen van vertrouwen bij samenwerking op afstand. Het interview heeft tot doel om antwoord te geven op de volgende vragen:

- What are the perceived reasons for participants to apply trust on interpersonal level in a cooperative network with limited physical interaction?
- What factors do participants consider when making decision to trust on interpersonal level in a cooperative network with limited physical interaction?
- What problems do participants perceive to encounter when applying trust on interpersonal level in a cooperative network with limited physical interaction?
- What are the perceived causes of the problems that participants perceive when applying trust on interpersonal level in a cooperative network with limited physical interaction?
- What strategies do the participants apply to cope with the problems of applying trust on interpersonal level in a cooperative network with limited physical interaction?

Vorbereiding

- Kennis over het werk/de functie van de te interviewen persoon;
- Vragen voor het interview reviewen en eventueel verbeteren/toevoegen na eerdere interviews;
- 3 dagen van tevoren, e-mail reminder sturen voor de afspraak.

Benodigdheden

- Deze interview guide;
- Dossiermap met alle (achtergrond) informatie van dit onderzoek;
- Adres + telefoonnummer van de te interviewen persoon;
- Pen;
- Notitieblok;
- Toestemmingsformulier;
- Voice-recorder (2x);
- Extra batterijen;
- Klein cadeautje als dank.

Interview

- 15 minuten vóór afspraak aankomen op locatie;
- Voorstellen en kennismaken;
- Eenmaal geïnstalleerd > Beginnen met het interview.

Ronde introductie/uitleg

- Het doel van dit onderzoek is om te kijken hoe mensen vertrouwen toepassen bij samenwerkingen waarbij veel gebruik gemaakt wordt van moderne communicatietechnologie zoals telefoon, e-mail, video conferencing, misschien ook social media, maar waarbij weinig persoonlijk face to face contact plaatsvindt. Er zijn relatief weinig kennis in de literatuur over hoe mensen omgaan met vertrouwen bij samenwerking als er weinig fysieke, face to face-ontmoetingen plaats (kunnen) vinden.
- De resultaten van het onderzoek kunnen leiden tot meer inzicht in het toepassen van vertrouwen bij samenwerkingen, en eventueel tot verbeteringen bij samenwerkingen, zowel in sociaal als technologisch opzicht.
- Het interview bestaat uit vragen over uw ervaringen met vertrouwen bij samenwerking.
- 'Het interview duurt ongeveer 45 minuten.'
- Uitleg van de structuur van het interview:
 1. Inleidende vragen over uw werk;
 2. Ervaringen met vertrouwen en samenwerking op afstand;
 3. Afrondende vragen over uw geneigdheid anderen te vertrouwen;
 4. Uitleg aan de geïnterviewde persoon: wat zijn de voornaamste dingen die ik tijdens het interview te weten wil komen: Hoe besluit u ertoe om iemand te vertrouwen? Wat zijn uw strategieën/oplossingen als de samenwerking, resp. Het vertrouwen niet goed loopt?

'Mag ik het interview opnemen met een voice-recorder? De informatie en alles wat u hier tijdens het gesprek zegt blijft vertrouwelijk en wordt alleen gebruikt voor dit onderzoek.'

Voorlezen:

'Dit is een opname van een evaluatie-interview voor het onderzoek 'vertrouwen bij samenwerking op afstand'. Aanwezig zijn de onderzoeker Kai Yin Chung van de Wageningen UR. Mevrouw/de heer <naam> heeft toestemming gegeven tot het opnemen van dit gesprek. De informatie uit dit gesprek zal alleen gebruikt worden voor dit onderzoek en blijft vertrouwelijk.'

Ronde inleidende vragen

- Kunt u meer vertellen over uw werk bij (werk/organisatie)? Wat houdt het in? Prompt/probe/samenvatten.
- Met welke partijen heeft u veel samenwerking bij uw werk? Prompt/probe/samenvatten.

Ronde 'ervaring' met vertrouwen

- Kunt u een voorbeeld geven dat u een partij op uw werk niet vertrouwd? Prompt/probe/samenvatten. (Wat is er gebeurd dat ertoe leidde dat u geen vertrouwen kreeg? Resp. wat zijn de factoren die ertoe leidden de u iemand niet vertrouwd?)
- Kunt u een voorbeeld geven dat u een partij op uw werk heel erg vertrouwd? Prompt/probe. (Wat is er gebeurd dat ertoe leidde dat u vertrouwen kreeg? Resp. wat heeft u nodig om iemand te vertrouwen).
- Welke invloed heeft vertrouwen/gebrek aan vertrouwen/wantrouwen op de samenwerking?
- Kunt u een voorbeeld geven waarbij u moest samenwerken met partijen die elkaar niet goed kennen en ook weinig of geen gelegenheid hadden om elkaar te ontmoeten, maar die wel veel gebruik maken van moderne communicatietechnologieën zoals e-mail, telefoon, video conferencing? Prompt/probe.
- Zijn er problemen waar u tegenaan liep? Prompt/probe.
- Hadden die problemen te maken met (gebrek aan) vertrouwen? Prompt/probe.
- Wat waren volgens u de oorzaken van de problemen? Prompt/probe.

- Heeft u die problemen opgelost en zo ja, hoe? Prompt/probe.

Steekwoorden/aspecten die volgens de literatuur relevant kan zijn bij opbouwen van vertrouwen bij samenwerking

- Trustworthiness: Competence, integrity, en 'benevolence';
- Institutionele/sociale controle en handhaving;
- Cross culturele samenwerking;
- Politiek gevoeligheid/verborgen agenda;
- Belangenverschillen;
- Machtsverschillen;
- De grootte van het belang (*stake*) van de samenwerking;
- Duidelijkheid over de inrichting van taken en rollen;
- Aard van de samenwerking en van de communicatie.

Ronde afbouw

Uitleg over geneigdheid tot vertrouwen (*trust propensity*) en vragen hoe de geïnterviewde zichzelf beschouwt als iemand die anderen op het werk 'snel' vertrouwt of juist niet.

'Ik denk dat ik alle gewenste antwoorden in dit interview heb gekregen...'

(Als er vragen komen, dan meer vertellen over de wijze waarop de interviews worden geanalyseerd, over de achtergrond van het onderzoek of over mezelf.)

De geïnterviewde bedanken, vertellen dat hij/zij contact kan opnemen als er vragen zijn over het interview/het onderzoek) of als er juist aanvullende opmerkingen zijn die nuttig kunnen zijn voor deze evaluatie.

Laat contact informatie achter.

Beloven transcript van interview op te sturen voor terugkoppeling.

Nagaan of er behoefte is aan een exemplaar van het eindrapport.

Bedanken en afscheid nemen.

APPENDIX 5 CODING SYSTEM

The coding system in this research is the result of multiples stages of coding with different approaches. In the first round of coding, a coding system is used that is based on the selected theoretical frameworks of trust, trust development and influencing factors on trust development, together with the research method of Frame Analysis. The second round of coding is based on a less structured approach, to discover elements and themes that are not included in the first round. In the final round, the codes of the first and second round are merged to create a primary coding system, and the data is reviewed and coded again to using this system.

The coding system consists of 10 code families

- Code family 1: Definition of trust described by interviewees in cooperative networks with limited physical interaction.
- Code family 2: Factors that may influence the readiness to trust in cooperative network with limited physical interaction (reasons to form initial trust).
- Code family 3: The perceived problems of trust application in cooperative networks with limited physical interactions.
- Code family 4: The perceived causes of trust application related problems in cooperative networks with limited physical interaction.
- Code family 5: The perceived responsible factors of causing problems of trust application in cooperative networks with limited physical interaction.
- Code family 6: The perceived solution to the problems of trust application in cooperative networks with limited physical interaction.
- Code family 7: The description and perception related cooperation.
- Code family 8: The description and perception related participants.
- Code family 9: The description and perception related trust.
- Code family 10: Other assisting codes such as interesting quotes and other undefined yet relevant data.

Code family 1: Definition of trust described by interviewees in cooperative networks with limited physical interaction

Code 1: Trust on competence = trusting others to have the knowledge and capacity to perform the tasks in the cooperative network.

‘Ik ga vanuit de mensen de expertise hebben in zijn functie.’

‘Ik vind het belangrijk om eerst bewijzen te vinden of iemand zijn werk goed kan doen.’

Code 2: Trust on reliability = trusting others to have the dependability to keep their promise to deliver contribution of work on time and up to standard.

‘Afspraken nakomen, dat is heel belangrijk.’

Code 3: Trust on integrity = trusting others to have the honesty to take interests of cooperative partners into account, without displaying opportunistic behaviours that may harm the interest of others or the cooperation.

'Ik moet een gevoel hebben dat iemand ook mijn belang in rekening houden.'

'Iemand heeft niet een dubbele agenda om achter mijn rug iets gaat regelen.'

Code 4: Other definitions of trust not defined in other codes in this code family.

Code family 2: Factors that may influence the readiness to trust in cooperative network with limited physical interaction (reasons to form initial trust)

Code 5: Perceived trustworthiness of others = including perceived competence, reliability and integrity of others.

'Ik vertrouw iemand als na een tijdje blijkt dat hij altijd zijn afspraken nakomen.'

Code 6: Trust propensity = perceived personal dispositional willingness to trust others based on individual psychological characters and past experience.

'Ik ga vanuit dat iedereen is te vertrouwen tot tegendeel bewezen is.'

'Ik ben altijd heel voorzichtig bij samenwerking met mensen die ik nog niet zo goed ken.'

Code 7: The existence of Institutional monitoring and sanctioning = perceived existence of formal regulations and structures to monitor and regulate agreements and performances of participants in cooperative networks.

'Als iemand zijn werk niet op tijd opleveren, dan krijg hij ook probleem van zijn baas.'

'Mensen die de belangen van de project schaden krijgen officieel sancties van de organisatie.'

Code 8: The existence of social monitoring and sanctioning = perceived existence of informal regulations and structures to monitor and regulate agreements and performances of participants in cooperative networks.

'Als hij keer en keer zijn werk niet doet, dan krijgt die een reputatie en probleem zal krijgen voor zijn volgende projecten en nieuwe werken.'

'Ja, niemand wilt dan verder met hem werken.'

Code 9: Similarities or differences of interest and credible commitment = the perceived differences and similarities in personal and collective interest and commitment of the cooperation.

'Maar het is ook in zijn eigen belang om dit project een succes van te maken.'

'Tijdens de project blijkt dat hij ook een heel andere belang had dan wat wij eerst weten.'

Code 10: Importance of cooperation outcome = the perceived relevance for the participants to achieve the collective objectives of the cooperation.

'Maar iedereen vindt het heel belangrijk om dit project tot een succes te brengen.'

'Het is duidelijk dat mensen veel waarde hechten aan de succes aan dit project.'

Code 11: Difference in power and dependence = the perceived power difference of cooperative partners and the capacity to influence the actions of others in cooperative network.

'Ja, maar als ik niet doe want zij wilt, dan krijg ik gewoon veel problemen.'

'Maar er is geen twijfel dat hij doet zijn werk, ik ben bevriend met zijn chef en daar zal die problemen van krijgen.'

Code 12: Other factors not defined in other codes in this code family that may influence the readiness to trust in cooperative network.

Code family 3: The perceived problems of trust application in cooperative networks with limited physical interactions

Code 13: Hard to estimate trustworthiness of other cooperative partners = perceived difficulties to estimate the trustworthiness of the cooperative partners.

Code 14: Hard to gain trust from other cooperative partners = perceived difficulties to obtain trust from other cooperative partners.

Code 15: Hard to trust other cooperative partners = perceived difficulty to apply trust to other cooperative partners.

Code 16: Hard to develop and maintain trust with other cooperative partners = perceived difficulties to build and maintain trust with cooperative partners after the initial stage of the cooperation.

Code 17: Hard to repair trust with other cooperative partners = perceived difficulties to repair trust after information and events that damage of trust.

Code 18: Hard to utilise trust in cooperation (no need for trust) with other cooperative partners = perceived difficulties to utilise trust in the cooperative network.

Code 19: Other perceived problems of trust application in cooperative networks with limited physical interaction that are not defined in other codes in this code family.

Code family 4: The perceived causes of trust application related problems in cooperative networks with limited physical interaction

Code 20: The restriction of the quality and quantity of physical interaction = the perceived problems of trust application caused by the lack of physical interaction in cooperative network.

'Het is gewoon makkelijker als je de person eerder had ontmoet, de drempel is lager om dan contact te onderhouden met email of telefoon.'

'Het is lastig via Skype te doen, zeker om nieuwe ideeën te krijgen met de groep om vorm te geven aan een nieuwe projecten, iedereen mist de cue om voor zijn beurt te spreken en het wordt dan heel chaotisch.'

'Als je iemand persoonlijk kent, dan weet je of iemand heel formeel is of juist meer 'losjes', dan kan je veel beter je email of communicatie aanpassen aan die persoon.'

Code 21: The restriction of nonphysical interaction or communication technology = perceived problems of trust application caused by the problems of other form of communication.

'Ja, soms kunnen mensen de boodschap verkeerd interpreteren met e-mails.'

'Mensen zijn vaak niet bereikbaar via telefoon voor de nodige overleg.'

Code 22: The restriction of cooperative networks = perceived problems caused by the characters of the cooperation.

'Er zijn veel verschillen in belangen bij de deelnemers.'

'Samenwerking met politieke doelen zijn vaak lastig om vertrouwen op te bouwen.'

Code 23: The restriction of the participating actors = perceived problems caused by the personal role, function and character of the cooperative participants.

'Het gaat vaak moeilijk met vertrouwen en afspraken als mensen komen allemaal uit verschillende culturen.'

'In deze type projecten komen vaak mensen die een dubbele agenda hebben.'

Code 24: Other perceived causes not defined in other codes in this code family that may influence the readiness to trust in cooperative network negatively influence trust application in cooperative networks with limited physical interaction.

Code family 5: The perceived responsible factors of causing problems of trust application in cooperative networks with limited physical interaction

Code 25: Participants = the function, interests and other characteristics of the cooperative partners.

Code 26: Interactions = Process and methods of interactions of the cooperation.

Code 27: Cooperation = Structure, goals and characteristics of the cooperation.

Code 28: Other perceived responsible factors of causing problems of trust application in cooperative networks with limited physical interaction not defined by other codes in this code family.

Code family 6: The perceived solution to the problems of trust application in cooperative networks with limited physical interaction

Code 29: Perceived solution based on changes on participants = changing on function, interests and other personal factors of cooperative partners.

Code 30: Perceived solution based on changes in interactions, including the medium, the frequency, de content and the (design of) process.

Code 31: Perceived solution based on changes to the cooperation, including structure of the cooperation, goals and other characteristic of the cooperation.

Code 32: Other perceived solution based on changes other aspects not defined by other codes in this code family.

Code family 7: The description and perception related to cooperation

Code 33: Perceived functioning of cooperation.

Code 34: Perceived goal of cooperation.

Code 35: Perceived reasons for starting cooperation.

Code 36: Perceived metaphor of cooperation.

Code family 8: The description and perception related to participants

Code 37: Perceived functioning of participants.

Code 38: Perceived goal from participants.

Code 39: Perceived reasons for to participate.

Code 40: Perceived metaphor of participants.

Code family 9: The description and perception related to trust

Code 41: Perceived functioning of trust.

Code 42: Perceived goal of trust.

Code 43: Perceived reasons for trust application.

Code 44: Perceived reasons for trust development.

Code 45: Perceived reasons for trust failure.

Code 46: Perceived metaphor of trust.

Code family 10: Other assisting codes

Code 47: Interesting quotes.

Code 48: Other interesting or relevant data not defined by other codes.

APPENDIX 6 EXAMPLES OF TRUST DEFINITIONS ACROSS REFERENTS AND LEVELS OF ANALYSIS

Individual

'The willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party.' (Mayer et al., 1995)

'The extent to which a person is confident in, and willing to act on the basis of, the words, actions and decisions of another.' (McAllister, 1995)

'... the intention to accept vulnerability based upon positive expectations of the intentions or behaviours of another.' (Rousseau et al., 1998)

'Confident positive expectations regarding another's conduct.' (Jeffries & Reed, 2000)

'A state involving confident positive expectations about another's motives with respect to one's self in situations entailing risk.' (Boon & Holmes, 1991-1994), '...an orientation towards others that is beyond rationality' (Lewis & Weigert, 1985; Tyler & Kramer, 1996), 'because it increases one's vulnerability to opportunistic behaviour (Cummings & Bromiley, 1996; Zand, 1972)

'An individual's belief about the integrity and dependability of another.' (De Jong, Van der Vegt & Molleman, 2007)

'A's expectation that B can be relied on to behave in a benevolent manner.' (Sorrentino, Holmes, Hanna, & Sharpe, 1995)

'The willingness to make oneself vulnerable to another person despite uncertainty regarding motives and prospective actions.' (Kramer, 1999; Mayer, Davis, & Schoorman, 1995; McAllister, 1995; Rotter, 1967)

'A type of expectation that alleviates the fear that one's exchange partner will act opportunistically.' (Bradach & Eccles, 1989), 'even when it is not possible to monitor that partner.' (Mayer et al., 1995)

'The degree of faith employees...have concerning management's ability to steer the organisation (Oreg, 2006)

'A psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behaviour of another (Rousseau et al., 1998)

'The willingness to be vulnerable to the actions of another (Mayer, Davis & Schoorman, 1995)

'Acceptance of vulnerability out of positive expectations of the other's intentions', (e.g. Mayer, Davis, & Schoorman, 1995; Rousseau, Sitkin, Burt, & Camerer, 1998)

'A willingness to be vulnerable to another person based on the expectation, but not certainty, that he or she will act benevolently', (Whitener et al., 1998). 'It also reflects an assessment

of a person's motives, intentions, and character' (Tyler & Lind, 1992), 'including judgments of a person's benevolence, integrity, fairness, and reliability' (e.g., Butler, 1991; Mayer & Davis, 1999)

'Employees' expectations regarding the behaviour of their workgroup peers so that those who they trust will reliably support processes that help them and oppose processes that will harm them' (Deutsch, 1973)

'A group member's willingness to be vulnerable to the actions of his or her teammates on the basis of the expectation that other members will perform actions that are important to the trustor' (Mayer, Davis, & Schoorman, 1995)

'Trust is viewed here as a unitary construct reflecting a willingness to be vulnerable. That willingness is driven by three facets of 'trustworthiness': ability, integrity, and benevolence'. Organisation (Deery et al., 2006)

'A confidence between the parties that they will not be harmed or put at risk by the actions of the other party and that neither party to the exchange will exploit the other's vulnerability' (Jones & George, 1998)

'The willingness to be vulnerable to the actions of another, due to the expectation that those actions will not harm oneself' (Hosmer, 1995; Mayer, Davis, & Schoorman, 1995; Williams, 2001)

Team

'A common belief among a group of individuals that another individual or group (a) makes a good faith effort to behave in accordance with any commitments (b), is honest in whatever negotiations preceded such commitments and (c) does not take excessive advantage of another even when the opportunity is available.' (Cummings & Bromiley, 1996)

'An expectation or belief that the team can rely on the leader's actions or words and that the leader has good intentions toward the team.' (Davis et al., 2000)

'The willingness of a party (trustor) to be vulnerable to the actions of another party (trustee) based on the expectation that trustee will perform an action important to the trustor, regardless of the trustor's ability to monitor or control the trustee.' (Mayer et al., 1995.)

'Members' beliefs about the leader's competence', 'Members have a strong and favourable emotional connection with the leader'. Team e.g., (Simons & Peterson, 2000).

'Generalized expectations for all group members' (Zand, 1972)

'A willingness to be vulnerable to the actions of another party' (Mayer, Davis, & Schoorman, 1995), 'in situations involving some risk' (Deutsch, 1958) '...intra team trust is the aggregate perception of trustworthiness that team members have about one another'. (Serva et al., 2005)

'A shared belief by members of a focal group about how willing that group is to be vulnerable to a target (i.e., trustee) group.' (De Jong & Elfring, 2010)

'... a psychological state of individuals involving confident, positive expectations about the action of another' (Dirks & Skarlicki, 2004)

Organisation

'The collective set of norms, values, and beliefs that express employees' views of how they interact with one another while carrying out tasks for their firm'. (Menges et al., 2011)

'The positive expectations employees have about the intent and behaviours of other organisational members'. (Shockley-Zalabak et al., 2000)

'When trust perceptions are aggregated across employees, partnerships, stockholders, customers, and others take holders these generalized expectations become part of the cultural context of the organisation'. Organisation (Gibson & Birkinshaw, 2004)

'Trust is an attribute of context that induces members to rely on the commitments of each other (Ghoshal & Bartlett, 1994: 95). Inter-Organisational, (Zaheer et al., 1998)

'The expectation that an actor (1) can be relied on to fulfil obligations (Anderson & Weitz, 1989), (2) will behave in a predictable manner and (3) will act and negotiate fairly when the possibility for opportunism is present' (Anderson & Narus, 1990; Bromiley & Cummings, 1995).

'The extent to which organisational members have a collectively held trust orientation toward the partner firm', (Fryxell et al., 2002)

'Willingness to make oneself vulnerable to the actions of another under conditions of risk, based on the characteristics or qualities of specific others, groups, or systems to be trusted' (Mayer et al., 1995; McAllister, 1995). (Faems et al., 2008)

'Positive expectations regarding the other party in a risky situation' (Lewicki et al., 2006; Rousseau et al., 1998) '...trust is a multidimensional concept' (e.g., Das & Teng, 2001; Nootboom, 1996), 'encompassing positive expectations about a partner's ability to perform according to an agreement (competence trust) as well as the party's intentions to do so (goodwill trust)'. (Gainey & Klaas, 2003)

'A willingness to make oneself vulnerable to another party' (McAllister, 1995; Nootboom, 1996)

'The confidence held by one party in its expectations of the behaviour and goodwill of another party regarding business actions' (Ring and Van de Ven 1992, Zucker 1986, Mayer et al. 1995)

'The trusting behaviour firms display as they knowingly take risks and become vulnerable to their partners' (Nootboom, 2002)

'The confident positive willingness of one to be vulnerable to the conduct of another (Mayer, Davis, & Schoorman, 1995; Rousseau, Sitkin, Burt, & Camerer, 1998) in conditions of interdependence and risk', (Krishnan et al., 2006)

'The expectation held by one firm that another will not exploit its vulnerabilities when faced with the opportunity to do so' (Barney & Hansen, 1994; Mayer et al., 1995; Sako, 1991)

'The confidence that another party, not under your control, will refrain from exploiting your vulnerabilities.' (Lane et al., 2001)

