



National Defence University

Series 1: Research Publications No. 45

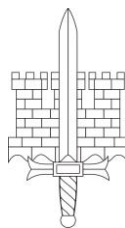
Trust and Routines in Multi-Supplier Networks

Markus Gardberg

MARKUS GARDBERG

TRUST AND ROUTINES IN MULTI-SUPPLIER NETWORKS

Akateeminen väitöskirja, joka Maanpuolustuskorkeakoulun tutkimusneuvoston suostumuksella esitetään julkisesti tarkastettavaksi sotatieteiden tohtorin tutkintoa varten Maanpuolustuskorkeakoulun auditorio Itälinakkeessa, Santahaminassa Helsingissä, perjantaina 10. syyskuuta klo 12.



MAANPUOLUSTUSKORKEAKOULU
HELSINKI 2021

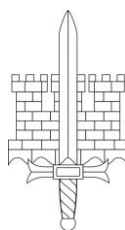
Martinalle, Hannulle, Maijalle ja Matiakselle

MAANPUOLUSTUSKORKEAKOULU
JULKAISUSARJA 1: TUTKIMUKSIA NRO 45

NATIONAL DEFENCE UNIVERSITY
SERIES 1: RESEARCH PUBLICATIONS NO. 45

TRUST AND ROUTINES IN MULTI-SUPPLIER NETWORKS

MARKUS GARDBERG



MAANPUOLUSTUSKORKEAKOULU
HELSINKI 2021

Markus Gardberg: *Trust and Routines in Multi-Supplier Networks*
Maanpuolustuskorkeakoulu
Julkaisusarja 1: Tutkimuksia nro 45
Väitöskirja /
National Defence University
Series 1: Research Publications No. 45
Doctoral dissertation

Author: Captain, MSc Markus Gardberg

Supervisor: Professor, Lt. Col. Aki-Mauri Huhtinen
National Defence University

Pre-examiners: Professor Petri Virtanen
University of Vaasa

Professor Jari Stenvall
Tampere University

Opponent: Professor (ret.) Pertti Ahonen
University of Helsinki

Recent publications in PDF format: <http://www.doria.fi/handle/10024/73990>

© Author & National Defence University

ISBN 978-951-25-3207-0 (pbk.)

ISBN 978-951-25-3208-7 (pdf)

ISSN 2342-9992 (print)

ISSN 2343-0001 (web)

**Maanpuolustuskorkeakoulu
National Defence University**



This work is licensed under the Creative Commons BY-NC-ND 4.0 International License. To view a copy of the CC BY-NC-ND 4.0 license, visit <https://creativecommons.org/licenses/by-nc-nd/4.0/deed.en>

PunaMusta Oy
Tampere 2021



ABSTRACT

Trust and routines have been studied for decades in organisational contexts. The studies have provided invaluable insights into the way in which organisations function. However, the association between trust and routines has rarely been considered. This dissertation proposes a theoretical framework wherein trust and routines function as indicators of future events even in a complex environment. In other words, they can be used to increase the accuracy of predictions about the future which, in turn, has several benefits such as more viable planning.

The aim of this dissertation, at a practical level, is to provide information for practitioners on how to build trust and form routines in networks. At a theoretical level, it will argue that uncertainty can be mitigated and predictability increased by building trust and forming routines. To this end, the purpose of this dissertation is to provide information on how to increase the efficiency of networks, and to enhance understanding of the conceptualisation of trust and routines.

The dissertation comprises the following sections: introduction and theoretical framework, one published essay on trust and routines as process ontological phenomena, three published articles, and a discussion. The first two articles deal with trust-building. The first of these presents a framework for trust-building factors. This framework consists of two types of factors: structural (e.g. legacy structure, roles and responsibilities, personal relations, forums) and functional (e.g. communication and behaviour). The second article explores how these factors are present in contracts. The results show that while most of the factors were governed by the contracts, some were neglected. For instance, personal relations were identified as an important factor in the framework but were not covered in contracts.

The third article focuses on routinisation and presents findings on the kind of functions that are routinised, how this is attempted, and the hindering and supporting factors that lie behind routinisation. For example, actors attempt to routinise processes by setting some form of constraints. This, again, can be supported by time and experience and hindered by factors related to actors. Finally, the discussion section focuses on what practitioners should take into account in light of the results emerging from the articles. It also discusses the possible venues for future research, such as the need for determining the relative importance of the factors presented.

Keywords: *trust, routines, cooperation, networks*

TIIVISTELMÄ

Luottamusta ja rutiineja on organisaatioihin liittyen tutkittu vuosikymmeniä. Tutkimukset ovat tuottaneet paljon hyödyllistä tietoa organisaatioiden toiminnasta. Luottamuksen ja rutiinien suhdetta toisiinsa on kuitenkin tutkittu hyvin vähän. Tässä väitöskirjassa ne yhdistetään tavalla, jonka mukaan luottamus ja rutiinit auttavat ennakoimaan tulevia tapahtumia jopa kompleksisessa ympäristössä. Toisin sanoen niiden olemassaolo parantaa ennustamisen tarkkuutta, mikä puolestaan on hyödyllistä esimerkiksi suunnittelun pohjana.

Väitöskirjan tavoitteena on käytännön tasolla tuottaa tietoa luottamuksen rakentumisesta sekä rutiinien muodostumisesta verkostoissa. Teoreettisella tasolla tarkoituksena on perustella ajatus, jonka mukaan epävarmuutta voidaan vähentää rakentamalla luottamusta ja kehittämällä rutiineja. Väitöskirjan tarkoituksena on tuottaa tietoa, kuinka verkostojen tehokkuutta voidaan parantaa ja lisätä ymmärrystä luottamuksen ja rutiinien mahdollisesta käsitteellisestä.

Väitöskirja koostuu seuraavista osioista: johdanto ja teoreettinen viitekehys, yksi julkaistu essee luottamuksesta ja rutiineista prosessiontologisina ilmiöinä, kolme julkaistua artikkelia sekä viimeisenä johtopäätökset. Artikkeleista kaksi ensimmäistä käsittelee luottamuksen rakentumista. Ensimmäinen artikkeli esittää luottamuksen rakentumisen tekijät monitoimittajaverkostossa. Tekijät jakautuvat kahteen kokonaisuuteen: rakenteelliset ja toiminnalliset tekijät. Rakenteellisia tekijöitä ovat esimerkiksi vanhat rakenteet, roolit ja vastuut, henkilösuhteet ja foorumit. Toiminnallisia tekijöitä puolestaan ovat kommunikaatioon ja käyttäytymiseen vaikuttavat tekijät. Toinen artikkeli tarkastelee, kuinka sopimukset tukevat luottamuksen rakentumista. Artikkelin johtopäätöksinä todetaan, että valtaosa tekijöistä on otettu huomioon sopimuksissa, mutta muutamia tekijöitä sopimukset eivät käsittele. Yksi esimerkki tällaisista on henkilösuhteet, jotka ensimmäisessä artikkelissa havaittiin vaikuttavan luottamuksen rakentumiseen.

Kolmas artikkeli käsittelee rutiinien muodostumista. Artikkelin tuloksissa esitellään, mitä toimintoja pyritään muodostamaan rutiineiksi, miten siihen pyritään ja mitkä tekijät tukevat ja haittaavat rutiinien muodostumista. Toimijat esimerkiksi pyrkivät siihen, että prosessit olisivat mahdollisimman pitkälle rutiineja. Tähän pyritään asettamalla erilaisia rajoitteita toiminnalle. Tätä toimintaa puolestaan tukee esimerkiksi aika ja kokemus ja haittaa eri toimijoihin liittyvät tekijät.

Lopuksi johtopäätökset keskittyvät siihen, mitä esimerkiksi ammatinharjoittajien tulisi huomioida artikkelien tuloksista. Johtopäätöksissä myös esitetään mahdollisia tulevaisuuden tutkimussuuntia, kuten esimerkiksi tarve määrittää eri tekijöiden suhteellinen tärkeys luottamuksen rakentumisessa tai rutiinien muodostumisessa.

Asiasanat: *luottamus, rutiinit, yhteistoiminta, verkostot*

FOREWORD

I was putting the finishing touches to my master's degree in 2016 when I became interested in three things: productivity, network management, and public procurement. As a logistics officer, I felt that all three were important because I would likely be dealing with these matters later in my career. Moreover, from a broader perspective, the lion's share of Finland's military capabilities is dependent upon private companies, ministries, third sector entities, and other civilian actors. These interrelations coupled with the fact that Finland invests hundreds of millions of euros in defence capabilities annually makes all knowledge related to efficient project management highly important. As a consequence, I decided to pursue these interests, which eventually led me to apply for the National Defence University of Finland's doctoral programme a year later. This dissertation was researched and written between 2017 and 2020 to fulfil the graduation requirements of that programme.

I focus on management mainly from the perspectives of trust-building and routine-forming. Trust and routines are fascinating concepts. They are frequently used in interactions but almost never defined: everyone has seen news articles about the trustworthiness of public entities, wants to deal with trustworthy companies, or is engaged in routine tasks. The problem is that trust and routines are highly multifaceted concepts involving several aspects that should be considered when they are discussed. For instance, trust is not about whether or not someone can be trusted, but rather about what he or she can be trusted to do. Routines, in a similar vein, are not static but constantly evolving. These aspects are often lost when trust and routines are discussed. Hence, I chose these concepts as a focus because I was certain it would not only make for a very interesting point of view, but also provide valuable insights for scholars and practitioners alike.

I would like to thank my supervisor, Professor Aki-Mauri Huhtinen, for excellent guidance and support during the whole process. I would also like to thank my family and all the numerous people who spent their time reading the manuscripts and providing invaluable help, comments and advice. Finally, I wish to thank the various anonymous respondents who lent their expertise, as well as the staff of the Finnish Defence Forces Logistics Command who provided the contracts used as data in one of the studies.

I hope you enjoy reading this dissertation.

Markus Gardberg

Joensuu, December 28, 2020

ESIPUHE

Sotatieteiden maisteriopinnoista jäi mieleen kolme mielenkiintoista kokonaisuutta: tuottavuus, verkostojen johtaminen ja hankinnat. Olin varma, että logistiikkaupseerina tulen tarvitsemaan näihin liittyvää tietoa myöhemmin urallani. Toisaalta tiesin myös, että leijonan osa Puolustusvoimien suorituskyvystä on riippuvaista muiden toimijoiden avusta ja tekemisistä. Näin ollen päätin alkaa tutkimaan asiaa tarkemmin, koska arvelin tietojen olevan hyödyllisiä monesta eri näkökulmasta. Selvitystyö johti lopulta siihen, että hain ja pääsin Maanpuolustuskorkeakoulun tohtoriohjelmaan vuonna 2017. Tässä väitöskirjassa esitetyt tutkimukset on laadittu vuosien 2017 ja 2020 välillä.

Keskityn erityisesti johtamiseen erityisesti luottamuksen rakentumisen ja rutiinien muodostumisen näkökulmista. Luottamus ja rutiinit ovat mielenkiintoisia käsitteitä, koska niitä käytetään jatkuvasti puhemielessä, mutta niitä ei määritellä juuri koskaan. Kaikki ovat varmasti nähneet tutkimuksia viranomaisten luotettavuudesta, moni työskentelee yrityksessä, joka painottaa strategiassaan luotettavuutta tai jokainen on joskus suorittanut rutiinitoimenpiteen. Ongelmana kuitenkin on, että luottamus ja rutiinit ovat erittäin monimutkaisia käsitteitä. Esimerkiksi luottamuksessa on kyse ennen kaikkea siitä, mihin luotetaan. Esimerkiksi putkimies ei välttämättä osaa korjata rikkoontunutta hanaa, mutta avian varmasti muistaa lähettää laskun. Onko putkimies siis luotettava? Rutiinit puolestaan muuttuvat jatkuvasti, vaikka kaukaa tarkasteltuna ne ehkä näyttävät pysyviltä. Nämä ominaisuudet yleensä unohtuvat, kun rutiineista ja luottamuksesta keskustellaan. Näin ollen valitsin nämä käsitteet tutkimuskohteiksi, koska niistä on varmasti saatavissa mielenkiintoisia tuloksia niin Puolustusvoimille, tutkijoille kuin minulle itsellenikin.

Haluan tässä yhteydessä kiittää ohjaajaani, professori Aki-Mauri Huhtista erinomaisesta ohjaamisesta koko prosessin aikana. Haluan kiittää myös ennen kaikkea perheitäni, ystäviäni sekä erittäin suurta määrää ihmisiä, jotka uhrasivat aikaansa lukiessaan tekeleitäni sekä antaessaan apua, kommentteja ja vinkkejä työn edetessä. Lopuksi haluan kiittää vielä lukuisia nimettömiä vastaajia, jotka jakoivat asiantuntemustaan haastattelussa sekä Puolustusvoimien Logistiikkalaitoksen edustajia, joiden kautta sain käyttööni arvokasta aineistoa.

Toivotan mielenkiintoisia lukuhetkiä väitöskirjan parissa.

Markus Gardberg

Joensuussa 28. joulukuuta 2020

TABLE OF CONTENTS

ABSTRACT	i
TIIVISTELMÄ	ii
FOREWORD.....	iii
ESIPUHE.....	iv
TABLE OF CONTENTS	v
1 INTRODUCTION	1
2 THEORETICAL FRAMEWORK	7
2.1 Complexity and complicatedness	11
2.2 Uncertainty and predictability.....	14
2.3 Conclusion	20
3 RESULTS OF THE ARTICLES	21
3.1 Trust-building factors	21
3.2 Trust-building factors in contracts.....	24
3.3 Routinisation.....	25
4 DISCUSSION	29
4.1 Limitations	34
4.2 Conclusion	35
REFERENCES.....	37
APPENDICES.....	42
Appendix 1. Trust-building in a cooperative multi-supplier network	
Appendix 2. Contracts as trust-builders	
Appendix 3. Routinisation in a cooperative network between the military and the private sector	
Appendix 4. Trust and routines as indicators of the future	

FIGURES AND TABLES

Figure 1. Broad framework	7
Figure 2. Multi-supplier network.....	8
Figure 3. Framework of trust-building as described in the first article.	22
Figure 4. Framework of routinisation as described in the third article.....	26
Table 1. Summary of the published articles	3

1

INTRODUCTION

The world has always been interconnected. Nothing happens in a vacuum, and every event has been the sum of numerous factors. Neanderthal hunting trips, political decisions in ancient Athens, or war-fighting by Napoleon, for example, were all influenced by different processes, attributes, weather, equipment, information, training, and so forth. However, the difference when compared to the contemporary world is the scale of things. Today, everything is interconnected on a global scale rather than at a local or regional level. This has given rise to systems that are extremely complex. For instance, complexity has been cited as the reason for China not being able to match the USA in terms of military technology: the technology is so complex that it cannot simply be imitated or reproduced even if all of the specifics can be acquired via espionage (Gilli & Gilli, 2019). Complex systems have to be created by numerous parties working in cooperation because no actor possesses sufficient knowledge to create the system alone. This cooperation is interesting because it forces all kinds of actors to work together; some may be seasoned partners, others new acquaintances, some established organisations, while others are new start-ups. Some may even be rivals or competitors and yet they must cooperate to achieve a common goal in a globally interconnected world.

As a logistics officer in the Finnish Defence Forces (FDF), I have come to acknowledge the fact that the military is highly interconnected with countless entities. I have not always understood this, however. Previously, I always assumed that the military merely procures capabilities or systems and operates them. Later, I discovered that both the procurement and the operation rely heavily on the knowledge and support of the private sector, and that the work is carried out in networks. This realisation led to my interest in the efficient management of these cooperative networks between the FDF and the private sector. While I was reading up on the subject, I also learned that some of the companies developing capabilities are even competitors. This gave rise to the puzzle addressed by this dissertation. The starting point was the question: *How should the military manage networked procurement projects where some of the cooperating companies are also competitors?* However, I decided to approach this management from the perspective of predictability and planning because predictability, in particular, yields numerous benefits such as the better use of resources, improved effectiveness, rapid responses to change, and so on (Asia-Pacific Economic Cooperation, 2015). This eventually led to the topic of this dissertation, which boils down to the question: *How can the military effectively manage networked procurement projects to make them more predictable?* This question could have been answered, for instance, by comparing the pros and cons of established management styles, such as Lean or Agile management, or studying which style would work in certain scenarios. However, I felt that a more innovative approach was warranted since established management styles are studied extensively, but the literature on how to increase predictability in networks is surprisingly scarce. To this end, I explored aspects of cooperation which finally resulted in the discovery of trust and routines as potentially beneficial factors. I started exploring them further because they are in essence about de-

scribing what should take place and not about what is going to take place. Hence, trust and routines were promising venues because by trust-building and routine-forming, the military ought to be able to communicate its vision of what should take place to the cooperating parties.

The aim of this dissertation, at a practical level, is to provide information for practitioners on how to build trust and form routines in networks. At a theoretical level, I will argue that uncertainty can be mitigated and predictability increased by building trust and forming routines. The reason for this is that both trust and routines can be conceptualised as constructs that affect the directions along which the future can unfold. The purpose of this dissertation, therefore, is to provide information on how to increase the efficiency of networks, and enhance understanding of the conceptualisation of trust and routines.

The point of view is above all managerial which, in practice, means that I seek to not only describe trust-building and routinisation, but also to provide practitioners with concrete tools to help them manage relations efficiently and effectively. This study is not normative as such, however, because this introduction in particular is heavily theoretical, and hence may not provide a sufficient empirical background to support normative endeavours. On the other hand, the articles do contain empirical results that can be applied by managers.

In this dissertation, trust and routines are explored through interpretations of subject matter experts to incorporate the highly subjective nature of the concepts. Moreover, trust and routines as well as predictability are explored in a framework of multi-supplier networks. A multi-supplier network is a complex adaptive network where multiple potentially competing organisations cooperatively develop something (e.g. capabilities, products, applications) for a client – in this case the FDF. They are regarded as a type of social network. A social network can be defined as “a set of people or groups of people with some pattern of contacts or interactions between them” (Newman, 2003, p. 174). Using this framework enables empirical endeavours because it provides a concrete context in which interviews can be conducted, for example, or relations and procedures between different organisations scrutinised.

Apart from this introduction, the dissertation consists of the theoretical framework, one published essay, and three published journal articles. In the essay, I explore the concepts of trust and routines in a process ontological framework. I argue that regarding them as processual in nature yields information relevant to predictability. This argument is paramount here when trust and routines are discussed as concepts increasing predictability. The first article describes a multi-supplier network and its qualities as well as trust-building within it. The second article studies the content of contracts and explores their role as a way of building trust. It is the only section in this dissertation that was co-written. The co-writer was Dr Minna Branders, whose role was to verify the validity of the content analysis. The third article deals with routines and routinisation in the relations between the FDF and its partners. The dissertation concludes by discussing the applicability of the findings. The journals in which the articles were published, as well as the aim, timeframe, and data for each one are summarised in Table 1.

Table 1. Summary of the published articles

Article no.	Published in (Finnish Publication Forum – JUFO – rating)	Aim	Timeframe	Data	Method of analysis	Key findings
1	<i>Journal of Public Procurement</i> (JUFO 1)	Explore how trust can be built in a multi-supplier network.	2017-2018	17 semi-structured interviews	Data-driven content analysis	The study found that trust-building is influenced by several structural and functional factors. The role of the prime actor and its role in trust-building was also emphasised.
2	<i>Journal of Trust Research</i> (JUFO 1)	Explore how contracts support the forming of a favourable environment for trust-building.	2018-2019	8 contracts between the FDF and its partners	Theory-driven content analysis	The study improved understanding of how contracts particularly influence the communication between parties, which is essential in trust-building. The study also identified five aspects that could be improved: establishing fewer forums of communication; encompassing personal relations and potentially deviating interests; providing more communication via avenues other than key personnel; carefully considering the need for restrictive confidentiality clauses; and using contracts to pursue a certain culture.
3	<i>International Journal of Procurement Management</i> (JUFO 1)	Describe what the actors in a cooperative relationship are trying to routinise and how they are trying to accomplish that.	2018-2019	17 semi-structured interviews	Data-driven content analysis	Routinisation is carried out via functions (e.g. training, communication) and constraints (e.g. regulations, contracts). Routinisation is also supported or hindered by matters related to time, framework, actors, and actions within the network.

The first article in this dissertation deals with practitioners' perceptions of trust-building. Based on 17 semi-structured interviews, the article finds that trust-building is perceived to be influenced by functional factors (e.g. the behaviour of the actors) and structural factors (i.e. cultural factors, legacy structures, clear roles and responsibilities, personal relations, etc.). This supports the notion that trust and trust-building are influenced by factors at both the system and the actor levels, and not just one or the other. The second article covers a study focusing on contracts as trust-builders. Using eight contracts signed between the FDF and its partners as data, the study tested how trust-building factors are present in dyadic contracts between actors. The study found that contracts clearly define and support certain aspects of relations, such as roles and responsibilities, but overlook other important aspects such as personal relations.

The third article focuses on a study on routines and routinisation. The study aimed to discover which tasks the actors in a network were attempting to routinise, how they were doing that, and what was perceived to hinder or support the routinisation process. The article used data from 17 semi-structured interviews with respondents from the FDF and its partners. The respondents differed from those in the first article. In short, the study found that actors attempted to routinise processes, structures, and roles. The routinisation was attempted by actions that would lead to learning, such as communication, training, and inspections, and was seen to be supported by factors related to actors (e.g. skills, familiarity), actions (e.g. exchanging information), and framework (e.g. understanding of culture, mutual benefits). Moreover, time and experience were identified as highly important when routinisation is discussed. Similarly, some factors related to actors, actions, and framework were seen to hinder routinisation if, for example, personnel lacked competence, organisational goals prohibited the sharing of certain information, or cultural differences were present.

The articles applied qualitative research methods. The methods were naturally chosen based on their applicability to the research design and the resources available. Several other approaches, such as observations or experiments, would also have been possible if the design had been tweaked slightly, and greater resources employed. For instance, observations might yield interesting results if trust and routines are examined in a limited framework, such as a military exercise or a networking event. The problem with this approach, however, is that the study would likely focus mainly on the communication because it is observable, and duly omit several other relevant aspects. Other aspects, such as actions, could also be observed but the study might find it difficult to distinguish between the reasons behind certain actions. At least, it would require a team of observers to gather sufficient data pertaining to the actions. Experiments, on the other hand, could incorporate several aspects and variables. However, they would likely require greater resources because trust and routines are complex concepts and simple experiments might, again, omit important aspects. The experiments could also provide quantitative data, which would require appropriate analysis methods. In sum, interviews and contracts as data coupled with data-driven and theory-driven analysis were deemed to be the best approaches to fulfil the aim and purpose of this dissertation.

In the following, I outline the theoretical framework connecting and linking the studies presented in the articles as well as the essay. I also advance the notion of why it is important to increase understanding of predictability in networks.

THEORETICAL FRAMEWORK

Planning is essential for organisations. It facilitates the performance of the task at hand (Gollwitzer, 1996). Planning also helps organisations to allocate resources, achieve goals, innovate, and operate more efficiently, among other things. Plans are based on some form of prediction or forecast about the future. Scholars and practitioners have long been interested in predicting because it helps organisations to avert or mitigate negative outcomes prior to their occurrence, or to identify new opportunities, for instance (Jalonen & Lönnqvist, 2011). However, planning is difficult because the accuracy of predictions and forecasts varies, especially in complex networks. The accuracy of predictability has to be increased for better planning, but the question is how. The main problem lies in the nature of the complex network itself, where it is difficult to infer the parts of the whole (De Toni & De Zan, 2016) and where minimal changes can bring about huge impacts, while huge changes may evoke only minimal consequences (Anderson, 1999; Richardson, 2008). If a complex network does not follow normal logic but events always take place in an unexpected and emergent way, how can events be predicted and predictability increased? In this dissertation, I will propose trust and routines as ways of increasing predictability in complex networks.

The framework used here incorporates several concepts, such as trust, routines, uncertainty, predictability, complexity, multi-supplier networks, and processes. These concepts and their interrelations are discussed below but Figure 1 depicts a broad framework for the entire dissertation. In short, the reality consists of processes, which form a system level that has several qualities, such as complexity and uncertainty, which affect the results of the processes.

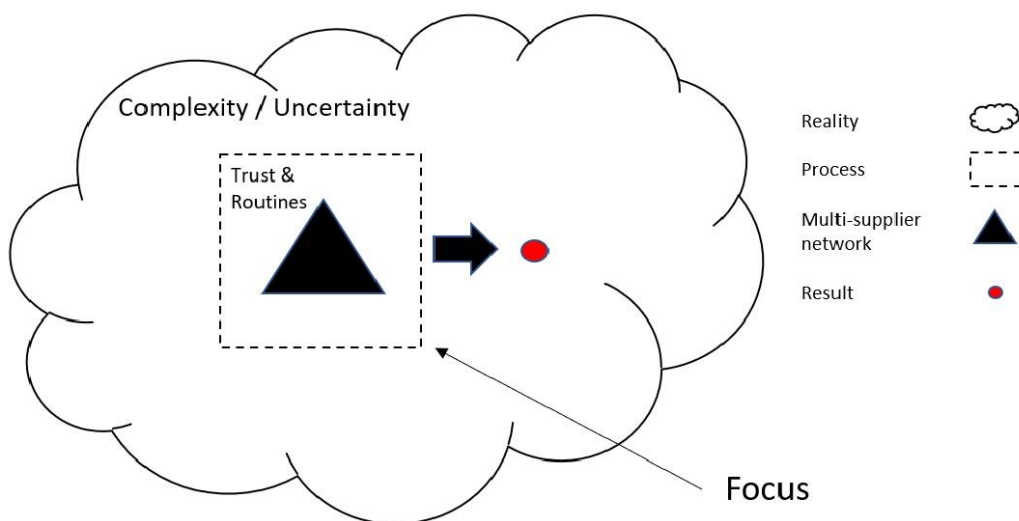


Figure 1. Broad framework

Processes contain networks which are made up of actors (see Figure 2). They form the so-called actor level, which also has attributes, qualities, and functions that similarly pertain to the results of the processes. The results can be anything, such as products, ideas, principles, change, new processes, and so forth. Trust and routines are these kinds of attributes and functions. They are both considered to ultimately reside within processes because both are heavily influenced by factors that cannot be attributed only to single entities. Therefore, I focus here on how trust and routines are formed within the processes.

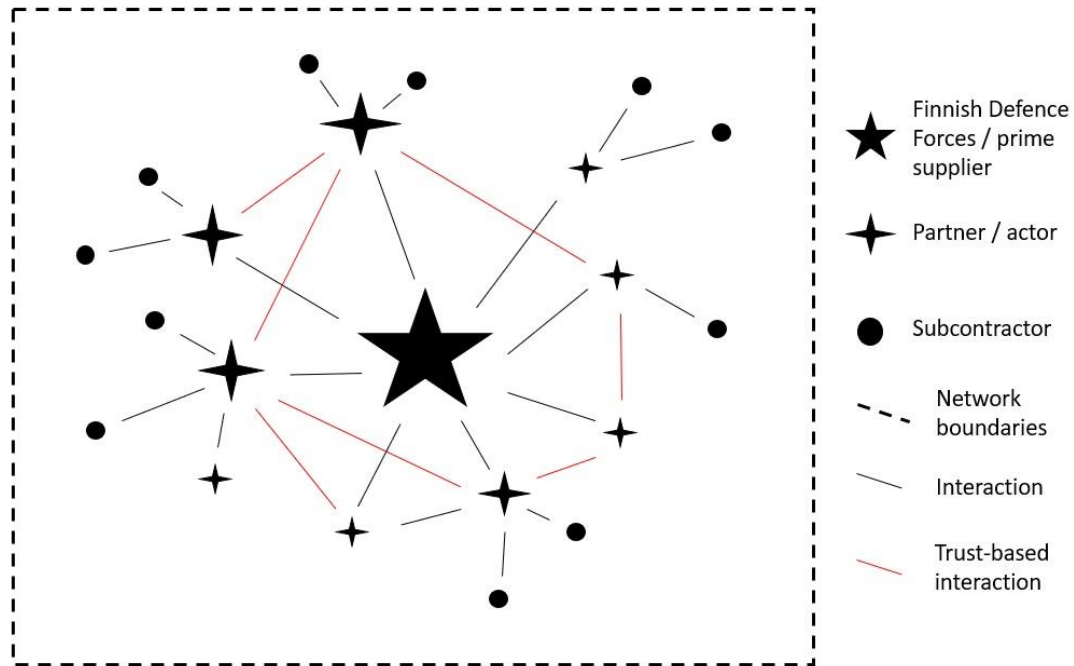


Figure 2. Multi-supplier network

Trust and routines are studied here in a so-called multi-supplier network, as depicted in Figure 2. There are three types of actors in the figure. First, the Finnish Defence Forces (FDF) are the employer, namely the actor that needs something to be developed by the multi-supplier network. There may also be a so-called prime actor in the middle, which is an actor tasked with managing the multi-supplier network. In this case, the employer mainly deals with the prime actor which, in turn, handles the connections to suppliers and other actors. Second, there are suppliers or other actors, which can be anything from private companies to government officials and third sector organisations. Third, there are subcontractors of the private companies, who normally do not interact with actors other than their supplier. The actors can interact in one of two ways: regular interactions or trust-based interactions. Regular interactions are usually governed by some sort of legal foundation, such as a contract with suppliers or a law defining how public sector officials are to resolve matters. Naturally, there can be some exceptions when dealing with the third sector, but these are considered to be minor here. Trust-based interactions, on the other hand, are not regulated by contracts. The interactions take place, for example, when suppliers are supposed to share information on their products with others in order for the whole project to move forward. This can be problematic because suppliers do not have binding contracts with one another but only with the FDF. Thus, actors need to have faith in each other so that they do not try to exploit the information,

especially if they are competitors. These trust-based interactions make the multi-supplier network an interesting venue for examining trust and routines because the interactions are highly unregulated. It can lead to all sorts of outcomes for the actors. This also makes multi-supplier networks interesting and, above all, an important framework for analysis because the network has to operate effectively in order for it to produce the desired outcomes.

Networks, in general, are an integral part of the world. They can be tangible objects such as power grids and subway systems, entities in abstract space such as collaboration networks between individuals (Boccaletti, Latora, Moreno, Chavez, & Hwang, 2006), or social networks (e.g. Landis, 2016). Networks are understood here as combinations of interrelated nodes. These nodes can be anything, ranging from individual humans to multinational corporations, organisations, sub-networks, laws or single artefacts. A node can be anything that interacts or affects interactions. It is also referred to in this dissertation as an ‘actor’, which signifies the node’s ability to have an effect. An actor can be human or non-human (also referred to in the literature as an actant) (Sele & Grand, 2016). This is because both human and non-human actors can have an effect on other nodes. For instance, flags are non-human artefacts but they evoke behaviour in humans (e.g. raising a flag or saluting it) and humans also attribute meanings to them (e.g. duty or camaraderie). Similarly, laws are non-human but they influence the way in which corporations can do business, while corporations attempt to influence them to make them more permissive.

Nodes also have qualities and attributes which influence their behaviour. For example, an individual human might be honest or at least be perceived by others to act honestly. This is likely to influence the way in which nodes act within the network. However, the attribution of qualities within the network raises a problem: How do we attribute highly abstract qualities such as ‘Finnish culture’, which the interviewees in the first article often saw as influencing the way organisations act? It could be argued that it is a quality of a node, labelled as ‘Finland’ or ‘Finnish people’. In contrast, one could argue that it is something that exists in the space between the nodes. In other words, causality (i.e. the culture’s effect on behaviour) can be attributed either to personal dispositions (i.e. qualities of nodes) or to environmental dispositions (i.e. to something existing outside of or between the nodes) (see Shaver, 1983). The environment is also referred to here as a system.

This dissertation supports the notion whereby attribution can be both environmental and personal because merely attributing everything to nodes is too fuzzy and controversial. Moreover, attributing some concepts explicitly to a personal level is difficult. For example, trust is something that has been regarded as existing at individual, organisational or system levels (e.g. Fulmer & Gelfand, 2012), hence making it possible to attribute it as both a personal and an environmental disposition. To address this problem, the reality is viewed here to have a system level and an actor level. The system level houses all of the external factors affecting the nodes and edges of the network. Naturally, actors simultaneously contribute to system-level factors, such as culture. The actor level, on the other hand, houses the qualities and attributes of the actors (e.g. individuals, organisation, networks) and their interactions. The actor level exists and is situated entirely within the system level, as depicted in Figure 1.

Trust is an important phenomenon worldwide. It has even been viewed as the very foundation of society (Sasaki, 2019). However, trust is a multifaceted concept which has been defined, conceptualised, and operationalised in various ways. For instance, it has been conceptualised as a belief, as a decision, as an action (Dietz & Den Hartog, 2006), or as an underlying psychological condition (Rousseau, Sitkin, Burt, & Camerer, 1998). In a more recent work, Amaral et al. (2019, p. 6) propose that “to conceptualize trust, one must refer to: (i) *agents and their goals*; (ii) *agents’ beliefs*; (iii) possibly executable *actions* of a given type; and (iv) *risk*” (emphasis in the original). The goals of the agents and the actions are particularly important here because they can be seen as narrowing the possible ways in which the future can unfold. Thus, they can provide feasible information that can be used to predict the future. The possible definitions and philosophical aspects of trust are discussed later in the articles but, for now, suffice it to state that, at the actor level, trust is understood here as a belief or psychological condition intrinsic to an actor. Trust is also viewed as calculative in the early stages of relations (i.e. derived from the perceived beneficial actions of the trustee) but evolves towards relational trust (i.e. positive expectations about the intentions of the trustee) (Rousseau et al., 1998). In the articles, the exact definition of actor-level trust varies slightly to accommodate the purpose of the articles, but the basic notion remains the same. At the system level, trust is understood as a force that affects interactions because, for instance, institutions, culture, and situational factors are viewed as placing constraints upon the behaviour of the actors (see Dietz & Den Hartog, 2006). In other words, trust, and especially trust-building, are viewed here as processual phenomena. This is because trust is operationalised through its effects on actions; if no one puts themselves in a position where they are vulnerable to the actions of other parties, trust would not exist. Similarly, trust-building is definitely a process because it takes place in the interrelation and interaction between entities.

The articles did not, as such, explore or empirically approach the question of predictability. Thus, one relevant question here is whether trust and predictability can be viewed as being related in a way that enables trust to be regarded as something potentially increasing predictability. Indeed, trust and predictability have previously been found to have an interrelation where predictability increases trust. For instance, Cunningham and McGregor (2000) found in their study that workers trust their managers if managers act in a predictable manner. Similarly, Dietz and Den Hartog (2006) argue that predictability along with ability, benevolence, and integrity are the most relevant attributes of the trustee, while Edelenbos and Klijn (2007) state that “[t]he value of trust lies in handling uncertainty in complex decision making because other actors’ actions become more predictable”. The relationship also works in reverse. Rempel, Holmes and Zanna (1985, p. 96) suggest: “beliefs about the partner’s predictability would relate to the amount of past experience in the relationship and the degree to which this experience suggested consistency, stability, and control over the pattern of behavior exhibited.” This notion is likely to operate similarly at other levels as well because experience in previous dealings can be used to predict outcomes in the future. Due to these interrelations, trust and predictability are regarded here as highly interconnected concepts that can potentially influence one another.

A routine is also a concept that is very often referred to when organisational behaviour is discussed. It is not as multifaceted and elusive a concept as trust, but it has similar features nonetheless. A routine refers to a recurrent and repeated sequence of behaviour carried out by groups or organisations (Hodgson, 2008; Becker, 2004). It is understood here as it is defined in the third article: “established, repetitive, recognisable, and predictable patterns along which multiple actors perform organisational actions”. Routines are specifically organisational behaviour and can be distinguished from habits, which are standardised behaviour of individuals. Routines are deemed to be embedded in organisations (Becker, 2004), which results in multiple interrelations. As a result of these interrelations, routines are an interesting concept to explore in relation to complexity and predictability. Similar to trust, routines have been coupled with predictability, for instance, because they need to be recognisable and “are recognizable when one action can be used to predict the likelihood of the next action” (Pentland, Feldman, Becker, & Liu, 2012, p. 1491). The concept of a routine is discussed in detail in the third article of this dissertation.

Trust and routines have rarely been discussed as related concepts. In cases where they have been seen as related, the focus has been on how routines support trust-building. For example, Nilsson (2019) proposes that routines may facilitate trust in the early stages of a relationship. Furthermore, the relationship between trust and routines appears to be conceptualised as the latter’s ability to frame and nurture trust-building. Notwithstanding the effects of routines on trust-building, the relationship between these concepts has not been examined. While I do not contest this conceptualisation, I propose that it can be expanded from mere framing to one where both trust and routines functionally act as indicators of future events. This discussion is also likely to enhance understanding of the operationalisation of these concepts.

The remainder of this section describes and explores complexity as well as uncertainty and predictability. It is organised into two parts; first, I will describe complexity and distinguish it from complicatedness and then go on to explore predictability and its relations to trust and routines.

2.1 Complexity and complicatedness

The world can be viewed using either mechanistic or complex models. Mechanistic models assume that the world is knowable and leaders can employ control mechanisms to bring about a desired future for organisations, while complex models assume that the world is unknowable and consists of actors who learn and adapt to produce behaviours that cannot be predicted by observing past systems (Madden, Duchon, Madden, & Plowman, 2012). This dissertation follows the complex approach because everything relating to different aspects of trust or factors affecting routinisation, for example, cannot be effectively known. Therefore, the complex approach is better suited to modelling trust and routines because it incorporates the notion that the world is bound to remain unknowable to some extent. The following explores the concept of complexity and its related constructs.

Complex networks differ from complicated networks. A complex system can be described as one with multiple nonlinearly interacting parts, or as a system with two

or more non-overlapping descriptions (Richardson, 2008). It has also been defined as “a system in which large networks of components with no central control and simple rules of operation give rise to complex behavior, sophisticated information processing, and adaptation via learning or evolution”, or as “a system that exhibits nontrivial emergence and self-organizing behaviors” (Mitchell, 2009, p. 13). Complex networks have also been defined as “networks whose structure is irregular, complex and dynamically evolving in time, with the main focus moving from the analysis of small networks to that of systems with thousands or millions of nodes, and with a renewed attention to the properties of networks of dynamical units” (Boccaletti, Latora, Moreno, Chavez, & Hwang, 2006, p. 177). A complicated system, on the other hand, is something that can be modelled accurately, at least in principle (Cilliers, 2000). Complicated systems have individually distinguishable parts, which can be addressed piece by piece; these parts can be controlled and inputs into the system produce proportionate outputs (Poli, 2013).

The main difference between complex and complicated systems comprises interacting feedback loops where the presence of three or more loops renders predicting difficult with standard analytical methods (Richardson, 2008). The components of complex systems interact in a web of feedback loops that change inputs to outputs in a nonlinear way (Anderson, 1999). Nonlinearity means that small changes to a few parameters can have a drastic effect on the whole system (Anderson, 1999). The second important difference concerns how complex and complicated systems can be modelled. In complex systems, causality is networked, making it difficult to untangle the contributions of individual causal paths, which causes difficulties in planning for certain outcomes (Richardson, 2008). Furthermore, it is often uncertain whether physical distance plays a role or even if two components actually interact or not (Albert & Barabási, 2002). Complicated systems, in contrast, may have multiple nodes and edges but the hierarchies, interactions, causalities, and so on between different nodes are clear. However, it should be noted that the connections in real networks often have considerable heterogeneity in capacity and intensity (Boccaletti, Latora, Moreno, Chavez, & Hwang, 2006). These connections also differ temporally. Therefore, it is likely that only a technical system, such as an airplane or computer, can be labelled as complicated because, for instance, in social networks at least some part of the system is complex.

Scholars have attempted to understand complex systems by using a model called a complex adaptive system. According to Anderson (1999, p. 216), these systems have four key characteristics: “agents with schemata, self-organizing networks sustained by importing energy, coevolution to the edge of chaos, and system evolution based on recombination”. He describes these as follows: First, all agents (i.e. actors) have a schema which is a cognitive structure or a set of rules that dictates which actions the actor will take based on its perception of the environment. Second, the actors are interconnected, and hence the behaviour of an actor depends on the behaviour of some subset of all other actors in the system. Behaviour is based on local information only in that the actor derives information from other actors it is connected to. This makes the system self-organising because no single actor dictates the collective behaviour, but all of the actors adjust their behaviour based on the information they are able to gather locally. Third, actors coevolve because their behaviour affects the environment in which every actor operates. The environment does not become

chaotic, however. In a chaotic environment, small changes in behaviour frequently produce large outcomes, but in complex adaptive systems, small changes may bring about small, medium or large outcomes, thereby making it exist on the edge of chaos. Fourth, “complex adaptive systems evolve over time through the entry, exit, and transformation of [actors]” (p. 220). New actors may be recombined from the elements of previous actors. Furthermore, the connections and feedback loops between actors may evolve over time, which also adds to the evolution of the system.

The actors in complex adaptive systems are influenced by past events. This is because “the [actors] in the system recognize the meaning of a given exchange, and adjust their own behavior as their response to that meaning within the system” (Lichtenstein & Plowman, 2009, p. 619). The concept of ‘meaning’ in this case is understood as the relative importance of an exchange based on information provided by previous exchanges. For example, if actors perceive that trustworthy behaviour in the past is not only expected now but also increases the potential payoff, then the actor is likely to act again in a trustworthy manner. Therefore, trust and routines are considered to influence this meaning because they are, at least to an extent, based on information derived from previous encounters. In a similar vein, Richardson (2008) argues that complex systems have local memories that store responses to certain scenarios. These responses can be learned from experience to create new responses to other contexts as well. This notion of learning is in concert with meaning because both incorporate the idea of past events influencing behaviour.

Complex adaptive systems are closely related to the concept of emergence. Emergence is a highly important concept where complexity is concerned. It is a process that takes place when actors at a lower organisational or system level interact and exchange information without coordination from a central decider, resulting in unintended changes throughout the system or organisation (Lichtenstein & Plowman, 2009). In emergence, activity occurs due to the inter-dependence of actors rather than being induced by the environment (Schneider & Somers, 2006). Emergence derives from the interactions of actors across the whole system rather than from the behaviour of a single entity (Lichtenstein & Plowman, 2009). In other words, it is essentially the same concept as self-organisation in the complex systems.

According to Lichtenstein and Plowman (2009), emergence requires four conditions in order for it to take place: a dis-equilibrium state, amplifying actions, recombination/self-organisation, and stabilising feedback. They argue that a dis-equilibrium state is initiated by activities or events that are outside the normal behaviour, which pushes the system into a highly dynamic state. Amplifying actions are measures (e.g. positive feedback) that amplify the fluctuations taking place within the system. Recombination or self-organisation takes place when the fluctuation within a system is so great that the system can either re-organise or collapse. In this phase, actors are re-combined into new patterns of interaction that usually improve the functioning of the system. Finally, the authors define stabilising feedback as feedback that slows down the amplification within the system and keeps the emergent change from spinning out of control.

The recombination phase is particularly important here. It is the phase which essentially makes complex networks different from complicated networks, and which

renders a strictly mechanistic approach unusable. It also produces outcomes that are difficult to predict. The other phases, on the other hand, are different because predicting events or behaviour in them is more dependent on the information available. For instance, the effects of amplifying or stabilising actions can be expected to take place in a manner that is dependent on the initial conditions.

Complex adaptive systems are not fixed entities but evolve over time (Anderson, 1999). Similarly, Boccaletti et al. (2006, p. 179) argue that networks are dynamic entities whose “topology is not fixed, or grown, once forever. Instead it is allowed to evolve and adapt in time, driven by some external action, or by the action of the internal elements, or following specific predetermined evolving rules”. These ideas of complex networks as dynamic entities give rise to the question of their ontological nature. Are complex systems better understood as interacting entities or as depictions of a processual world that merely happens to be observable at a given point in time? Boccaletti et al.’s notion would suggest that the processual approach would be plausible because it could incorporate and explain the role of the external factors or rules. With a subject ontological approach, these external factors would likely have to be explored through observable features of entities. This might downplay their significance by regarding entities’ internal qualities as factors influencing their behaviour. In a similar vein, Anderson (1999, p. 222) suggests that “[i]nstead of making nonlinear systems tractable by modelling complex building blocks with few interactions, we can make them understandable by modelling simple building blocks with many interactions”. This also supports the processual approach because again it is better suited to highlighting the complex activities and transactions between entities (Langley & Tsoukas, 2010). The third notion supporting a process ontological approach is the nature of emergence. This is because in emergence, interactions and influence processes take place continuously throughout the whole system (Lichtenstein & Plowman, 2009).

Based for the most part on these three notions, I chose the processual approach. It best allows for scrutinising trust and routines because they are in essence something that exists in and is affected by the whole network. In practice, this approach meant, for instance, designing the interview questions for the first and third articles in such a way that they not only focused on the qualities of the actors but also on the relations and the surroundings the actors were embedded in. It also allowed for examining trust and routines in relation to uncertainty and predictability, as will be discussed in the following section.

2.2 Uncertainty and predictability

Uncertainty is an integral part of future-oriented decision-making, and reducing it poses a significant challenge (Jalonen & Lönnqvist, 2009). According to Sydow et al. (2013), uncertainty is present in situations where the likelihood of occurrences cannot be expressed in probabilities. The authors also differentiate uncertainty from risk and ambiguity. Risk is the probability estimate of an unwanted event times the size of the potential loss, meaning that risk is calculable. Ambiguity, on the other hand, is a lack of clarity regarding the interpretation of certain occurrences. Risk is a particularly important concept here due to its calculable nature, as will be discussed in due course.

Certainty can be referred to as a perception or belief that a system or phenomenon will or will not take place, while uncertainty is a lack of sureness pertaining to information or a decision (Li, Chen, & Feng, 2012). Uncertainty can also be defined as “decision makers’ inability to predict or anticipate the future” (Hanén, 2010, p. 33), or as “an individual’s perceived inability to predict something accurately” (Milliken, 1987, p. 136). Uncertainty can take numerous forms and can be caused by various traits and attributes of systems or actors (e.g. Berztiss, 2002, for a review). For instance, uncertainty can be due to fuzziness where concepts are not explicitly defined (e.g. cold weather, tall man), limited validity (e.g. the extent to which a family owns a mortgaged house), obscurity (e.g. temporal variation on a ski resort’s income), or partial knowledge (e.g. the exact composition of teams) (Berztiss, 2002). Furthermore, uncertainty can be either aleatory or epistemic. Aleatory uncertainty is the inherent randomness of the physical world, such as the result of a coin toss, while epistemic uncertainty derives from humans’ lack of knowledge and limited ability to measure and model the physical world (Li, Chen, & Feng, 2012). Uncertainty can also be internal to an organisation or external (i.e. environmental) (Sydow, Müller-Seitz, & Provan, 2013). Environmental uncertainty can be of three types: state, effect or response uncertainty, as suggested by Milliken (1987). According to him, state uncertainty is present when managers perceive the environment or a component of that environment as being unpredictable. Effect uncertainty refers to individuals’ inability to predict the impacts of environmental events or changes to an organisation. For instance, the path of a hurricane might be known but its exact impact on a building is uncertain. Response uncertainty refers to a lack of knowledge about possible response options and/or the inability to predict the consequences of those options.

As the previous examples of different definitions and distinctions between different types of uncertainty show, uncertainty is above all related to the inability to predict the future. Thus, uncertainty is understood here as an actor’s perceived inability to predict the future. It is operationalised through actors that are unable to perceive or fathom everything related to the environment because of the epistemic challenges. However, uncertainty is not created by actors but by the unknowable and emergent nature of the world they operate in. Uncertainty is also seen as a perceived inability here not least because assessing the accuracy of the actors’ predictions or their actual capacity to predict is beyond the scope of this dissertation.

Hanén (2010) argues that certainty can seldom be achieved, and thus organisations should strive to accept uncertainty and reduce the effects of complexity. The literature identifies several ways of dealing with uncertainty. Most of the ways appear to regard information or knowledge as the key. For example, the forming of alliances and networks has been viewed as a means of coping with environmental uncertainty caused by incomplete knowledge (Sydow, Müller-Seitz, & Provan, 2013). Das and Teng (2001) propose several trust-building techniques and control mechanisms that can be used to manage uncertainties. Li et al. (2012) argue that epistemic uncertainty can be reduced while aleatory uncertainty is always present. At an individual level, Uncertainty Reduction Theory (URT) explains the communication between two strangers. It claims that individuals attempt to gather information that enables them to predict the behaviour of others and quickly reduce the uncertainties involved in interactions (Redmond, 2015). URT states that uncertainty is reduced if individuals,

for instance, attempt to seek information (i.e. ask questions), reciprocally share information, and have similarities (Berger & Calabrese, 1975). However, some scholars take a different stand: Sydow et al. (2013) argue that most of the literature considers that optimal governance or contractual design will alleviate the effects of uncertainty. They point out that information does not necessarily reduce uncertainties because an increase in knowledge often gives rise to new uncertainties. Despite this critique, I will also adopt a view that can be regarded as a governance perspective. This is because trust and routines may indeed bring about new uncertainties but the difference is that trust and routines make events more calculable. In other words, if uncertainty is understood as incalculable and risks as calculable, as discussed above, new uncertainties are not actually uncertainties, but risks.

Reducing uncertainty and increasing predictability are viewed here essentially as synonyms (Redmond, 2015). In both cases, one is trying to make the future more calculable and known. I will focus here on predictability as a concept and the question of whether or not it is actually possible to predict the future. The subsequent essay will explore the ontological aspects of trust and routines and their impact on predictability more closely.

Predictability, in general, refers to the degree to which correct predictions can be made about the future. At the actors' level, predictability refers to consistency or regularity of action (Dietz & Den Hartog, 2006). Predictability is understood here as a quality of an individual actor's behaviour. It is also a degree because nothing can be predicted with 100% certainty, although some events take place with extremely high probability. For instance, the Olympic Games can be predicted to take place every four years. In 2020, however, the COVID-19 pandemic forced the Tokyo Olympics to be rescheduled. Athletes had prepared for the games years in advance based on the prediction that they would take place. The notion of an "individual actor's behaviour" emerges because the Olympic Games are regarded as an actor. This is the case because the games are arranged by an organisation. Naturally, many system-level factors (i.e. culture or institutional factors) are connected to the games, but when considering whether they will be held every four years, it is above all the consistency of action of the organisation that causes them to be held at regular intervals.

Along with predictability as a quality of behaviour, the literature also identifies predictive capabilities. These can be defined as a "specific mode of operation and its supporting knowledge system, used to rapidly produce analytical information based on event data from business processes mainly to support operational decision making" (Jalonen & Lönnqvist, 2011, p. 208). In other words, predictive capability is a process in which an entity creates information regarding the future using a predetermined pattern. This sort of process is the medium that operationalises trust and routines because existing trust and formed routines influence the "supporting knowledge system", and thus the way in which information is processed. It could also be argued that trust and routines contribute to the predictive capabilities of the actors. Therefore, in a sense, the predictions made by the actors take place using these capabilities. However, I will not delve deeper into this notion because the internal process of predicting is beyond the scope of this dissertation.

Predicting is influenced by several factors. Hyndman and Athanasopoulos (2018, p. 12) present three influencing factors: “1. how well we understand the factors that contribute to [an event or a quantity]; 2. how much data are available; 3. whether the forecasts can affect the thing we are trying to forecast”. The more of these conditions that are met, the more accurate the forecast. The accuracy of predictions depends on factors such as the time horizon, factors determining outcomes, and data patterns (Hyndman & Athanasopoulos, 2018). For instance, the exact time of sunrise in a certain place can be predicted even a hundred years from now, but tomorrow’s lottery numbers are impossible to forecast. Moreover, a prediction about tomorrow’s weather becomes more accurate with more measurements of air pressure, humidity, temperature, and so on in different locations. Predicting in an organisational relations framework is also dependent upon the same factors. For instance, understanding contracting processes can help to anticipate the future, and information on a partner’s financial status can be used to determine whether it will remain solvent. In the case of forecasting as a self-fulfilling prophesy, an expectation of trustworthy behaviour has been argued to give rise to trustworthiness, even though this might not be the case in one-off situations (see Kiyonari, Yamagishi, Cook, & Cheshire, 2006). These examples suggest that predictions can be made even in complex organisational or social relations. The next question concerns how we can make predictions and, in particular, to what extent we can use information about the initial or current state to predict future events.

The literature identifies several different ways of predicting. For instance, predictions can be made by using general time series forecasting where the predictions are based on regularly observed data over time (Hyndman, 2020), or the so-called naïve method where predictions are based on the last possible observation (Hyndman & Athanasopoulos, 2018). Predictions can be made by individuals or groups, but the wisdom of the crowd usually outperforms any prediction made by individuals (DellaVigna & Pope, 2018). In the past, mathematicians such as Pierre-Simon Laplace suggested that, in theory, everything could be predicted at all times if one could measure the current position and velocity of every particle in the universe (Mitchell, 2009). This kind of reductionistic and deterministic approach to predicting was deemed to be unwarranted, however, because emergence can evoke scenarios that are something other than merely the sum of the parts involved (Hanén, 2010). Cilliers (2000, p. 24) argues that behaviour within the system cannot be predicted this way because “[t]he behavior of the system is determined by the nature of the interactions, not by what is contained within the components”. He also argues that systems are open and precisely modelling them would require us to model every interaction between the actors and the environment ever taken. Therefore, he views predictions as a form of generalisation that omits factors, but with the complex and emergent nature of the system, we do not know whether these factors are significant or not. On the other hand, he does not deny causality. Hence, he mainly argues that nothing can be predicted with 100% accuracy.

Here, I subscribe to the view that predicting is possible as a form of generalisation. This is because the question is not whether the future can be predicted, but rather how accurate the prediction is. Predictions are bound to leave out relevant factors because all systems have emergent qualities. However, this does not make it impossible to predict; using some methods of prediction is not in vain but can help actors

to plan for the future, although full certainty cannot be achieved. I follow Jalonen and Lönnqvist (2011, p. 209), who assume in their paper that “there are always some similarities between different events, and thus, the information about a certain event can be used in analyzing another one”. Although their premise can be argued to be flawed due to a reductionistic approach, their point is valid because information about and similarities to previous events is in practice used to predict the future. If this was not the case, methods such as general time series forecasting would likely have died out. Furthermore, Li et al. (2012) argue that epistemic uncertainty can be reduced or even eliminated with more information and improved methods of understanding. Thus, it is completely relevant to use the information on an initial or a current state to predict the future.

One important notion here is the distinction between and effects of epistemic and aleatory uncertainty. Epistemic uncertainty can be reduced and predictability increased with information, but events with high aleatory uncertainty are another matter. While the exact outcome of a single event, such as a coin toss, cannot be predicted, the chance can be determined. In an organisational context, this is beneficial when predicting outcomes. For example, let’s say specialist A is crucial for a project because of their know-how and experience. If specialist A caught the flu in the flu season, it would be detrimental to the project. Now, based on medical studies, it can be stated that specialist A has, for instance, an 8.7% chance of catching the flu. However, if they wash their hands, the chance decreases to 2.9%. Based on this information, the specialist can be encouraged to wash their hands so that the outcome of the project is likely to be favourable. Therefore, information on aleatory events can help actors to mitigate their effects. In other words, information can indicate what is likely to transpire even with aleatory uncertainty present. Actors in a complex system need these kinds of indicators because the complex systems of events always involve uncertainty.

Trust is this kind of indicator. It is a belief that provides an estimate of what is likely to happen. This is because belief and the behavioural components of trust are related so that the latter depends on the former (Amaral, Tiago, Guizzardi, & Porello, 2019). It also reduces uncertainty because it makes events calculable inasmuch as uncertainty evolves into risk, as suggested above. Risks can then be identified and their occurrences predicted. This is because trust is not based purely on a wild guess but on experiences of previous encounters, references, knowledge of the prevalent culture, and so forth. Thus, if previous encounters or references would suggest that the actor is consistent in its dealings, trust can be seen as an indicator. A similar logic is also true of routines: if an organisation has always communicated with another organisation via dedicated personnel, it would indicate that the same would take place in the future as well.

However, there is one other aspect to consider, namely the depth of trust or routines. At an individual level in particular, scholars have found that a trustor’s propensity to trust can lead to high levels of trust even though the trustee may not be viewed as trustworthy (Fulmer & Gelfand, 2012). Similarly, an individual’s trust in another party can be low based on nothing more than a reference. For example, if a person is in need of an electrician and a good friend has talked about a bad experience with a particular electrician, the person will not even consider the one that has

received the bad reference. The perceived low trust may or may not indicate the behaviour of the said electrician but it affects the predictions nonetheless. Hence, trust should be seen as something built over a long period of time as suggested by, for instance, Six and Sorge (2008). In other words, when trust is used as an indicator, it should not be merely high or low based on a few sources. For instance, trust has previously been regarded as knowledge- or identification-based, as coined by Lewicki and Bunker (1995). They regard knowledge-based trust as actors being confident about another's dependability, reliability, and predictability, while identification-based trust is about fully internalising each other's desires and intentions (McAllister, Lewicki, & Chaturvedi, 2006). These kinds of developed relations are likely to better indicate future behaviour. On the other hand, a sufficient degree of maturity is difficult to determine because behaviour might be sufficiently indicated even without high internalisation of another's intentions. Hence, I argue that predictability requires knowledge-based trust. In other words, trust is comprehensively based on multiple observations made over a long period of time. When trust is based on many different perceptions, it can be viewed to better indicate at least the lines inside which the other actor is going to act. In practice, the first article here identifies multiple trust-building factors. If several of these factors are present in a relationship between organisations, the trust may be of a knowledge-based variety that better indicates the future behaviour.

The required level of trust can also be termed deep trust. Deep trust is understood here as a similar notion to models such as the Comprehensive Trust Model described by Yan (2008). In this model, factors such as a trustor's trust policy, the trustee's qualities, evidence collected from valued encounters or recommenders, and context all influence trust. These kinds of models are often employed in a digital or technological framework, such as Yan's case of component software systems. Consequently, I will refer to deep trust here to emphasise its association with predictability. Deep trust as a concept has been mentioned by Kriz and Keating (2010). They considered a slightly different definition from the one proposed here. They define deep trust as the heart-and-mind confidence and belief that the other person will behave in a way that is expected without explicit statement or implication, emphasising the role of personal relations in trust-building. Therefore, it lacks the notion of comprehensiveness, such as the role of the trustor's as well as the trustee's qualities and the effects of the environment.

Routines are similarly an indicator of future events. If a task is routinised, it is expected to be carried out using certain steps, and the steps can be predicted. But are predictions similarly dependent on the extent or depth of the routinisation as they are in the case of trust? The short answer here is rather simple. If something can be regarded as a routine (i.e. the behaviour has qualities such as recurrence, repeatability, and recognisability), it can be viewed to predict the future. Therefore, in a sense, routines differ from trust because when it comes to trust, a more comprehensive understanding is needed before trust can indicate the future. Naturally, the accuracy of predictions increases with deeper routinisation. For instance, if a new employee is unaware of existing routines, the routine may still be viewed to exist although the new employee acts differently on a single occasion. With deeper routinisation, namely with routines embedded more deeply, even new employees are better able to follow the routines. Thus, deeper routinisation provides information that is more

relevant when indicating future events.

For the information to be relevant, both trust and routines should also be studied from a process ontological perspective. This would afford more comprehensive understanding of trust and routines as indicators. In the case of trust, the approach is usually from a subject ontological point of view, as I will argue in the subsequent essay. Therefore, the discussion on trust focuses on qualities, such as psychological conditions (e.g. Müller & Schwierer, 2020), of subjects rather than entire processes. By focusing on entire processes (e.g. trust-building), scholars would likely advance not only the literature on trust, but also discussion on predictability and predictions. This is attempted in the first and second articles of this dissertation. In the articles, the definition of trust is subject ontological (i.e. tied to an actor) to reduce epistemic challenges that might follow from a definition that is strictly processual (e.g. respondents might misunderstand what is being discussed). However, in the analysis phase, I attempted to incorporate the process ontological view so that the analysis would not focus strictly on the qualities of actors.

In the case of routines, defining them as “patterns” enables studying them from the processual point of view because patterns are essentially processes that are performed in a similar manner time and time again. This affords an opportunity to comprehensively study matters relevant to routines as indicators. This would not be the case if routines were, for instance, qualities of organisations. In the third article, routines and routinisation are approached from both processual and subject perspectives. I see this approach as also providing insights into what can be construed as relevant information for indicating future events. For example, in the article I conclude that communication, interpretation, stability, and understanding were identified as crucial aspects in the routinisation process. Thus, focusing on these matters is likely to increase predictability as well because successful communication, for instance, should indicate the performance of the network.

2.3 Conclusion

Trust and routines are viewed in this dissertation as concepts that are processual in nature and that can have an effect in mitigating uncertainty even in a complex reality. They can be viewed as processual phenomena because they are affected by both system-level and actor-level qualities, attributes, functions, and so forth.

Uncertainty and its effects can be mitigated. Epistemic uncertainty in particular can be reduced with information, while information also mitigates the effects of aleatory uncertainty. Reducing uncertainty is beneficial because the future becomes more predictable which, in turn, offers multiple benefits for organisations. In reducing uncertainty, trust and routines are regarded as playing a key role. However, mere trust or superficially stabilised routines are unlikely to significantly increase predictability. This requires deep trust and deeper routinisation, where trust derived from multiple sources and routinisation is deeply embedded throughout the organisation. This dissertation aims in particular to offer insights into how managers can achieve these deeper levels of trust and routines.

3

RESULTS OF THE ARTICLES

This section summarises the results and findings as presented in the published articles. The section firstly presents the trust-building factors identified in the first article, followed by the role of contracts and the occurrence of trust-building factors in them, and finally, the findings on routinisation.

3.1 Trust-building factors

Trust was found to be formed if actors follow certain rules in their dealings. These rules result from trust-building factors, divided into structural and functional factors (see Figure 3). The structural factors can be further divided into system-level factors and individual-/organisational-level features. The system-level factors were not viewed as something resulting from or residing within individuals or organisations, but rather as something intrinsic to the system. They exert effects on all of the entities within a network. System-level factors have four sub-themes: established structure; roles and responsibilities; regulations, culture, and processes; and forums of communication. Established structures are a form of legacy that affects current and future dealings. For instance, if a certain platform is used for multiple capabilities, it may force subsequent projects to use the same platform to avoid compatibility issues. Roles and responsibilities were regarded as the most important factor in trust-building. This is because every actor needs clear boundaries within which they can operate. If the boundaries are not clear, all types of unwanted or unwarranted behaviour can result, diminishing trust. The roles and responsibilities are not without challenges, however. These challenges are twofold: First, situations can change rapidly, which calls for fast reactions and redefining roles and responsibilities if needed. Second, the actors' interests and capabilities are likely to overlap. This may lead to a situation whereby cooperating actors may begin to temporarily compete. Competing may then lead to opportunism or protectionism, which are potentially detrimental to trust. Both of these challenges can be overcome if, for instance, the customer or the prime supplier act rapidly to redefine the roles and responsibilities.

The third sub-theme covers regulations, cultures, and processes. These were defined as “factors that force the actors to behave in a certain manner” (p. 153). In other words, regulations state what kind of equipment has to be used when working on the project. Culture, on the other hand, can be everything from open to secretive or from inclusive to exclusive, all of which have an effect on how actors behave. Processes can run more smoothly when actors do not need to consider every format, solution, form, and so on, and can focus on other aspects instead. The final sub-theme of forums of communication indicates where and how actors are expected to communicate with one another. In particular, the forums are the places where actors convey their views on the rules of the game to others. The forums can be official (e.g. contracts, board meetings, kick-off events) or unofficial (e.g. email, phone calls, workshops). In respect of the official forums, contracts were seen to be of a paradoxical nature. As stated in the article, “many respondents felt that detailed con-

tracts clarify the functioning of the network, such as rights to IPRs, or the availability of the source code. Conversely, some respondents felt that strict contracts also hinder efficiency and can even be seen as a sign of distrust between actors” (p. 154). This was one of the main reasons why I sought to further clarify the role of contracts in the second article in this dissertation.

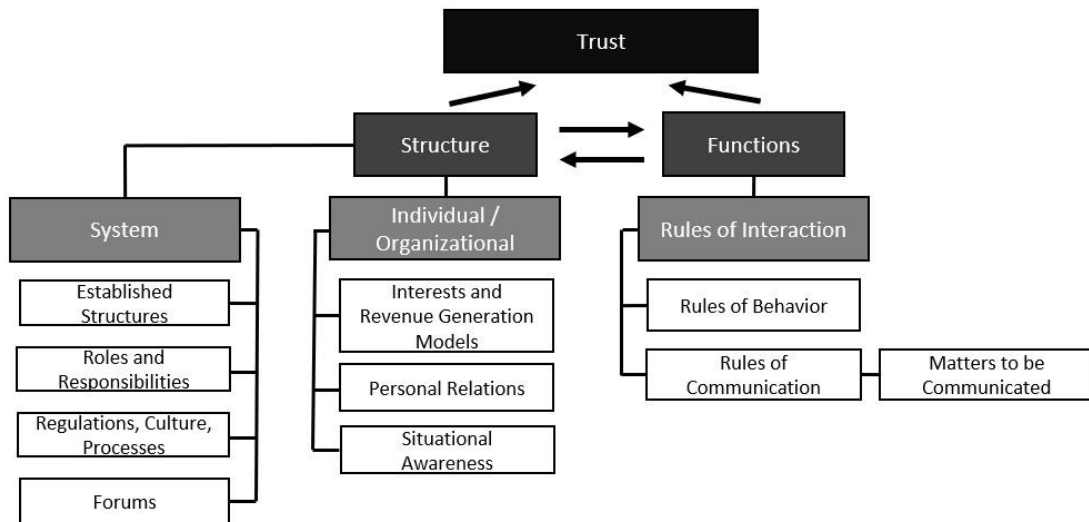


Figure 3. Framework of trust-building as described in the first article.

Individual- and organisational-level features are intrinsic to specific actors. They are divided into three sub-themes: interests and revenue generation models, personal relations, and situational awareness. Interests and revenue generation models deal with what the actors are expecting to get out of the cooperation. For instance, a company may develop components that are designed for specific projects, or try to sell generic components. Both of these approaches lead to different types of behaviour that may alter trust, particularly if a company gains an advantage without a common agreement. Similarly, individuals’ interests can vary significantly within a network; some are furthering their employer’s agenda while others try to advance their own. This also has a strong impact on trust and trust-building.

The second sub-theme deals with personal relations, which mainly affect communication within a network. If individuals do not get along or if there is friction in relations, they tend to communicate less, and vice versa. It was also apparent that getting acquainted with other individuals was seen to build trust because it conveys an impression of the ability and willingness of others to carry out their duties. On the other hand, poor personal relations were not seen to be actively counter-productive in the sense that people attempt to undermine the efforts of the other party. Rather, the communication would be lacking, which may lead to other problems. The last sub-theme was situational awareness, namely actors’ understanding of the status of the network. It was seen as important because it reduces the uncertainties regarding structures and interactions. Furthermore, situational awareness should be similar for everyone in the network. For instance, actors operating on the periphery of the network might make the wrong interpretations if they do not have similar situational awareness to others. This may then affect trust-building if the actors make rash decisions based on flawed information.

Functional factors comprise the second category of trust-building factors, including the rules of interaction that should be followed in dealing with other actors. Rules of interaction are divided into two sub-themes: rules of communication and rules of behaviour. The main difference between them is that while most of the interactions relate to communication, some functions are conducted in secrecy. For example, companies set their strategic goals internally. In other words, some of the functions (e.g. communication) take place frontstage and others (e.g. goal-setting) backstage. Thus, the functional factors were examined separately, with rules of communication dealing with frontstage actions and rules of behaviour dealing with backstage actions.

The rules of communication define how information can be and should be passed on. The study identified three rules. First, actors need to be mindful when sending information so that the content is similar for every recipient. This is particularly important when asked for quotations because differing information might lead to one actor having an advantage over others. Second, the format and the recipient should be considered. For example, some actors require official documents in order to take actions but some are content with just an email. Particularly in the defence sector, many matters are classified, which also gives rise to the need to consider the format and the recipient of the information. Breaches of security were identified as being particularly detrimental to trust and trust-building. The third rule of communication was that it needs to be regular and active. For instance, some of the interviewees in the study said they felt uncertain about a supplier's ability to deliver the agreed product if there had been a period of little to no communication.

The study also underlined that open and transparent communication was seen as a prerequisite for trust. For instance, all respondents stated that being open about any difficulties was of the utmost importance because it allowed others to act accordingly. However, open communication was seen to have drawbacks, such as confidentiality issues, increased costs, and the need for regulations. An example of confidentiality issues is that some information is bound to be confidential, which forces actors to withhold privileged information. Costs can accumulate, for example, when suppliers communicating together decide to fix a problem by introducing a new component when the problem could also be fixed in another way. Besides additional costs, the introduction of a new component may then lead to competition if it falls outside the determined roles and responsibilities, which, in turn, can lead to problems with trust, as discussed above. It may also be necessary to regulate the communication in order to reduce unwanted communication. Naturally, there is always a need to regulate communication to some degree but interactions may become cumbersome if communication is too regulated. In other words, the regulation of communication needs to be balanced with the benefits, such as individuals getting to know each other and getting things done, and different drawbacks that result from too open communication.

The study also identified several matters that need to be communicated. These are highly related to and overlap with other sub-themes and factors, but were dealt with in a separate section to highlight the important aspects. This is because trust is about perceptions and certain aspects have to be communicated to form a perception of ability and willingness. The study identified eight components: results, objectives,

rules, culture, ability and reference, roles and responsibilities, problems and deviations, and the status of the network.

The second sub-theme in functional factors was the rules of behaviour. These rules focus on actions taken backstage, the first of which is the need for honesty. Honesty was strongly emphasised by the interviewees, and in this case refers to behaviour that is “not deceptive or fraudulent, but open and transparent” (p. 158). The need for honesty is not limited to communication but also applies to planning, setting objectives, and so forth. The second rule of behaviour is the need to consider the common objective. Consideration can be shown by actions such as resolving problems others are facing, sharing information vital to others, and respecting common and individual objectives. The third rule identified was the need to adapt. In practice, adaptation means matching behaviour to the cultures and expectations of others. This helps everyone to speak the same language and act in a predictable manner.

3.2 Trust-building factors in contracts

The second article deepened the understanding of trust-building by examining how contracts support it. Based on a theory-driven analysis of eight contracts between the Finnish Defence Forces and its partners, the study found that while most of the trust-building factors presented above are covered in the contracts, some important ones are missing. The following summarises the findings, starting with system-level factors, followed by individual-/organisational-level factors, and concluding with rules of behaviour and communication.

When it comes to the system-level factors, roles and responsibilities are extensively defined at both individual and organisational levels. Some of the contracts were also seen to incorporate the possibility of a third party joining the cooperation. For this eventuality, the contracts included clauses that state who is responsible for possible mistakes or delays caused by a third party. An established structure was also highly evident in the contracts since vast amounts of clauses were seen to be based on some form of previous dealing, project, capability, system, and so on. Similarly, laws and regulations were frequently mentioned. Parties agreed, for instance, that Finnish law has to be adhered to in dealings, and certain regulations affect data handling or procurement processes. References to culture, on the other hand, were much scarcer. However, some of the clauses could be seen to have the purpose of influencing culture. An example of such a clause is quoted on page 11 of the article: “With a partnership that is long-term and close, benefiting both the Client and the Supplier, a cooperative relationship is pursued [and the relationship] is based on interaction and openness, constant mutual development, transparency of operation, and trust, which fulfils the mutually agreed principles of cooperation.” This type of clause can, naturally, be understood as mainly outlining the rules of behaviour, but in this case, the clause can also be understood as influencing trust-building via culture if actors act in a trustworthy manner due to the aspired nature of the cooperation. Lastly, numerous different forums were mentioned in the contracts. Naturally, the number is very high if forums with different labels are added together, but some forums have very similar content, include almost the same actors, or are otherwise closely related. Therefore, the final tally is somewhere between 60 to 90 different forums where cooperation takes place. Nevertheless, for the purposes of trust-building, it is

important to note how many different forums of communication are actually named in the contracts.

Factors affecting cooperation at individual and organisational levels were present in the contracts but some interesting shortcomings were also identified. In terms of interests and revenue generation models, the study found that revenue generation models were incorporated into the contracts. For instance, several clauses dealt with how a client's equipment can be used when producing services for a third party. The interests, on the other hand, were not present at all since not a single data point was identified to deal with possibly diverging interests. It was even stated that the contracts do not appear to take into account the fact that individuals or organisations may have diverging interests. Similarly, personal relations were also absent from the contracts. Some clauses did cover how a person can be removed from their post (e.g. sick leave), but none of the reasons was due to a glitch in personal relations. Finally, clauses pertaining to situational awareness were abundant in the contracts; they described in detail how situational awareness should be formed and distributed among the actors. This was done, for example, by defining responsibilities for creating and maintaining situational awareness, as well as by defining what constitutes relevant information.

The functional factors were also present in the data. The rules of behaviour were rather difficult to identify due to the close proximity to other factors. However, several clauses dealt with behaviour in the cooperation. For example, decision-making without unnecessary delays, or by unanimous or special approval was often mentioned. Moreover, numerous provisions also stated how actors should conduct themselves (e.g. be transparent, behave in a trustworthy manner). Provisions also state that if a person is removed, the replacement must be equally qualified, duly affecting staffing, which is essentially a backstage action. Interestingly, only one contract was identified as having a clause pertaining to a fine if a replacement was not equally qualified. This was the only time a contract would impose a penalty if the rules of behaviour were not followed. The rules of communication, on the other hand, were extensively covered. The contracts stated how communication ought to take place in certain scenarios, such as the need for changes to plans to be communicated in writing. Contracts also contained several clauses pertaining to information security, stating, for example, how confidential information had to be handled and how information security needed to be taken into account in the cooperation.

3.3 Routinisation

The third article covered routines and routinisation in a cooperative network. Based on 17 semi-structured interviews and data-driven content analysis, it explored what is routinised, how it is done, and what hinders or supports routinisation (see Figure 4). The following summarises the findings in that order.

The “what is routinised” theme is divided into two sub-themes – processes as well as structures and roles. Processes deal with everyday actions within the network, such as billing, training, inspections, sharing situational awareness, making announcements, or decision-making. In particular, matters related to information security and confidentiality were frequently mentioned by the interviewees. Structures

and roles, on the other hand, relate to the framework of the network. They deal with actors' functional roles within the network and the structure of the network. Examples of the former are integrator, supplier, and producer, while the latter can be the hierarchy within the network.

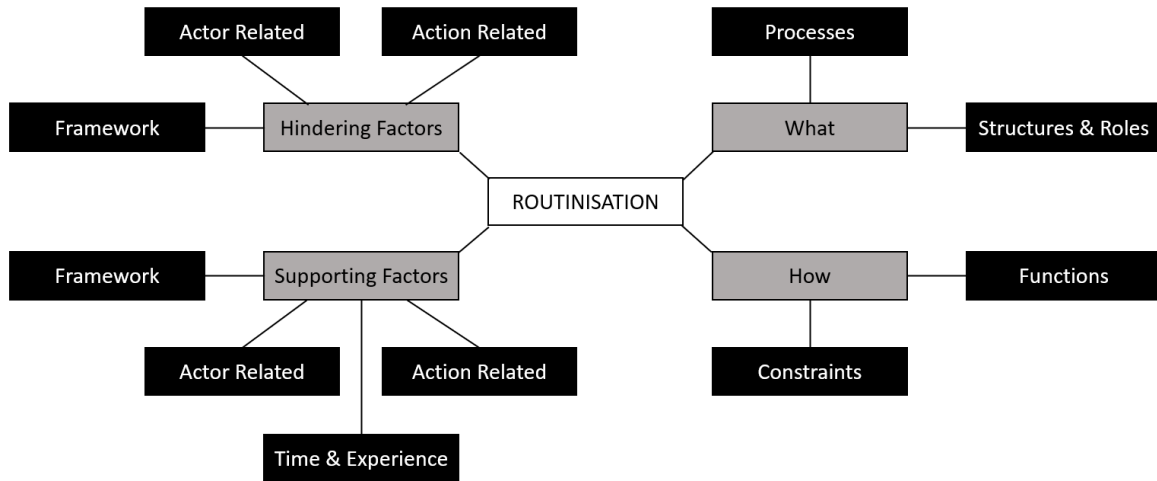


Figure 4. Framework of routinisation as described in the third article.

Routinisation can be carried out via functions or constraints. Functions are actions that lead to learning within the network. These actions are usually interorganisational (e.g. communication) but some can take place internally. Communication was identified, unsurprisingly, as a critical factor. It is vital when creating the ostensive and performative aspects of the routines. It can take place in numerous ways, such as in negotiations, meetings, unofficially, or via contracts. Besides communication, other functions were also identified. First, training was seen as a way to transfer information to personnel. It can be conducted, for example, via workshops or exercises. While most of the training is facilitated internally by organisations, the respondents also brought up the interorganisational aspect. They felt that other organisations should also participate in training so that individuals gain a more comprehensive picture of the ostensive and the performative aspects of the routines. As for other functions, feedback and inspections were identified. They are important because they provide information on how routines are being performed and if they need to be changed or developed in some way.

Routinisation can also take place via constraints. They influence routines by setting boundaries along which patterns of actions must develop. Boundaries are usually set by contracts or guidance from above. Contracts act as a starting point or a foundation for routines, while guidance from above can include anything from legislation to organisational regulations and commands from supervisors. For instance, laws can govern how confidential information is to be handled, while organisations can regulate communication, safety, or commercial functions. Moreover, legacy structures can be seen to have a constraining role if routines evolve in relation to how actions are taken in previous encounters.

Routinisation is supported by several factors, divided into four sub-themes in the study. First, actor-related factors include, above all, attributes of individuals and their relations, which were identified as easing the routinisation process. For example, individual know-how and skill as well as familiarity were seen to support routinisation by making communication and interactions easier. In addition, routinisation is also supported by organisational attributes, such as the size of the company, consistent performance, or a customer-oriented mindset. Second, action-related factors deal with communication and leadership within the network. Communication should be direct, open, and honest. It should involve exchanging information on all matters related to cooperation, and familiarising oneself with the other actors. Furthermore, leadership involves a great deal of communication but was identified as a separate factor because it is centred on certain actors. Leadership can support routinisation if the leader defines and communicates clear roles, processes, instructions, and the like. In other words, a leader has to create a specific environment of predictability and stability in order for routines to form.

Third, routinisation can be supported by the framework in which the actors cooperate. It includes matters related to culture, attitudes, opinions, and how the actors conduct their operations. For instance, routinisation can be easier if actors are willing to work together, understand how others operate, and set converging goals. In particular, creating mutually beneficial situations was deemed a prominent way to support routinisation because it would mitigate resistance. Fourth, time and experience were identified as the final sub-theme because they deepen the effects of the above-mentioned supporting factors. They facilitate routinisation because interactions are more open and equal, reacting to problems is faster, and common successes support cooperation in general.

Several factors may hinder routinisation. The sub-themes are similar to the supporting factors but without time and experience. Actor-related factors include changes in personnel, as well as matters bound to individuals and organisations. Changes in key personnel may have a massive effect on patterns of action, and hence changing the routine completely, or poor personal relations are likely to affect how routines are carried out. Similarly, organisational factors can have a hindering effect on routinisation if, for instance, organisational processes change or the organisation has certain goals. Changes in organisational processes mean that the new processes have to be coordinated with others, which is no simple task, as one respondent stated. Organisational goals affect routinisation because, for example, a corporation needs to make a profit which, in turn, prohibits certain actions.

The action-related factors deal with communication and leadership. These factors hinder routinisation if information is not available to those who need it. Information needs to be communicated both within and between organisations. Reasons for poor communication mentioned by the interviewees included jealousy vis-à-vis information, conflicting instructions, and the forming of stove-pipes. Finally, framework-related factors can be attributed to culture. Many respondents felt that different organisational cultures were something that hindered the formation of routines. For example, attitudes towards change and confidentiality issues are likely to differ between the military and the private sector. This requires managers to influence the culture before routinisation can be effective.

4

DISCUSSION

The aim of this dissertation, at a practical level, was to provide information for practitioners on how to build trust and form routines in networks. At a theoretical level, I argued that uncertainty can be mitigated and predictability increased by building trust and forming routines. The reason for this was that both trust and routines can be conceptualised as constructs that affect the directions along which the future can unfold. Hence, the purpose of this dissertation was to provide information on how to increase the efficiency of networks and add to the understanding of the conceptualisation of trust and routines.

The broad framework was as depicted in Figure 1. The main premise was that trust and routines can be viewed as processual phenomena because they are affected by both system-level and actor-level qualities, attributes, functions, and so forth. The focus was on trust-building and routinisation processes, which led to knowledge of how they take place, and where managers should direct their efforts.

I identify and discuss four main contributions:

1. A description of the multi-supplier network
2. A comprehensive presentation of trust-building factors in multi-supplier networks
3. A comprehensive exploration of routinisation in multi-supplier networks
4. A discussion on how trust and routines could function and be conceptualised as a way to increase predictability in a complex network by acting as indicators of future events.

Finally, I focus on how this dissertation adds to military studies and the scientific literature produced by the Finnish National Defence University.

First of all, the description of a multi-supplier network provided here is beneficial because it homes in on a previously unidentified network; multi-supplier networks are often used in public procurement projects but lack a definition let alone a description. However, with the description provided in the first article, scholars can begin to develop a more precise definition and map out the qualities of these kinds of networks. Managers can then attempt to apply these findings when operating in multi-supplier networks. For example, it would be highly beneficial for managers to apply findings regarding the efficiency of the network. It would likely save resources and allow procurement projects to produce better quality outcomes in a timely manner if scholars are able to provide information on a network's optimal size, ideal communication, information-sharing within the network, the role of legacy structures, and so on.

The second contribution of trust-building factors expands the current literature on trust-building in general. The main contribution of this dissertation to the trust and trust-building literature derives from a process ontological approach.

Naturally, several scholars have studied trust-building previously (see e.g. Fulmer & Gelfand, 2012 for an overview) from a perspective which can be regarded as dealing with the processual aspect of trust. They have found, for example, that workers trust their managers if they act in a predictable manner (Cunningham & McGregor, 2000), that trust can develop via mutual interests and joint dispute resolution (Das & Teng, 2001), and that miscommunication and unclarity about responsibilities can send ambiguous relational signals that may hinder trust-building (Six & Sorge, 2008). Moreover, trust-building is facilitated by information on potential partners as well as interdependencies between partners more than local norms and institutions (Mathews & Stokes, 2013). The results presented in the first article (see Figure 3) can also be used together with results from studies such as the one by Nilsson (2019), which examines the effect of proximity on trust-building. While many of the findings here strongly align with previous research (e.g. on communication, roles and responsibilities, interests), the processual approach enabled the first and the second article to comprehensively map out several of the perceived trust-building factors. The processual approach was beneficial particularly when it came to mapping factors that are not intrinsic to actors alone. Future research would now be able to capitalise on this comprehensive knowledge to determine the relative importance of each factor, for instance.

Contemporary literature on trust leans more towards considering the role of the trustee. For example, Levine et al. (2018) found guilt-proneness to be a major factor when it came to an actor actually behaving in a trustworthy manner. Moreover, Müller and Schwierien (2020) discovered that the Big Five personality factors (openness, conscientiousness, extraversion, agreeableness, and neuroticism) explain the behaviour of the trustor but not that of the trustee. Instead, the behaviour of the trustee was explained by the behaviour of the trustor. Based on these findings, future research on trust in multi-supplier networks should also focus on the trustee. This would increase knowledge on why actors would act in a trustworthy manner even when operating with potential competitors. This dissertation supports these kinds of endeavours by providing a framework that can be further developed when focusing on the role of the trustee.

Contemporary literature on trust has also become more interdisciplinary. Möllering (2019) writes in his editorial piece for the *Journal of Trust Research* that trust research was previously associated with organisation or management studies, but is now more connected with fields such as communication studies, sociology, economics and international relations. While this dissertation is strongly grounded in organisation studies, it likely offers tools for researchers who are interested in predictability in other fields, such as sociology or international relations. The second article in particular might yield insights into how the role of contracts can be approached in other fields as well, such as economics and international relations in respect of contracts and treaties. Scholars in these fields can apply theory-driven content analysis in a similar manner to contracts and treaties to see how they might support the actualisation of theories.

Besides enhancing understanding of trust-building, this dissertation also furthers the discussion on the conceptualisation and operationalisation of trust, especially relational trust. For instance, Amaral et al. (2019) propose that trust can be classified as

social trust (i.e. agents' trust in other agents) and institutional-based trust, which emerges from rules, regulations, common practices, and so on. In other words, they operationalise trust as something guiding the actions of agents. This operationalisation enables trust to be viewed as a means of increasing predictability in relations of all sorts. Naturally, further research is needed on the more precise role of trust as an indicator, as well as possible limitations. This sort of research might even reveal whether a new kind of trust can be coined: if trust is deep enough, in that sufficient certainty about future actions can be reached, trust may even be referred to as indicative trust.

The literature on routines, as stated in the third article, has previously focused on several venues of research. For instance, scholars have studied micro-foundations of routines, attributes of individual human actors, routines as deposits of tacit knowledge, and so forth. All of these venues added to the understanding of organisations and their functions. However, new approaches were needed. New methodological and theoretical tools, such as ethnography and phenomenology, were adopted and routines are now regarded as processes rather than entities (Feldman, 2016; Feldman, Pentland, D'Adderio, & Lazaric, 2016). These changes are seen to better incorporate routine dynamics (i.e. the internal functions of routines) into the study of routines.

As for venues of future research, Feldman (2016, p. 38) suggests that “further intensification [on action] would allow us to understand more about the potential of organizational routines”. By action, she refers to doings and sayings taken in specific time and space. This idea of action taking centre stage when routines are studied is also supported by this dissertation. In the third article in particular, I point out several actions, or “doings and sayings” (e.g. setting constraints), which can lead to routinisation (see Figure 3). Thanks to the process ontological approach, I was able to focus comprehensively on routines and the actions behind them instead of on routines just at the actor level. If my approach had been subject ontological, the results would have likely focused on factors such as the individual qualities that enable routines to form. It would have omitted a significant part of the routinisation. Instead, I present a more comprehensive map of routinisation in multi-supplier networks. This map can help to extend the study of routines with a focus on a more exclusive set of actions or even individual actions. In particular, the discussion on factors hindering routinisation could be furthered because the third article likely did not offer an exhaustive discussion on how certain actions might hinder routinisation.

Feldman et al. (2016) also offer several other perspectives on what future research on routines should focus on. They propose research on the network of routines (i.e. the relationality of routines), materiality (i.e. the material entanglements in enacting routines), and embodiment (i.e. the mutual constitution of matters such as stability and change, or repetition and innovation). Firstly, the materiality aspect was studied in the second article by incorporating the role of contracts, where the latter can be understood as material entities. The research material aspect can also be extended when studying cooperation between the private and the defence sectors. For example, the military has numerous material identifiers, such as uniforms, insignia, and flags, to name a few. When combined with the fact that, at least in Finland, a vast array of private-sector personnel has completed conscript service, the material iden-

tifiers are certain to carry some weight. Moreover, the FDF is a high trust entity, as demonstrated even by many of the respondents, which is likely to enhance the effect of the materialistic aspects. Secondly, this dissertation advances understanding of networks of routines via the description of multi-supplier networks. These kinds of networks are likely to be interesting frameworks because they simultaneously embrace several different organisations. The organisations engage in multiple routines, which are bound to influence the forming of new routines common to the network. Therefore, routines and the routinisation process are a particularly relevant field to be studied because it is likely to yield knowledge on the early stages of routines. This knowledge can be used by managers to steer routinisation in other frameworks where multiple networked routines exist. Thirdly, the knowledge of embodiment is potentially a field to which this dissertation does not add significant insight. This is simply because the focus was not on any dualistic pair of concepts. However, stability and change are present in multi-supplier networks as in any other network. An interesting question would be how change manifests in a multi-supplier network. For instance, Feldman (2003) argues that actors use their understanding of how the network operates when guiding their performances within routines. Therefore, scholars should investigate understanding and its development within a multi-supplier network because it has various parts, and understanding will not develop similarly in all of them. This, again, would yield relevant knowledge for managers to better develop understanding of the network in those parts where it matters the most.

As a fourth contribution of this dissertation, I identify the discussion on how trust and routines could function as a way to increase predictability in a complex network by acting as indicators of future events. The concepts of trust, routines, complex networks, and predictability are, naturally, difficult to combine because of their definitions. For example, complex networks are always unknowable to some extent, which makes achieving predictability difficult because predictions are usually based on information on past and present conditions. Similarly, routines are repetitive and recognisable patterns of interdependent action that are always changing because actors execute them with slight variation. This also makes them unknowable, at least to some extent, because exact enactment cannot be determined because of the free will of human agents. Moreover, emergence is omnipresent in the world, which can affect complex systems so that factors that appear to be causally related may in fact produce surprising results. All of these idiosyncrasies make it difficult to predict the future. However, a “decision can only be made based on our best current understanding, and that understanding will always be incomplete” (Richardson, 2008, p. 25). Therefore, if we focus on the known parts of complex networks instead of the unknown parts, we can gather relevant information that can be used as an indicator that can increase the accuracy of our predictions. Hence, this notion of the potential use of trust and routines as an indicator of future events not only serves as motivation for further uncovering the nature of trust and routines, but also as a venue through which predictability can be approached. Predictability can also be used to guide actors and networks through challenging times if, for example, plans are more viable and managers can predict how much resilience will be needed.

At the beginning of this dissertation, I posed the question: *How can the military effectively manage networked procurement projects to make them more predictable?* In responding, I

deem the answer to be twofold: First, all of the personnel involved in the project need to actively build trust and form routines by focusing on the factors presented in Figures 2 and 3. Second, all of the managers need to frame the process so that it flows unhindered. For instance, they need to compile the rules of communication so that relevant information is not withheld unnecessarily. The factors presented here should provide helpful guidance in deciding what should be done and how.

Finally, I focus on how this dissertation augments military studies and the scientific literature at the Finnish National Defence University (NDU). According to the NDU's homepage (Research at the Finnish National Defence University, 2021), research primarily focuses on four core research areas:

1. War and the development of the art of war
2. Military development in Finland's neighbouring areas
3. The Defence Forces as part of Finnish society
4. Finland as part of the international security community

The homepage also states that the purpose of the research is to support the Finnish Defence Forces in carrying out their tasks, one of which is “[c]ooperation with other government authorities”. This dissertation supports the research agenda of the NDU particularly by adding to the knowledge of the relationship between the Defence Forces and Finnish society, including government authorities. Based on the results here, representatives of the Defence Forces are well placed to manage relationships with a higher degree of trust and better functioning routines. The relationships often extend over vast periods of time, meaning that even deep trust can be formed, as discussed in the Theoretical Framework section.

In relation to other academic dissertations, this work is positioned close to those of Ikonen (2020) and Häyhtiö (2018). Ikonen studied collaborative procurement management, finding that procurement projects entail several factors that affect the outcome. For instance, he cites the project team and stakeholders as critical factors. Ikonen's results paint an excellent picture of what is critical. The present dissertation broadens this knowledge by providing information on how the critical factors should be managed and handled. As a second example, Ikonen found that a high level of trust mitigated the issue of someone freeloading within the procurement project. Thus, the current findings are also useful in this context because they allow managers to better resolve the issues identified by Ikonen.

Häyhtiö (2018), for his part, studied service development in Public Private Partnerships. He focused on requirement management and how it can be used when new services are developed. The approach was different and a clear linkage between Häyhtiö's findings and this dissertation is difficult to pinpoint. However, requirement management is another approach to managing partnerships and, as such, it can be coupled with the findings presented here. Taken together, the findings of both works can help managers to gain a more comprehensive picture of how the management of networks and cooperation can be approached.

4.1 Limitations

I identify and discuss three limitations of this dissertation:

1. The relative importance of different factors in trust-building and routinisation
2. Defining the qualities of multi-supplier networks
3. Studying routines in a multi-supplier network

The first limitation pertaining to the unknown relative importance of factors is a result of the qualitative research approach. Defining the relative importance of different factors would have required a quantitative approach with a dataset enabling statistical analysis. This would have been difficult to achieve, however, because the multi-supplier network is a subject that has not been extensively covered in the literature. Hence, the lack of knowledge about the framework would lead to problems with validity and reliability if the study focused on irrelevant factors or overlooked crucial variables.

Future research should duly focus on determining the relative importance of different factors. This would further understanding because practitioners could divert their actions towards more effective and efficient means of trust-building and routinisation. Naturally, studying the relative importance of factors would also require more extensive research on different types of multi-supplier networks as well as their idiosyncrasies. This is because the relative importance is likely to vary between situations with different actors, goals, budgets, timeframes, and so on. These differences also lead to the second limitation of this dissertation in that I did not conduct research focusing solely on qualities and aspects of multi-supplier networks, as the network was described based on the data in the first article. Coupled with the shortage of previous studies, this might lead to some minor issues when applying the results in different situations if, for instance, some relevant idiosyncrasies are unknown. Therefore, it would likely be beneficial if multi-supplier networks are clearly defined and described based on more extensive research.

Thirdly, and finally, studying routines in a multi-supplier network might have benefitted from a clearer definition of the multi-supplier network itself. While gathering data for the third article, I purposefully did not ask the respondents to base their answers explicitly on a multi-supplier network. I did this because I felt that there would be a chance of misunderstanding and confusion. Confusion would result if a respondent did not recognise the framework and would, therefore, suppose that they had no insight into the matter. This could have led to a loss of potential respondents. It could also have led to diminished comparability of the responses if the respondents had interpreted the framework differently. Instead, I designed the questions so that they would require the respondent to base their answers on a framework with several cooperating parties, which would be similar enough to a multi-supplier network. The framework enabled the respondents to also contemplate cases where, for instance, the network did not produce a capability but cooperated to pursue different goals. This, naturally, had risks but in the analysis phase I did not identify any major flaws in the research design. On the other hand, if the same study had been conducted with an explicit focus on multi-supplier networks, the results might have highlighted different aspects than those considered here.

In sum, to address the limitations of this dissertation, future research should focus, firstly, on defining the multi-supplier network and, secondly, on exploring and defining the relative importance of factors related to trust-building and routinisation. These venues would lead to a more profound understanding of several cooperative ventures, including public-private partnerships, public procurement, cooperative relations, and project management. However, despite its limitations, this dissertation did augment the knowledge in all of these fields. It will also hopefully serve as a starting point for others pursuing research in this area.

4.2 Conclusion

Trust and routines have constituted an important venue for research in organisational studies for several decades. The research has provided important insights into how organisations function the way they do. However, trust and routines have rarely been considered to have a linkage. In this dissertation, I presented a theoretical framework wherein trust and routines are conceptualised as indicators of future events even in a complex environment. In other words, they can be used to increase the accuracy of predictions about the future which, in turn, has several benefits such as more viable planning.

Trust and routines do not merely appear. Instead, they have to be actively built by practitioners. I also presented several factors relevant to trust-building and routinisation. Practitioners can apply these results to improve the performance of their organisations and cooperation networks. Scholars, on the other hand, can use the results for further research on several phenomena, such as complexity, effectiveness and efficiency, predicting, cooperation, and competition, to name just a few.

REFERENCES

- Albert, R., & Barabási, A.-L. (2002). Statistical mechanics of complex networks. *Reviews of modern physics*, 74(1), 1–54.
- Amaral, G., Tiago, P. S., Guizzardi, G., & Porello, D. (2019). Towards a Reference Ontology of Trust. *OTM Confederated International Conferences: On the Move to Meaningful Internet Systems* (pp. 3–21). Cham: Springer.
- Anderson, P. (1999). Complexity Theory and Organization Science. *Organization Science*, 10(3), 216–232.
- Asia-Pacific Economic Cooperation. (2015). The Benefits of Foresight. Retrieved December 2020 from APEC Center for Technology Foresight: <http://www.apecctf.org/index.php/foresight-methodology/the-benefits-of-foresight.html>.
- Becker, M. C. (2004). Organizational routines: a review of the literature. *Industrial and Corporate Change*, 13(4), 643–677.
- Berger, C. R., & Calabrese, R. J. (1975). Some explorations in initial interaction and beyond: Toward a developmental theory of interpersonal communication. *Human communication research*, 1(2), 99–112.
- Bertziss, A. T. (2002). Uncertainty management. *Handbook of Software Engineering and Knowledge Engineering: Volume II: Emerging Technologies*, 389–417.
- Boccaletti, S., Latora, V., Moreno, Y., Chavez, M., & Hwang, D.-U. (2006). Complex networks: Structure and dynamics. *Physics Reports*, 424(4–5), 175–308.
- Brown, H. (2014). A Process Ontology. *Axiomathes*, 24, 291–312.
- Cartwright, T. J. (1991). Planning and chaos theory. *Journal of the American Planning Association*, 57(1), 44–56.
- Cilliers, P. (2000). What Can We Learn From a Theory of Complexity. *Emergence*, 2(1), 23–33.
- Costa, A. C., Fulmer, C. A., & Anderson, N. R. (2018). Trust in work teams: An integrative review, multilevel model, and future directions. *Journal of Organizational Behavior*, 39(2), 169–184.
- Cunningham, J., & McGregor, J. (2000). Trust and the Design of Work Complementary Constructs in Satisfaction and Performance. *Human Relations*, 53(12), 1575–1591.
- Das, T., & Teng, B.-S. (2001). Trust, Control, and Risk in Strategic Alliances: An Integrated Framework. *Organization Studies*, 22(2), 251–283.
- De Toni, A. F., & De Zan, G. (2016). The complexity dilemma. *Emergence: Complexity & Organization*, 18(3/4), 1–8.

- DellaVigna, S., & Pope, D. (2018). Predicting experimental results: who knows what? *Journal of Political Economy*, 126(6), 2410–2456.
- Dietz, G., & Den Hartog, D. N. (2006). Measuring Trust Inside Organisations. *Personnel Review*, 35(5), 557–588.
- DiFonzo, N., & Bordia, P. (1998). A Tale of Two Corporations: Managing Uncertainty During Organizational Change. *Human Resource Management*, 37(3 & 4), 295–303.
- Edelenbos, J., & Klijn, E.-H. (2007). Trust in Complex Decision-Making Networks: A Theoretical and Empirical Exploration. *Administration & Society*, 37(1), 25–50.
- Feldman, M. S. (2003). A performative perspective on stability and change in organizational routines. *Industrial and corporate change*, 12(4), 727–752.
- Feldman, M. S. (2016). Routines as process: Past, present, and future. In J. Howard-Grenville, C. Rerup, A. Langley, & H. Tsoukas (Eds.), *Organizational Routines: How They Are Created, Maintained, and Changed* (pp. 23–46). Oxford: Oxford University Press.
- Feldman, M. S., Pentland, B. T., D'Adderio, L., & Lazaric, N. (2016). Beyond Routines as Things: Introduction to the Special Issue on Routine Dynamics. *Organization Science*, 27(3), 505–513.
- Fulmer, C. A., & Gelfand, M. J. (2012). At What Level (and in Whom) We Trust: Trust Across Multiple Organizational Levels. *Journal of Management*, 38(4), 1167–1230.
- Gilli, A., & Gilli, M. (2019). Why China Has Not Caught Up Yet: Military-Technological Superiority and the Limits of Imitation, Reverse Engineering, and Cyber Espionage. *International Security*, 43(3), 141–189.
- Gollwitzer, P. M. (1996). Benefits of planning. In P. M. Gollwitzer, & J. A. Bargh (Eds.), *The Psychology of Action: Linking Cognition and Motivation to Behavior* (pp. 287–312). The Guilford Press.
- Hanén, T. (2010). Ennakoinnin Illuusio [The Illusion of Predicting]. *Tiede ja ase*, 68, 31–62.
- Hodgson, G. M. (2008). The concept of a routine. In M. C. Becker (Ed.), *Handbook of Organizational Routines* (pp. 15–30). Cheltenham, UK and Northampton, MA, USA: Edward Elgar.
- Hyndman, R. J. (2020). A brief history of forecasting competitions. *International Journal of Forecasting*, 36(1), 7–14.
- Hyndman, R. J., & Athanasopoulos, G. (2018). *Forecasting: principles and practice* (2nd ed.). OTexts.
- Häyhtiö, M. (2018). *Service Development in Public Private Partnerships in the Military Domain: Requirements Management as a Service Performance Development and Measurement System*. Helsinki: National Defence University, Series 1: Research Publications No. 26.
- Ikonen, I. (2020). *Suomen turvallisuusorganisaatioiden yhteishankkeet*. Helsinki: Maanpuolustuskorkeakoulu, Julkaisusarja 1: Tutkimuksia nro 41.

- Jalonen, H., & Lönnqvist, A. (2008). Kohti ennakoivaa liiketoimintaa. *Liiketaloudellinen aikakauskirja, The Finnish Journal of Business Economics*.
- Jalonen, H., & Lönnqvist, A. (2009). Predictive business – fresh initiative or old wine in a new bottle. *Management Decision*, 47(10), 1595–1609.
- Jalonen, H., & Lönnqvist, A. (2011). Exploring the Critical Success Factors for Developing and Implementing a Predictive Capability in Business. *Knowledge and Process Management*, 18(4), 207–219.
- Kiyonari, T., Yamagishi, T., Cook, K. S., & Cheshire, C. (2006). Does Trust Beget Trustworthiness? Trust and Trustworthiness in Two Games and Two Cultures: A Research Note. *Social Psychology Quarterly*, 69(3), 270–283.
- Kriz, A., & Keating, B. (2010). Business relationships in China: lessons about deep trust. *Asia Pacific Business Review*, 16(3), 299–318.
- Landis, B. (2016). Personality and Social Networks in Organizations: A Review and Future Directions. *Journal of Organizational Behavior*, 37, S107-S121.
- Langley, A., & Tsoukas, H. (2010). Introducing "Perspectives on Process Organization Studies". In A. Langley, & H. Tsoukas (Eds.), *Process, Sensemaking, & Organizing* (pp. 1–26). Oxford: Oxford University Press.
- Levine, E. E., Bitterly, T., Cohen, T. R., & Schweitzer, M. E. (2018). Who is trustworthy? Predicting trustworthy intentions and behavior. *Journal of personality and social psychology*, 115(3), 468–494.
- Lewicki, R. J., & Bunker, B. B. (1995). Trust in Relationships: A Model of Development and Decline. In B. B. Bunker, & J. Z. Rubin (Eds.), *Conflict, cooperation and justice* (pp. 133–173). San Francisco: Jossey-Bass.
- Li, Y., Chen, J., & Feng, L. (2012). Dealing with Uncertainty: A Survey of Theories and Practices. *IEEE Transactions on Knowledge and Data Engineering*, 25(11), 2463–2482.
- Lichtenstein, B. B., & Plowman, D. A. (2009). The leadership of emergence: A complex systems leadership theory of emergence at successive organisational levels. *The Leadership Quarterly*, 20(4), 617–630.
- Luhmann, N. (2017 [1979]). *Trust and power*. Cambridge: Polity Press.
- Madden, L. T., Duchon, D., Madden, T. M., & Plowman, D. A. (2012). Emergent organizational capacity for compassion. *Academy of Management Review*, 37(4), 689–708.
- Mathews, M., & Stokes, P. (2013). The creation of trust: the interplay of rationality. *Entrepreneurship & Regional Development*, 25(9), 845–866.
- McAllister, D. J., Lewicki, R. J., & Chaturvedi, S. (2006). Trust in developing relationships: from theory to measurement. *Academy of Management Proceedings*, 1, pp. G1–G6. New York.
- Milliken, F. J. (1987). Three Types of Perceived Uncertainty about the Environment: State, Effect, and Response Uncertainty. *The Academy of Management Review*, 12(1), 133–143.

- Mitchell, M. (2009). *Complexity: A guided tour*. Oxford University Press.
- Möllering, G. (2019). Connecting trust and power. *Journal of Trust Research*, 1–5.
- Müller, J., & Schwieren, C. (2020). Big Five personality factors in the Trust Game. *Journal of Business Economics*, 90(1), 37–55.
- Newman, M. E. (2003). The structure and function of complex networks. *SIAM review*, 45(2), 167–256.
- Nilsson, M. (2019). Proximity and the trust formation process. *European Planning Studies*, 27(5), 841–861.
- Ohly, S., Sonnentag, S., & Pluntke, F. (2006). Routinization, work characteristics and their relationships with creative and proactive behaviors. *Journal of Organizational Behavior*, 27, 257–279.
- Parkkari, J. (2020, 18.10.). Miksi Kiina ei ole jo saavuttanut Yhdysvaltoja? Digitalisaatioista huolimatta aseteknologia ei siirry maasta toiseen napinpainalluksella. YLE News. YLE.
- Pentland, B. T., Feldman, M. S., Becker, M. C., & Liu, P. (2012). Dynamics of Organizational Routines: A Generative Model. *Journal of Management Studies*, 49(8), 1484–1508.
- Poli, R. (2013). A note on the difference between complicated and complex social systems. *Cadmus*, 2(1), 142–147.
- Redmond, M. V. (2015). Uncertainty Reduction Theory. In *English Technical Reports and White Papers* (Vol. 3). Retrieved from http://lib.dr.iastate.edu/engl_reports/3.
- Rempel, J. K., Holmes, J. G., & Zanna, M. P. (1985). Trust in Close Relationships. *Journal of Personality and Social Psychology*, 49(1), 95–112.
- Research in the Finnish National Defence University. (2021). Retrieved from Finnish National Defence University homepage: <https://maanpuolustuskorkeakoulu.fi/en/research>.
- Richardson, K. A. (2008). Managing Complex Organisations: Complexity Thinking and the Science and Art of Management. *Emergence: Complexity & Organisation*, 10(2), 13–26.
- Rittel, H. W., & Webber, M. M. (1973). Dilemmas in a General Theory of Planning. *Policy Sciences*, 4(2), 155–169.
- Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Not So Different After All: A Cross-Discipline View of Trust. *Academy of Management Review*, 23(3), 393–404.
- Sarewitz, D., & Pielke Jr, R. (1999). Prediction in science and policy. *Technology in Society*, 21, 121–133.
- Sasaki, M. (2019). Introduction. In M. Sasaki (Ed.), *Trust in Contemporary Society* (Vol. 42, pp. 1–8). Leiden/Boston: Brill.
- Schneider, M., & Somers, M. (2006). Organizations as complex adaptive systems: Implications of Complexity Theory for leadership research. *The Leadership Quarterly*, 17(4), 351–365.

Sele, K., & Grand, S. (2016). Unpacking the Dynamics of Ecologies of Routines: Mediators and Their Generative Effects in Routine Interactions. *Organization Science*, 27(3), 722–738.

Shaver, K. G. (1983). *An introduction to attribution processes*. London: Routledge.

Six, F., & Sorge, A. (2008, July). Creating a High-Trust Organization: An Exploration into Organizational Policies that Stimulate Interpersonal Trust Building. *Journal of Management Studies*, 45(5), 857–884.

Sydow, J., Müller-Seitz, G., & Provan, K. G. (2013). Managing uncertainty in alliances and networks – From governance to practice. In *Managing Knowledge in Strategic Alliances* (pp. 1–43). Greenwood: IAP.

Tsoukas, H., & Chia, R. (2002). On Organizational Becoming: Rethinking Organizational Change. *Organization Science*, 13(5), 567–582.

Weber, M. M. (2002). Measuring supply chain agility in the virtual organization. *International Journal of Physical Distribution & Logistics Management*, 32(7), 577–590.

Yan, Z. (2008). A comprehensive trust model for component software. *Proceedings of the 4th international workshop on security, privacy and trust in pervasive and ubiquitous computing*.

APPENDICES

Appendix 1. Trust-building in a cooperative multi-supplier network

Appendix 2. Contracts as trust-builders

Appendix 3. Routinisation in a cooperative network between the military and the private sector

Appendix 4. Trust and routines as indicators of the future

APPENDIX 1. Trust-building in a coopetitive multi-supplier network

‘This article is © Emerald Publishing Limited and permission has been granted for this version to appear here <https://www.doria.fi/handle/10024/73990> . Emerald does not grant permission for this article to be further copied/distributed or hosted elsewhere without the express permission from Emerald Publishing Limited.’

DOI: <https://doi.org/10.1108/JOPP-02-2018-0003>

ABSTRACT

Purpose – Alliances are an important form of cooperation in the contemporary world. Although most of the different alliances have been rigorously studied, one type of alliance has been neglected: a multi-supplier network forcing potential competitors to cooperate. The purpose of this kind of network is to develop and maintain complex technological systems, such as ICT systems for the public sector. The coopetitive nature of the network poses numerous difficulties for productivity. This article aims to explore how trust-building can mitigate such difficulties.

Design/methodology/approach – The data was gathered via 16 semi-structured interviews and analyzed using data-driven content analysis. The respondents were representatives of the private and public sectors in Finland, tasked with building an ICT system for the Finnish Defense Forces in a multi-supplier network.

Findings – The study found that trust-building is influenced by structural and functional factors. For example, roles and responsibilities emerged as an important structural factor, and communication was seen as a crucial functional factor.

Practical implications – The paper identifies factors that have to be managed properly for a multi-supplier network to function effectively and efficiently.

Originality/value – The study positions the multi-supplier network within the alliance framework. It also contributes to the literature on trust by identifying factors that influence trust-building.

Keywords: *trust, network, collaboration, efficiency, effectiveness, relations*

1 INTRODUCTION

Alliances can help combine resources and reduce uncertainties (Doz & Hamel, 1998). The problem is, however, that the respective partners may be simultaneously cooperating and competing (Castiglioni, et al., 2015; Bengtsson & Kock, 2000). This kind of “interpartner competition, [or ‘coopetition’], exists when a partner tries to maximize its private interests at the expense of the alliance or the other partner” (Krishnan, et al., 2006, p. 896). In other words, coopetition is defined as “a partially convergent interest (and goal) structure where both competitive and cooperative issues are simultaneously present and strictly interconnected” (Dagnino & Padula, 2002, p. 9). This poses difficulties and potential pitfalls for the alliance.

This article aims to explore how these difficulties can be mitigated by building trust. The data was gathered by means of semi-structured interviews and analyzed using iterative data-driven content analysis. The interviewees are working on a project aimed at incorporating an agile development process into Finnish Defense Force ICT system acquisitions, namely the Fox (Kettu in Finnish) project.

The article focuses, first, on positioning the multi-supplier network in the current alliance literature. Second, the concept of trust is defined and an overview of the literature on the subject is provided. Third, the methodological choices are explained. Fourth, the results of the analysis are described. Finally, the implications of the results are discussed.

1.1 Alliances

The type of alliance under study is a coopetitive multi-supplier network, which is an alliance utilized by the public sector in many fields, particularly in acquisition projects. As such, it has not been recognized in the alliance literature. Hence, a definition is arrived at in the Findings section because it relies on the interviews conducted for this article as well as unofficial conversations. This section focuses on mapping out the alliance literature and on identifying how the coopetitive multi-supplier is positioned in respect of other alliances.

A vast amount of research has been conducted into the subject of alliances and most types are well documented. The research has mainly focused on the private sector or public-private partnerships. However, these perspectives do not entirely describe the functioning of a coopetitive multi-supplier network. T. K. Das and Bing-Sheng Teng (1998) separate alliances into three categories, arguing that the most frequently used alliance structures are joint venture, minority equity alliance, and non-equity alliance. A joint venture is a separate but jointly run entity; a minority equity alliance involves one or both parties taking an equity stake in the other company; while non-equity alliances are merely contractual arrangements. All of the above can involve two or more partners. Coopetitive multi-supplier networks are not separate entities, and nor do they involve equity arrangements. To some extent, they can be categorized as non-equity alliances. However, as will be shown, the theory does not entirely apply to the alliances used by the Finnish Defense Forces (FDF). Non-equity alliances are heavily regulated by contracts (Das & Teng, 1998). Multi-supplier networks, on the other hand, do not necessarily have extensive con-

tracts. In other words, suppliers are forced to cooperate and share information with each other while only having limited legal protection. Therefore, some other form of regulation needs to be considered.

Buyer-driven value chains are networks with characteristics similar to the cooperative multi-supplier network. They are commonly used in commodity chains where tiered networks of contractors manufacture finished goods, such as sneakers, for the buyer (Gereffi, 1999). However, multi-supplier networks do not focus on manufacturing simple goods but have a complex innovating purpose instead, which fosters the view that the multi-supplier network should be regarded as a different entity. This aspect will also be elaborated in the Findings section since the notions are based on the interview data.

The literature discusses strategic alliances, multilateral alliances and hybrid networks. A strategic alliance is an “interfirm cooperative arrangement aimed at achieving the strategic objectives of the partners” (Das & Teng, 1998, p. 491). In a multi-supplier network, every actor has strategic objectives. The question is, however, the importance of the alliance for the achievement of the goals. The alliance can be presumed to be crucial for the prime actor because the latter cannot acquire the capabilities without it. On the other hand, most of the goals of the suppliers can be achieved without the multi-supplier network. Naturally, some companies, especially smaller ones, may have strategic objectives involving, for example, growing market value through cooperation with the FDF. Nevertheless, on the larger scale, strategic objectives involving multi-supplier networks are presumed to be exceptions here. Hence, a multi-supplier network cannot be identified as a strategic alliance. In addition to strategic alliances, multilateral alliances are defined as strategic alliances whose main function is to compete with other similar alliances or single actors (Das & Teng, 2015). This notion does not apply to the kind of network in question either: the network only aims to develop something new for the public sector without the purpose of competing.

The definition of hybrid organizations can, on the other hand, be applied to multi-supplier networks. They are arrangements in which strategic decisions and property rights are pooled, while ownership over key assets is maintained at the same time, thereby creating a need for a specific coordinating device (Ménard, 2012). The definition incorporates the notion of separating the actors’ core functionalities from the network. This is important because the need to protect assets influences the functioning of the multi-supplier network. Hybrid can also refer to a situation where business partners are neither friends nor strangers (Bachmann, 2001), which may be the case in a multi-supplier network. Furthermore, according to Mainela, Puhakka and Servais (2015), hybrids can be defined as organizations or governance structures. Hybrids as organizational forms are a set of organizations that have mutual dependence and uncertainty while they are coordinated via price and other mechanisms. Hybrid as a governance structure covers arrangements such as joint ventures, strategic alliances, licensing, and R&D partnerships. Regarding the multi-supplier network merely as a governmental structure would be an oversight because it has interdependencies and uncertainties. Therefore, it can be categorized as a form of hybrid organization with a complex and fluxing structure.

Alliances between governmental and private actors are referred to in the literature as private-public partnerships (PPP). This is a type of alliance used regularly in transportation, healthcare, public order and safety, education, telecoms, general public services, and so forth (de Vries, 2013; Boyer, et al., 2016). Lawrence Martin (2016, pp. 197–198) proposes that they should be defined as “...a class of public contracts for the construction or rehabilitation of public facilities and public infrastructure and for the provision of supportive or ancillary services. [They] generally involve a mix of the following component parts: design, construction, financing, operations and maintenance”. In other words, they involve a situation where the public and private sectors cooperate. A PPP is also defined as “an arrangement in which public organizations and private firms collaborate on a societal issue while simultaneously achieving individual objectives” (Vos et al., 2014, p. 87). However, neither of these definitions consider the cooperative nature of the multi-supplier network. They mainly focus on the reason for alliances’ existence and goals, rather than their inner workings. Thus, the term cooperative multi-supplier network is used here because it describes the functional aspects of the alliance more accurately.

On the other hand, the issues related to PPPs also apply to multi-supplier networks. Private and public-sector actors are dissimilar in societal functioning, organizational background, and purpose, leading to different objectives, cultures, structures, values, language, and time horizons (Vos et al., 2014). Further, the private sector has an information advantage because it possesses the information needed to build a complex system (Boyer et al., 2016). These functional baselines influence the multi-supplier network as well.

The multi-supplier network requires confidence in partner cooperation. This can be achieved via control (or detailed contracts) and trust (Das & Teng, 1998; Gulati, 1995). Trust and control (i.e. power) can mitigate complexity and uncertainty (Bachmann, 2001). The difference between them is that control limits the possibilities the other actor can utilize, while trust is about expecting the trustee to act in a preferred way (Bachmann, 2001). Control is important because it facilitates coordination and learning, but too much can have a negative effect on alliance performance (Das & Teng, 2001). Trust and control cannot separately explain the forming of confidence (Das & Teng, 1998). Therefore, this article is based on a presumption that there is an underlying code or a set of rules facilitating collaboration and trust (Yuan et al., 2016). The set of rules is a form of psychological contract, meaning that the actors feel they are obligated to behave in a certain way, and they also expect similar behavior from the others (Rousseau, 1990). The contract has to be followed for confidence to emerge. This is referred to as the Rules of the Game (de Bruijn & ten Heuvelhof, 2008). This article focuses on the rules from the perspective of trust and trust-building.

1.2 Trust

Trust has been recognized as one of the most central issues when considering relations within and between organizations (Bachmann, 2001). At the individual level, it can predict outcomes such as commitment, job performance, job satisfaction, information exchange, and turnover (Lewicki et al., 2006; Thorgren et al., 2011). Moreover, at the organizational level, it has a positive impact on revenue, profit, and

collaboration with external organizations, reduces transaction costs and lessens the potential for conflict (Lewicki et al., 2006; Gedeon, 2015). Trust mitigates uncertainty about partner behavior and allows for the benefit of the doubt in equivocal situations (Krishnan et al., 2006). Furthermore, trust increases performance in the event of high behavioral uncertainty, namely when it is difficult to understand and anticipate the actions of an exchange partner, of which an alliance between potential competitors is a prime example (Krishnan et al., 2006).

Trust is an elusive concept. Rousseau et al. (1998, p. 395) argue that “trust is not a behavior (e.g. cooperation) or a choice (e.g. taking a risk), but an underlying psychological condition that can cause or result from such actions”. However, it has been unclear whether it is a personality trait, rational choice, behavioral intention, belief, social structure, or interpersonal relationship (Gedeon, 2015). Nevertheless, risk seems to be a prerequisite for trust; having something invested creates the need for trust (Mayer et al., 1995). Moreover, being disposed to trust (e.g. having faith in humanity) and trusting beliefs (belief in benevolence, competence, honesty, and predictability) lead to trusting behavior (McKnight et al., 1998). Trust can be examined as interpersonal, interorganizational (i.e. system trust), or as institutional where, for instance, laws and regulations increase predictability (Zaheer et al., 1998; Bachmann, 2001; Lewicki et al., 2006). Furthermore, time is an important factor because trust evolves over time: at first, it is calculative in nature but evolves toward relational trust (Rousseau et al., 1998). Finally, trust is not a question of whether or not an actor can be trusted, but rather what an actor can be trusted to do (Lewicki et al., 2006). For example, an electrician will not forget to send an invoice but getting the work done as agreed is another matter completely.

Trust can be classified in various ways. It can be based on contracts, competence or displayed goodwill (Bachmann, 2001). Similarly, according to Lewicki and Bunker (1995), it can be based on calculus, knowledge, or information. Calculus-based trust means that the incentive for acting predictably is based on the fear of punishment. Knowledge-based trust relies on information about another’s behavior. Finally, identification-based trust exists when the actors understand, agree with, and endorse each other’s goals and interests. These classifications are in sequential iteration where development of trust at one level enables development at the next. In the former model, the classification is carried out in regard to the actions of the trustee. In the latter, the classification is based on the intrinsic factors of the trustor, namely the trustor’s information on the other actor’s likely behavior.

Trust has multiple definitions. Krishnan, Martin and Noordhaven (2006, p. 895) define trust as “the expectation held by one firm that another will not exploit its vulnerability when faced with the opportunity to do so”. They argue that trust is confirmed when parties reliably fulfill promises, act fairly in dealings, and exhibit goodwill in unforeseen contingencies. Similarly, Zeheer, McEvily and Perrone (1998) argue that interorganizational trust is based on predictability, reliability, and fairness. Another definition of trust is “a type of expectation that alleviates the fear that one’s exchange partner will act opportunistically” (Gulati, 1995, p. 91).

In this article, trust is understood as a subjective opinion of another’s ability and willingness to carry out their tasks. This is a more holistic and functional view of

trust and it is based on notions of ability and intentions (Six & Sorge, 2008; Klein Woolthuis et al., 2005). It is adopted to better grasp the multitude of relations in a cooperative multi-supplier network. In contrast, a narrow definition would likely omit important aspects of psychological contracts formed between the actors.

The level of analysis for trust is perceived to be at both the individual and organizational levels. Zhong et al. (2014) argue that trust resides at the individual level, but shifts to the organizational level when members agree upon the shared expectations regarding the partner organization. Moreover, Nahapiet & Ghoshal (1998) separate individual and organizational knowledge. They argue that the knowledge at the organizational level is more than a mere aggregation of the knowledge of a set of individuals. Similarly, this article considers organizational trust to be more than a combination of the trust of individuals. Therefore, both levels and their interconnectivity are explored.

Trust-building can be achieved in various ways. It is built incrementally over time when another actor chooses to reciprocate cooperation (Lewicki et al., 2006). Blomqvist and Ståhle (2000) suggest that trust-building is expressing competence and goodwill and behaving in a particular manner. This supports the notion of a certain set of rules that has to be followed. Calculus-based trust is increased with repeated interactions, multifaceted interactions (increasing the points of interaction), or by holding reputation hostage where potential reputation damage deters opportunism (Lewicki et al., 2006). Furthermore, clear coordination roles have a trust-building effect (Wehmeyer et al., 2001). Trust is also built by familiarity through previous alliances (Gulati, 1995). Gulati and Sych (2008) found partial support for the notion that organizational similarity increases trust at the individual level. On the other hand, they did not find that an interpersonal history of interactions would increase trust at the organizational level. Finally, routines, processes, standards, and official structures can have an impact on trust-building (Albers et al., 2015).

Building trust is particularly important in the early stages of interaction. This can be done via so-called fast or swift trust, which has been found to form among airline cockpit crews or surgical teams, for instance (Lewicki et al., 2006; Blomqvist & Ståhle, 2000). Lewicki, Tomlinson and Gillespie (2006) present several factors enabling fast trust. First, interaction is based on roles. The participants are expected to fulfil those roles and make efforts to minimize unpredictability and inconsistency. Second, professional standards (e.g. procedures) define behavior. Third, the participants are chosen from a narrow pool and their reputation is known. Finally, the tasks require moderate levels of interdependency. In other words, fast trust is based on clear roles and open communication (Blomqvist & Ståhle). Although this type of trust focuses on small professional teams, it can be applied to a multi-supplier network, which has similar features with regard to roles, reputation, and interdependency.

2 METHODOLOGY

The primary data for the study was gathered via semi-structured interviews. This was the chosen method of data collection because the phenomenon under study has received little attention to date. Thus, a method enabling an explorative approach was needed. Semi-structured interviews draw out subjective views and are designed to understand the world from the perspective of the interviewees (Brinkmann & Kvale, 2015, pp. 15; 30). Hence, this method is likely to provide insights into trust-building because it is a subjective phenomenon.

The final sample amounted to 16 interviewees, including eight representatives of the FDF, and eight employees working for companies cooperating with the Finnish military. Each interviewee was interviewed once. In addition to the 16 interviews, one interview was cancelled because it was deemed highly unlikely that it would yield additional information. This is because three to four of the previous interviews did not deepen or provide additional perspectives but rather articulated them differently. Also, one interview was disregarded due to a technical failure. The interviewees were chosen based on their experience and duties in the Fox project. Every respondent is highly experienced in ICT development, both from the public and the private sectors.

The role of the Fox project was to provide a framework. First, it facilitated the selection of a sufficiently homogenous group of respondents, and second, it is an excellent example of the kind of multi-supplier network that the FDF use. Third, it helped focus the responses to the questions, increasing the comparability of the data (Foddy, 1993, pp. 17–20). Finally, it also provided a concrete setting for the interviewees to evaluate their relations and actions in a network. However, the study does not focus on the functionality of the Fox project's network per se, but rather on the multi-supplier networks used by the Finnish Defense Forces. In this sense, the project acted more as a point of departure for the interviews.

The interviews were conducted with the following preparations. First, a high-level point of contact was identified and approached. Second, the potential interviewees were contacted via email, stating the purpose and the framework of the study. The email was relayed through the point of contact to bring a sense of officiality to the participation request. Third, the potential interviewees were contacted via telephone and asked if they would be willing to participate. Not one potential respondent declined to be interviewed. During the phone calls, possible questions were also answered. Fourth, two mock interviews were conducted: one with a person with vast experience in the defense industry, and the other with a person not directly related to the framework at hand. Both yielded numerous improvements to the whole interview process. Finally, the first interview was transcribed and initially analyzed before conducting the second interview. In this way, the questions and the process could be further enhanced. Throughout the preparation process, the anonymity and confidentiality aspects, as well as the possible benefits were stressed to gain the trust of the interviewees.

The interview process included the following steps. All of the interviews were conducted during a four-week period in August and September 2017. Between one and

three interviews were carried out per day, with each one lasting 49 minutes on average. The venues were either the office of the interviewee or a conference room. Only the researcher and the respondent were present in each case. At the beginning of the interview, the purpose and the ethical code (e.g. anonymity) of the study were reviewed. The interviewees were also requested to answer the questions based on their own point of view to ensure the comparability of the data. Furthermore, they were asked to refrain from going into the substance of the project to avoid issues of confidentiality. Finally, the data was transcribed after the interviews.

The interview questions were devised so that they started off in a straightforward manner and progressively moved towards more abstract matters (see Appendix A). They were roughly divided into four phases: personal history, behavior in the network, trust-building, and skills required for the respective personnel. The phases were the same for every interviewee. However, some matters were covered as a part of a different phase if it appeared to be more logical to deal with them in a follow-up question. Therefore, slight variation did exist. The exact number and the format of the questions also varied because they were constantly improved to make them more relevant and unambiguous.

The analysis was performed using data-driven content analysis. An inductive approach was adopted. The analysis began by finding statements in the transcriptions and combining them into an Excel sheet. A sentence was used as a unit of analysis. This yielded 512 points of data, which were color-coded to identify the respondent. The points of data were then coded into 35 different codes, e.g. references, contracts, adaptation, results of action, interdependencies, common history, or information security. Subsequently, the codes were iteratively combined into themes and sub-themes. For example, adaptation, rules of communication, furthering economic interests, the role of the customer and so forth were compiled under the theme of “rules of interaction”. This process yielded three themes and 10 sub-themes. These were then used to build a narrative about the rules of the game in a multi-supplier network. Finally, the results of the analysis were sent to all of the respondents for comments. None of the respondents added any remarks.

3 FINDINGS

The interviews provided information that proved to be instrumental when it came to describing the cooperative multi-supplier network. To this end, the latter would appear to have four distinct attributes. First, it is an alliance consisting of a prime actor, usually the client, and more than one supplier. The suppliers may also have sub-contractors. However, the latter connect to the network only through the suppliers and do not influence the inner workings of the multi-supplier network. Second, each supplier has a particular task. They have to cooperate to meet their goals although they are potential competitors. Third, each supplier is bound to the network by a dyadic contract made with the prime actor. These contracts can be vague. Fourth, the network is not a single monolith. Rather, it entails various and fluxing relations between suppliers: some are constantly cooperating while others are barely conscious of each other’s existence. Based on these attributes, the cooperative multi-

supplier network is defined herein as a prime actor-driven multi-partner alliance between potential competitors with the goal of creating something for the prime actor.

Two features seem to differentiate the multi-supplier network from other types of alliances. First, the way in which the actors connect to the network is unusual. The network is fabricated by a prime actor, while the other actors, namely the suppliers, are only connected to the network by contracts made with the prime actor. Although this is similar to buyer-driven commodity chains, the difference is that the suppliers are innovating and creating something new while a commodity chain's main purpose is to manufacture. The suppliers are forced to innovate and solve problems together. This can be problematic because the suppliers are often potential competitors with one another since their fields and know-how overlap. Hence, the cooperation can be difficult to maintain since there are no contracts between suppliers. This can lead to an unexpected event crippling the network. Second, the cooperative multi-supplier network is integrated both vertically and horizontally. It has a vertical structure with the prime actor and several other more or less significant and powerful roles. It also has a horizontal structure because the suppliers must integrate their efforts. This duality is intriguing because it forces actors to take two different mechanisms of integration into account.

This section focuses on the rules of the game evident in a multi-supplier network. The rules can be divided into structural and functional factors (see Figure 1). The structural factors consist of two themes: the system level as well as the organizational and individual level. The functional factors have one theme, namely the rules of interaction. The following section covers, firstly, the system-level factors that emerged from the data; secondly, the organizational- and individual- level factors; and finally, the rules of interaction.

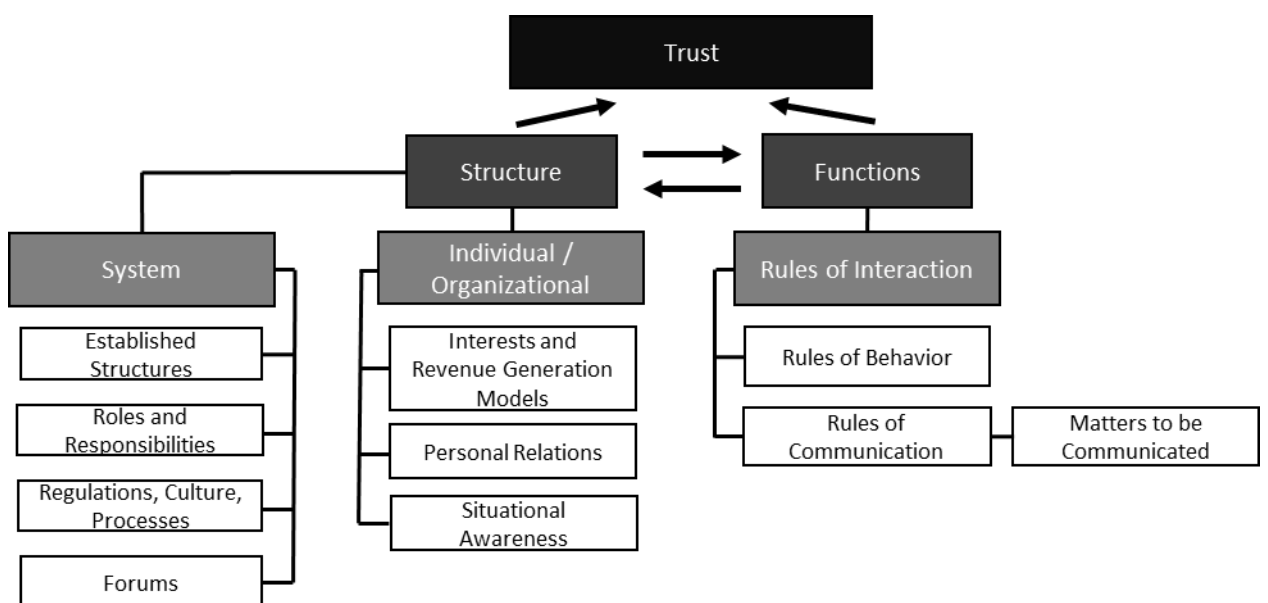


Figure 1: Framework of trust-building

3.1 System-level features

Trust-building in the multi-supplier network is perceived to be influenced by various system-level factors. These factors do not result from or reside in a single organization or individual, but are rather attributes of the system. What the factors have in common is the effect that they exert on the actions of every supplier in the network. Four sub-themes were identified in the analysis.

The first sub-theme to emerge was that of an old and established structure. Each of the respondents mentioned at some point the historical events affecting the current cooperation. In the defense industry, suppliers have been working together in a small circle for a long time, which has served to familiarize them with each other. Familiarity was seen as a positive factor in trust-building because others' talents and skills were known. Moreover, the respondents widely considered the FDF to be "reliable" or "trustworthy". However, established structures also have their downsides. They have created legacy structures which are difficult to deconstruct. As one private sector representative said: "[the suppliers] do not want to let go of the monolithic application structures and their strong bonds to the FDF". For example, several systems can be based on a single platform and that also forces the new systems to be built on the same platform to make them compatible.

The second sub-theme concerned regulations, culture, and processes. These are factors that force the actors to behave in a certain manner. For example, safety and confidentiality regulations were often mentioned first when respondents were asked about behavior in a multi-supplier network. The regulations determine what kind of information can be passed on, how it must be carried out, and what kind of equipment and spaces must be used. Deliberate negligence was seen to have a highly negative impact on trust. Moreover, accidentally breaking safety regulations could also undermine trust. Besides regulations, culture was also seen to influence cooperation. A private sector respondent explicitly said that the people working in defense projects have "a sense of cohesion". Processes also make the cooperation flow more smoothly. By being familiar with the processes, the actors can, for instance, present their progression in a way that is understandable to other suppliers.

The third sub-theme involved roles and responsibilities, which were seen to be absolutely crucial in a multi-supplier network. A private sector representative stated: "...it is totally central in any case that the high-level responsibilities are clear". Every supplier needs clear boundaries in order to work and cooperate effectively. Without these boundaries, trust cannot be built. The boundaries enable a focus on the objectives of the network. Similarly, a lack of clarity about roles potentially results in unwanted behavior if the actors begin to work against the objectives of the network, for instance.

The role of the prime actor was seen to be of paramount importance in trust-building. This is because the prime actor is the one capable of determining the roles and responsibilities, and can also force the suppliers to cooperate. As a representative of the military said: "We give the platform to several suppliers and tell them to make the interface based on the platform [...] That has forced them to interact".

Furthermore, according to the data, the prime actor is responsible for numerous functions, namely:

- Building the network, i.e. choosing the suppliers
- Overseeing the operations
- Prioritizing and guiding the actions
- Determining the tasks
- Distributing the situational awareness, i.e. the status of the network
- Supporting the actors' roles
- Resolving conflicts
- Committing the actors to the network
- Creating the inter-dependencies
- Protecting the suppliers' confidential information

The prime actor's role is particularly emphasized in the early stages of cooperation. In this stage, the functions are not yet established, and hence the creation of a clear framework is important. In other words, the swift forming of trust should be a priority. This is not an impossible task, however, because the respondents felt that the suppliers understand the role of the prime actor. What is more, they understand the common interests and respect the authority of the prime actor.

Two major challenges are embedded in the roles and responsibilities. According to the interviews, the main challenge is the constant change and evolution. Situations change and new opportunities frequently emerge in the agile development framework. This calls for "clear rules on how the changes are to be made", as one public-sector respondent put it. Moreover, reacting to the need for changes has to be done quickly by the prime actor. Otherwise there would be a risk of opportunistic behavior, in that an actor might try to utilize an opportunity regardless of other actors. Another challenge is the overlapping of interests or capabilities of the suppliers. This poses a problem when two or more actors are capable of supplying a service or an item, making them "go into competitive gear", as one public-sector representative said, to try to gain as many advantages as possible. This leads to opportunism and protectionism, namely trying to protect one's interests. Similarly, a new supplier entering the network also alters the existing structures and forces a redistribution of roles. Again, this calls for the prime actor to set the boundaries.

The fourth and final sub-theme concerned the forums of communication. According to the data, the rules of the game can be communicated in official and unofficial forums. Six types of forums were classified as official: contracts, boards, official documents, testing situations, kick-off events, and formal meetings. Contracts emerged as a paradoxical phenomenon. Many respondents felt that detailed contracts clarify the functioning of the network, such as rights to IPRs, or the availability of the source code. Conversely, some respondents felt that strict contracts also hinder efficiency, and can even be seen as a sign of distrust between actors.

Unofficial forums include phone calls, emails, informal meetings, and workshops. What these have in common is the fact that no binding decisions are made, but rather matters are prepared. Many respondents stated that the unofficial forums or discussions have been regulated, especially in the past. Everyone agreed that they

should be regulated because of the need for confidentiality. However, many saw that too rigorous restrictions on communication will burden productivity because problem-solving becomes difficult. Additionally, trust cannot be built without open and constant interaction between actors. Instead of restrictions, the unofficial forums should be made transparent for fluent cooperation, but also to allow the distribution of situational awareness.

3.2 Individual and organizational features

The multi-supplier network is affected by both individual and organizational features, which are the features that can be classified as intrinsic to specific actors. The first of these are interests and the revenue generation models. Companies aim to be profitable. Every respondent stressed the greedy nature of the suppliers; suppliers want to increase their share as much as possible. This was seen as the main reason for opportunism and protectionism possibly disturbing the cooperation. Similarly, individuals also have self-centered interests. The importance of appearing competent, advancing one's career, and making a mark were mentioned. One public-sector respondent even stated that people in public administration are driven by their own agendas, whereas in the private sector, the company's interests determine the individual's agenda. On the other hand, work ethic also emerged as an important factor determining interest because every respondent felt that actors want to fulfill their duties. This was apparent at both the individual and the organizational levels. Almost all of the respondents explicitly stated that the suppliers generally work to further the clients' agenda. The reason for this was that it is in the supplier's interests to keep the customer satisfied in order to receive more assignments in the future, for instance.

Important intrinsic factors include an inclination towards opportunism, and hence the need for protectionism. Numerous respondents felt that opportunism affected trust-building, especially between suppliers. Such opportunism occurs when a supplier detects an opportunity to increase their business. The respondents mentioned, for example, providing new components, or making others dependent on a platform or maintenance. In other words, the opportunity emerges when something is currently no-one's responsibility. The potential opportunism forces the suppliers to protect their assets, knowledge, and know-how which, in turn, leads to less communication. This is hazardous to the whole network because necessary information is withheld until the role issue is resolved. However, respondents did not feel that protectionism would have affected cooperation in practice. The explicit reason for this cannot be found in the data, but it is likely connected to the rather clear structure within the Fox project: no respondent felt that the structure was heavily hampering the operations.

The network is influenced by the revenue generation models of the companies. A few respondents saw this as problematic if there is inequity between the different models. Problems will arise if one company is gaining an advantage without a general agreement. For example, one company focuses on building a specific component while another develops a more generic component. The generic component can be used in another system, rendering it more valuable. Hence, one company gains an advantage. This can breed distrust if one supplier considers that another is earning an unfounded advantage. Nevertheless, the situation can be averted if the

different logics can be openly discussed and agreed upon. Roles and responsibilities have a great impact on the revenue generation model issue and vice versa. The prime actor needs to determine a clear framework that mitigates any uncertainty related to the different models. This needs to be considered in the network-building phase.

The second sub-theme concerned personal relations. Friction in relations can reduce communication, according to the interviewees. Conversely, people who get along tend to share information more, which helps to increase situational awareness and anticipate the future. Many respondents felt that being acquainted with the other individuals builds trust because it is easier to believe in the other persons' competence and willingness to fulfill their duties. Consequently, individuals need to be acquainted for a network to be productive. On the other hand, problems at the personal level were not seen to lead to actively undermining the other party's efforts.

An individual's competence is a highly important factor in trust-building. It was even referred to as the very basis of trust. Competence is something that needs to be managed by the actors. It requires familiarizing oneself with the company's policies and the rules of working in the multi-supplier network. Competence can also be affected by staff turnover. New personnel need to become acquainted with others and sufficiently familiarized before they can fulfill their roles. Most of the respondents thought that staff turnover, especially the rotation of duties in the military, was cumbersome. For example, one private-sector representative went as far as to say: "It is horrendous, it should be forbidden by law... It leads to a situation where the new people try to make their mark before they are transferred again, and the newcomer thinks that everything the previous person did is bad; plus the fact that he or she starts from nothing and does not understand anything about the current situation". On the other hand, some did not see the issue as particularly challenging. Another private-sector employee felt that "a new person has difficulties adapting", but the existing organization is not affected that much. The data suggests that staff turnover is problematic if the new person tries to influence the objectives or processes, or tries to make a mark. Alternatively, a lack of knowledge about the substance combined with a strong will can alter the modes of interaction within the network, as the former comment suggests.

The last sub-theme was situational awareness, namely the status of the network. It was classified under individual and organizational factors because it is a subjective view on the current state of affairs, such as the project phase, distribution of responsibilities, and so forth. It resides in the actors, affecting their actions. Situational awareness can be improved and equalized through communication. This mitigates uncertainties regarding structures and interactions. A private-sector representative stated: "...if we want a multi-supplier network that really functions, we need a working chat and all the building, version control, [and] all the work guidance systems [...] it can't be said that everyone sees everything, but they see the essentials in real time". Furthermore, a common understanding should be arrived at as broadly as possible. Otherwise, actors may interpret things differently if they do not actively work or participate in the operations, remaining at the periphery of the network instead.

3.3 The rules of interaction

The functional features within a multi-supplier network also affect trust-building. This theme was categorized as the rules of interaction, consisting in turn of two sub-themes: the rules of communication and the rules of behavior. Although most of the interaction can be viewed as communication, the functional features are more than just that. This is because the actors have intrinsic functions that are not communicated to the other actors. For example, the interests of a company or strategic goals affect behavior. Communication can be classified as a frontstage function while the planning takes place backstage (Goffman, 1959). This kind of frontstage-backstage framework requires the functional features to be examined separately.

As noted previously, communication is critical for the success of the network. The rules of communication define how information can be passed on. Three rules emerged from the data. First, it needs to be equal in that all the actors receive information comprising the same content. For example, as one public-sector representative pointed out, “when we make a request for a quotation ... it is sent to everybody with the same content”. The similarity of information is seen to be enhanced by communicating directly without intermediaries. Second, the format and the recipient need to be considered. Some actors demand official documents before actions can commence, while others settle for an informal form of communication. As one public sector interviewee put it: “within [some of the FDF’s departments] the right kind of documents have to be provided before the discussion can even begin”. Moreover, the confidentiality and security issues need to be addressed. All of the respondents stressed the importance of using the correct channels, equipment, and encryption for information pertaining to different tiers of confidentiality. The communication formats are in close interaction with the established forums. Third, the communication needs to be active and constant. Many interviewees felt uncertainty, for instance, about a supplier’s ability to deliver if there had been a period of no or little communication. This is in accord with previous literature and the notion of repeated interaction as a trust-builder. Regular communication was seen as something the prime actor should enforce. In addition, regular interactions help individuals and organizations to become more acquainted with each other, thereby building trust.

The respondents widely considered open and transparent communication to be a prerequisite for trust-building. For example, a public-sector respondent stated: “...the goal is to open up [the communication] so we don’t hide anything from the suppliers, but we can openly communicate ... so that everybody knows what the others are doing”. However, this kind of communication has its drawbacks, with confidentiality issues emerging as the most prominent. Actors are forced to withhold privileged information. Another challenge relates to the long-term effects of communication. Suppliers communicating together can lead to costs for the prime actor. For example, if the suppliers solve a problem by implementing a new component in the network, the prime actor has to pay. This was seen as an issue by some representatives of the military if the prime supplier is unable to influence the matter. A third problem concerns the fact that the communication needs to be regulated, for the reasons stated above. However, too rigorous regulation can have a negative effect on the network. Many respondents had experience of previous policies where

all the communication had gone through a single actor. This was seen as a cumbersome and time-consuming policy. It also made the actions too opaque. As one private sector employee stated: “people in the FDF still don’t trust [our organization] because previously so little was known”.

Handling problem situations is particularly important. Every interviewee felt that being open about any difficulties was absolutely crucial. With open reporting of any deviation, the actors can prepare for the future and plan accordingly. Hence, the effects of the issues are mitigated and they do not severely affect the network. In tackling the problems, trust and good relations were seen as enablers of communication on difficult matters. This is because trust gives the actors the benefit of the doubt. Without good relations, problems are not easily addressed. One military respondent stated that “some are afraid of losing face and imagine that the task will magically be handled [...] and only a day before admit that they won’t make the deadline”. This kind of behavior was generally viewed as detrimental for the objectives of the network.

Finally, in a multi-supplier network, there are matters to be communicated. Most of them have been partly covered in previous themes and sub-themes. However, treating them merely as a part of other sub-themes would be an oversight because trust is all about perceptions. Therefore, it is vital to communicate certain aspects to create an image of ability and willingness. The following matters emerged from the data:

- Results
- Objectives
- Rules
- Culture
- Ability and references
- Roles and responsibilities
- Problems and deviations
- The status of the network

Results are very important when it comes to trust-building. Many respondents stated that trust is built based on the results of the actions of others; trust is not built if much work is done, but nothing is ever finished. The objectives of a network or a project must also be communicated clearly to all parties involved. This helps in ensuring that the actors are engaged in the project. Communicating the rules of the game is vital because otherwise there would be many different sets of rules. The prime actor has the main responsibility of setting the rules and making sure that the other actors follow them.

The second sub-theme entailed the rules of behavior. These were categorized as a separate sub-theme because they are not limited to communication only, comprising guidelines that affect actions both frontstage and backstage, while the rules of communication focus solely on the frontstage. The first of these rules is the need for honesty. Nearly every respondent explicitly stated how crucial it was for trust to be built. In this context, acting honestly means behavior that is not deceptive or fraudulent, but open and transparent. This is not only limited to communication but

also covers, for instance, planning and setting objectives. Similarly, dishonesty was widely perceived as detrimental to trust. Many had experiences of situations where an actor had tried to further their agenda by lying, withholding information, or stealing IPRs. Stealing in particular was seen as something that could have a long-term effect on relations.

The second rule concerned the consideration of common interests. A multi-supplier network has many interdependencies which force actors to cooperate to achieve the network's objectives. Consideration can be shown by being flexible and professional, respecting common and individual objectives, playing one's part, solving problems others are facing, and sharing information vital to others. By expressing this sort of team spirit, an actor can show ability and willingness to fulfill its duties. Moreover, competing can also hurt common interests. Competition should not interfere with functioning. One private sector representative suggested separating the competition from the actual project: "[Competition] should be carried out in other forums by sales representatives".

The third rule is the need to adapt. Many respondents from both sectors stated that the actors should match their behavior to the culture and idiosyncrasies they are currently working with. Similar to the rule regarding common interests, this is not confined to the frontstage. The adaptation also needs to happen, for instance, in terms of objective-setting and other backstage functions. The general notion was that everyone was adapting. The suppliers' representatives were seen to change their behavior to match the prime supplier's culture. Similarly, the prime actor's personnel tried, at least to some extent, to match their behavior to suppliers' expectations. Adaptation can help the individual and organizational actors to speak the same language and act in a predictable way.

4 DISCUSSION

The study shows that the structure of the multi-supplier network creates a framework for the rules of the game to emerge. The structure has features that are present at the system level or that reside in the actors. Management personnel at all levels should aim to make the structure clear and unambiguous. First of all, trust-building is influenced by the previously established structures. For example, current issues are influenced by previous technical solutions, positive and negative experiences, power distributions, hierarchies, and personal interactions. Recognizing these features and their potential influences is paramount for a well-functioning network. The second influencing factor concerns features of the surrounding environment, as well as the intrinsic features of the individual and organizational actors. The culture and the legislation both set boundaries for the rules, and therefore for the trust-building. Similarly, the individual and organizational features affect trust-building. This is because, for instance, the goals and objectives affect whether or not an actor can be seen to be able or willing to carry out their duties. The third highly important feature entails the roles and responsibilities. They should be distributed in a manner whereby they do not overlap. Overlapping creates opportunism and protectionism, according to the interviews. Both of these hinder the network's performance be-

cause necessary information is not shared. Therefore, the roles and responsibilities need to be respected, supported, and enforced.

The prime actor has a crucial influence on trust-building. It has the authority to form the network in such a way that it promotes trust-building. To a certain extent, it can choose the suppliers, decide how information is distributed, adjust processes, and raise situational awareness. In contrast, the suppliers' task is more to respect and uphold the current structures than create and develop them. Furthermore, they need to highlight expectations or doubts regarding the structures.

Situational awareness is the adhesive in trust-building. Actors need to have a clear and similar perception of the current state of affairs and the future of the network. Ambiguity and misinterpretations lead to uncertainty, which creates fertile ground for opportunism. The perception of potential opportunism is followed by protectionism. Therefore, intensive measures should be taken to ensure comprehensive situational awareness for all of the actors. This can be done, for example, by limiting communication as little as possible or by developing procedures that make information sharing and receiving less burdensome. Another way of raising situational awareness is the use of references in the early stages of interaction, which can be used to form an initial picture of another actor's ability and willingness to fulfill a role.

The study found that different factors are emphasized in trust-building when comparing strategic alliances and multi-supplier networks. Das and Teng (1998) present risk-taking, equity preservation, communication, and interfirm adaptation as trust-building measures. From these, adaptation and communication arose as important factors in the interviews. However, risks, particularly external risks, were not mentioned by the respondents. This is likely because a multi-supplier network is a relatively stable entity that is not affected by fluctuations in global economics, and so forth. Internal risks, such as opportunism, were mentioned but these kinds of risks did not increase trust. In addition, equity preservation was not mentioned because there are no equity transactions. On the other hand, the literature on trust-building mentioned repeated interactions, familiarity, routines, processes, and so on. These features are also highly important in multi-supplier networks. Moreover, roles and responsibilities were mentioned by Blomqvist and Ståhle (2000) as important in building trust quickly. These emerged as important factors, although the study did not focus on swift trust in particular. The reason for this might be that while the actors are familiar with each other, the Fox project has not been running for many years.

In sum, two rules rise above others:

1. Operating within the boundaries of one's roles and responsibilities
2. Transparent communication and sharing of situational awareness

Practitioners in both the public and private sectors should follow these rules to make networks function productively. Although this study focused on the defense industry, the results should be applicable to other sectors with similar networks.

4.1 Limitations and future research

The main limitation of this study is the focus on a network-building ICT system in the defense industry. It has features that separate it from other cooperative networks. First, there are many suppliers, so there are more than just dyadic relations. The process of trust-building and rule definition might differ in a dyadic cooperative relationship. Moreover, the full extent of these different types of relations was not explored and some nuances could have been lost. Second, the defense industry in Finland is a very small circle where companies have been working together for decades and people are acquainted with each other. This potentially limits the applicability of the results to emerging networks. Third, the type of network studied has a very potent prime actor. Therefore, the rules can be generated in a more spontaneous and self-guided manner within a more indefinite network.

The nature of the network in question, and the lack of research pertaining to it is interesting. This study duly provides three major avenues for academics to explore in the future. First, the complex relations between the actors is the most obvious one. The present study adopted a more practical approach to how the network functions. However, the complexity and the features of the network are not entirely clear. Understanding the complexity of the network would require a case study focusing on different actors and their relations with each other. In addition, the roles of different actors would have to be determined more precisely. The study in hand focused on functional roles, such as prime actor, supplier, or sub-contractor, but there are probably behavioristic or social roles within the network as well. This study hopefully provides solid groundwork for studying these complex relations. Second, an interesting finding to emerge was that the actors attempted to adapt to the procedures and cultures of others. This can be seen as advantageous to trust-building. However, this could also have other implications, or even ramifications. This phenomenon was beyond the scope of this study so it was not explored rigorously. Hence, a study focusing on the adaptation process would likely provide new insights into the process of trust-building within an alliance. The third topic for future study is the initiation phase of the network. The present study was unable to comprehensively address how trust is built in a network where the actors are unknown to each other. This kind of research, combined with research on roles, could also provide insights into how a cooperative network should be formed.

REFERENCES

Albers, S., Schweiger, B. and Gibb, J. (2015), "Complexity, Power, and Timing in Multipartner Alliance: An Integrative Review and Research Agenda", in Das, T. K. (Ed.), *Managing Multipartner Strategic Alliances*, Information Age Publishing, Charlotte, NC, pp. 57-88.

Bachmann, R. (2001), "Trust, Power and Control in Trans-Organizational Relations", *Organization Studies*, Vol. 22 No. 2, pp. 337-365.

- Bengtsson, M. and Kock, S. (2000), "'Coopetition' in Business Networks – to Cooperate and Compete Simultaneously, *Industrial Marketing Management*, Vol. 29, pp. 411-426.
- Blomqvist, K. and Ståhle, P. (2000), "Building Organizational Trust", paper presented at 16th Annual IMP Conference, Bath, UK, available at <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.194.8467&rep=rep1&type=pdf> (accessed 2 February 2018).
- Boyer, E. J., Van Slyke, D. M. and Rogers, J. D. (2016), "An Empirical Examination of Public Involvement in Public-Private Partnerships: Qualifying the Benefits of Public Involvement in PPPs", *Journal of Public Administration Research*, Vol. 26 No. 1, pp. 45-61.
- Brinkmann, S. and Kvale, S. (2015), *Interviews: Learning the Craft of Qualitative Research Interviewing*, 3rd ed., SAGE, Thousand Oakes, CA.
- Castiglioni, M., Castro, I. and Galán, J. L. (2015) "The Choice and Formation of Multipartner Alliance: Underpinning Factors", in Das, T. K. (Ed.), *Managing Multipartner Strategic Alliances*, Information Age Publishing, Charlotte, NC, pp. 23-56.
- Dagnino, G. B. and Padula, G. (2002), "Coopetition Strategy: A New Kind of Inter-firm Dynamics for Value Creation", paper presented at Innovative research in management, European Academy of Management (EURAM), second annual conference, Stockholm, Sweden, May, 2002.
- Das, T. K. and Teng, B.-S. (1998) "Between Trust and Control: Developing Confidence in Partner Cooperation in Alliances", *Academy of Management Review*, Vol. 23 No. 3, pp. 491-512.
- Das, T. K. and Teng, B.-S. (2001) "Trust, Control, and Risk in Strategic Alliances: An Integrated Framework", *Organization Studies*, Vol. 22 No. 2, pp. 251-283.
- Das, T. K. and Teng, B.-S. (2015), "Alliance Constellations: A Social Exchange Perspective", in Das, T. K. (Ed.), *Managing Multipartner Strategic Alliances*. Information Age Publishing Charlotte, NC, pp. 1-22.
- de Bruijn, H. and ten Heuvelhof, E. (2008), *Management in Networks: On multi-actor decision making*, Routledge, New York, NY.
- de Vries, P. (2013) "The modern public-private demarcation: history and trends in PPP" in de Vries, P. and Yehoue, E. B. (Ed.), *The Routledge Companion to Public-Private Partnership*. Routledge, London and New York, pp. 9-28.
- Doz, Y. L. and Hamel, G. (1998), *Alliance Advantage: The Art of Creating Value through Partnering*, Harvard Business School Press, Boston, MA.
- Foddy, W. (1993), *Constructing Questions for Interviews and Questionnaires: Theory and Practice in Social Research*, Cambridge University Press, Cambridge.

- Gedeon, S. A. (2015), "How to Measure and Build Intra- and Inter-Organisational Trust", *International Journal of Business and Globalisation*, Vol. 14 No. 1, pp. 122-142.
- Gereffi, G. (1999), "A commodity chains framework for analyzing global industries", *Institute of Development Studies*, Vol. 8 No. 12, pp. 1–9.
- Goffman, E. (1959), *The Presentation of Self in Everyday Life*. Doubleday & Company, New York, NY.
- Gulati, R.O. (1995), "Does Familiarity Breed Trust? The Implications of Repeated Ties for Contractual Choice in Alliances", *Academy of Management Journal*, Vol. 38 No. 1, pp. 85-112.
- Gulati, R. and Sytch, M. (2008), "Does Familiarity Breed Trust? Revisiting the Antecedents of Trust", *Managerial and Decision Economics*, Vol. 29, pp. 165-190.
- Klein Woolthuis, R., Hillebrand, B. and Nooteboom, B. (2005), "Trust, Contract and Relationship Development", *Organization Studies*, Vol. 26 No. 6, pp. 813-840.
- Krishnan, R., Martin, X. and Noordhaven, N. G. (2006), "When Does Trust Matter to Alliance Performance?", *The Academy of Management Journal*, Vol. 49 No. 5, pp. 894-917.
- Lewicki, R. J. and Bunker, B. B. (1995), "Trust in Relationships: A Model of Development and Decline", in Bunker, B. B. and Rubin, J. Z. (Ed.), *Conflict, cooperation and justice*, Jossey-Bass, San Francisco, CA, pp. 133-173.
- Lewicki, R. J., Tomlinson, E. C. and Gillespie, N. (2006), "Models of Interpersonal Trust Development: Theoretical Approaches, Empirical Evidence, and Future Directions", *Journal of Management*, Vol. 32 No. 6, pp. 991-1022.
- Mainela, T., Puhakka, V. and Servais, P. (2015), "Hybrid ways of organizing opportunities in international entrepreneurship", in Larimo, J., Nummela, N. and Mainela, T. (Ed.), *Handbook on International Alliance and Network Research*, Edward Elgar Publishing, Cheltenham & Northampton, MA, pp. 65-86.
- Martin, L. L. (2016), "Making Sence of Public-Private Partnerships (P3s)", *Journal of Public Procurement*, Vol. 16 No. 2, pp. 191-207.
- Mayer, R. C., Davis, J. H. and Schoorman, F. D. (1995), "An Integrative Model of Organizational Trust", *Academy of Management Review*, Vol. 20 No. 3, pp. 709-734.
- McKnight, D. H., Cummings, L. L. and Chervany, N. L. (1998), "Initial Trust Formation in New Organizational Relationships", *The Academy of Management Review*, Vol. 23 No. 3, pp. 473-490.

Ménard, C. (2012), "Hybrid Modes of Organization: Alliances, Joint Ventures, Networks, and Other 'Strange' Animals", in Gibbons, R. and Roberts, J. (Ed.), *The Handbook of Organizational Economics*. Princeton University Press, pp. 1066-1108.

Nahapiet, J. and Ghoshal, S. (1998), "Social Capital, Intellectual Capital, and the Organizational Advantage", *The Academy of Management Review*, Vol. 23 No. 2, pp. 242-266.

Provan, K. B. and Kenis, P. (2008), "Modes of Network Governance: Structure, Management, and Effectiveness", *Journal of public administration research and theory*, Vol. 18 No. 2, pp. 229-252.

Rousseau, D. M. (1990), "New hire perceptions of their own and their employer's obligations: A study of psychological contracts", *Journal of Organizational Behaviour*, Vol. 11, pp. 389-400.

Rousseau, D. M., Sitkin, S. B., Burt, R. S. and Camerer, C. (1998) "Not So Different After All: A Cross-Discipline View of Trust", *Academy of Management Review*, Vol. 23 No. 3, pp. 393-404.

Six, F. and Sorge, A. (2008), "Creating a High-Trust Organization: An Exploration into Organizational Policies that Stimulate Interpersonal Trust Building", *Journal of Management Studies*, Vol. 45 No. 5, pp. 857-884.

Thorgren, S., Wincent, J. and Eriksson, J. (2011), "Too Small or Too Large to Trust Your Partners in Multipartner Alliances? The Role of Effort in Initiating Generalized Exchanges", *Scandinavian Journal of Management*, Vol. 27, p. 99-112.

Vos, P., Tjemkes, B., Janssen, R. and Aarts, O. (2014), "An Organizational Justice Perspective on Conflict in Multipartner Public-Private Strategic Alliances" in Das, T. K. (Ed.), *Managing Public-Private Strategic Alliances*, Information Age Publishing, Charlotte, NC, pp. 85-125.

Wehmeyer, K., Riemer, K. and Schneider, B. (2001), "Roles and Trust in Interorganizational Systems", paper presented at Eight Research Symposium on Emerging Electronic Markets (RSEEM 01), 16-18 September, Maastricht, Netherlands, available at <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1.2867&rep=rep1&type=pdf> (accessed 2 February 2018).

Yuan, X., Olfman, L. and Yi, J. (2016), "How Do Institution-Based Trust and Interpersonal Trust Affect Interdepartmental Knowledge Sharing?", *Information Resource Management Journal*, Vol. 29 No. 1, pp. 15-38.

Zaheer, A., McEvily, B. and Perrone, V. (1998), "Does Trust Matter? Exploring the Effects of Interorganizational and Interpersonal Trust on Performance", *Organization Science*, Vol. 9 No.2, pp. 141-159.

Zhong, W., Su, C., Peng, J. and Yang, Z. (2014), "Trust in Interorganizational Relationships: A Meta-Analytic Integration", *Journal of Management*, Vol. 43 No. 4, pp. 1050-1075.

Appendix A: Interview questions

PERSONAL HISTORY

1. How long have you been working in your current organization?
2. How long have you been working in the Kettu project?
3. How did you come to be in the project?
4. With how many people do you cooperate within the project's framework?

BEHAVIOR IN THE NETWORK

5. How would you describe your interactions with these people?
6. What kind of rules apply to these interaction situations? What can and cannot be done?
7. Does the behavior or the rules of behavior change when working with people from other organizations?
 - a. Is there a difference between those who work in the public sector and those in the private sector?
8. What factors influence your behavior? How do you decide how to act or behave with these people?
9. Have there ever been any discussions on how you should act with these people?
 - a. Officially/unofficially?
10. Do you think that the rules of behavior are clear for an individual?
11. Do you think that your organization knows how it should act with other organizations?
 - a. Do you discuss this with your colleagues?
12. If we now transition from the rules of behavior to the rules of the game, do you think that there is something more that comes into play? Is there something else that can or cannot be done?
 - a. Relaying information?
 - b. Making changes?
 - c. Forwarding economic interests?
 - d. Getting people and organizations to commit to a common cause?
13. How are these rules communicated within the network?
 - a. Should the communication be improved?
14. How do you teach these rules to others? How should they be taught to you?
15. Are there any special events where a different set of rules would apply?
 - a. E.g. decision making? Respecting basic values? Applying power? Communications? Reciprocity? Respecting certain rituals?
16. How would you like another party to behave towards you?

TRUST-BUILDING

17. Trust is understood as a subjective opinion of another's ability and willingness to carry out their tasks. What kind of behavior would make you lose trust?
 - a. At the individual level?
 - b. At the organizational level?

18. Do you feel that in your organization you have collective trust towards other organizations?
19. How would you describe trust within the Kettu network when the project was launched?
 - a. What was the trust based on?
 - b. What was the role of references in the initial trust?
20. How do you think that trust is built among different actors?
 - a. Is the process always the same?
21. Can the Finnish Defense Forces influence trust-building?
22. How can suppliers trust each other when they compete in some fields and cooperate in others?
23. How deep a level of trust is required for a network to function?

SKILLS REQUIRED

24. If we consider a situation where a new actor joins the FDF's project, what kind of skills and talents are required for him/her to be able to function within the network?
 - a. An individual
 - b. A new supplier
25. Do you feel that people in your organization have these kinds of skills when they join a project?
26. Do you feel that managers have sufficient skills and talents to manage these kinds of projects?
 - a. What additional skills should they have?
 - b. Could these skills be trained?

APPENDIX 2. Contracts as trust builders

This is an 'Accepted Manuscript' of an article published by Taylor & Francis Group in Journal of Trust Research, 2020, available online:
<https://www.tandfonline.com/doi/full/10.1080/21515581.2019.1705844>

ABSTRACT

Cooperative relationships require trust. Trust, on the other hand, requires a framework, i.e. an environment, in which it can be built. Numerous studies have focused on the antecedents of trust. For example, various trust-building factors have been identified in these studies. However, there is no comprehensive study exploring the ways in which contracts support the trust-building environment. This study attempts to fill this gap by drawing on the notion that contracts have a framing effect on trust, thereby creating an environment that can lead to trust building. The study entails an analysis of eight contracts made between the Finnish Defence Forces and its civilian contractors. The analysis is theory-driven and applies a framework of trust-building factors. The conclusion of the study is that the contracts support the environment by defining relevant legal regulation, communication processes, and forums for interaction. The contracts also involve a large number of clauses pertaining to roles and responsibilities, as well as the execution of processes within the exchange. However, trust building would benefit if contracts were improved in five ways, namely by establishing fewer forums of communication, addressing personal relations and potentially deviating interests, providing more communication via avenues other than key personnel, carefully considering the need for restrictive confidentiality clauses, and using contracts to pursue a certain culture.

Keywords: *cooperation, trust-building environment, contracts, network, trust*

1 INTRODUCTION

Cooperation is paramount for networks. It can help reduce uncertainties and provide access to resources one might not otherwise be able to obtain (Doz & Hamel, 1998). Cooperation has often been linked to the concept of trust. Trust is understood here as 'a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behaviour of another' (Rousseau, Sitkin, Burt, & Camerer, 1998, p. 395). Trust is highly beneficial for cooperation. It is seen as an important condition in the creation of an open and constructive atmosphere (Klein Woolthuis, Hillebrand, & Nooteboom, 2005). Similarly, trust creates confidence, decreases uncertainty, encourages shared problem solving and knowledge sharing (Lumineau, 2017). It increases job performance and organisational commitment on the individual level, and profit and revenue on the organisa-

tional level (Lewicki, Tomlinson, & Gillespie, 2006). Trust also mitigates uncertainty about partner behaviour and allows for the benefit of the doubt in equivocal situations (Krishnan, Martin, & Noordhaven, 2006). Although cooperation can take place without trust if risks and opportunistic behaviour is mitigated, for example, with control mechanisms (Mayer, Davis, & Schoorman, 1995), trust is seen here as a vital element in cooperation due to its numerous benefits.

This study focuses on the trust-building environment within a network. 'Network' is understood above all as a social network, which is defined as 'set of nodes (e.g., persons, organizations) linked by a set of social relations (e.g., friendship, transfer of funds, overlapping membership) of a specific type' (Laumann, Galaskiewicz, & Marsden, 1978, p. 458). All actors within the network are related to one another via a wide array of economic and social relations (Gulati, Dyaldin, & Wang, 2002). Trust is not constant between these actors but changes over time. Thus, the 'psychological state' called trust must be built for trust to benefit the network.

Trust building is viewed here as requiring a framework or an environment in which trust can develop. Contracts are essential in the creation of this framework. They are regarded as crucial framing devices because they are a central organisational governance mechanism (Schilke & Lumineau, 2018). This 'framing' can be understood via the concept of psychological framing, which refers to cognitive schemas and processes by which actors make sense of their situation and understand their environment (Lumineau & Malhotra, 2011). The framework can also be referred to as a trust climate, i.e. 'the within-unit agreement on the degree of trust in a referent shared by unit members' (Fulmer & Gelfand, 2012, p. 1203). According to Luo (2002, p. 903), '[c]ontracts and cooperation are interrelated because a contractual arrangement serves as a framework within which cooperation proceeds'. Naturally, behaviour in networks is affected by many factors, such as structure, processes, communication, and culture, making attributions about motives and intentions difficult (Perroni, Zaheer, & McEvily, 2003; Ferrin & Gillespie, 2010). Nevertheless, contracts are seen as exerting a strong influence or even as forming a foundation (Gong et al., 2007). Contracts can therefore be seen to create or at least participate in the creation of the environment for trust building within a network. This relationship will be elaborated later in this study. The contract is here understood as a 'formal, written contract between two or more competent parties, which creates obligations, whereby one party becomes bound to another to do or omit to do certain acts that are the subject of that contract' (Blomqvist, Hurmelinna, & Seppänen, 2005, p. 498).

Earlier studies have established that contracts support trust building (e.g. Faems, Janssens, Madhok, & van Looy, 2008; Poppo & Zenger, 2002). Transaction Cost Economics and contract theory view contracts as a basis for trust, because they limit opportunities and incentives for opportunism, and thus get actors to behave in a trustworthy manner (Klein Woolthuis et al., 2005). Moreover, contracts build trust by establishing common ground and explicit aims (Blomqvist et al., 2005), making assumptions and expectations explicit (Malhotra & Lumineau, 2011), as well as clarifying roles and responsibilities, and increasing communication (Mayer & Argyres, 2004). However, Zaheer and Harris (2006), for example, present an extensive list of trust-building factors supposedly influencing trust building (e.g. shared values, social

interaction), not all of which have been covered by studies focusing on the relationship between trust and contracts. Thus, the question of the extent of support remains. Are there other ways contracts support trust building, and is there room for improvement? A comprehensive empirical study appears to be missing. The purpose of this study is to bridge this gap by exploring how contracts support the forming of a favourable environment for trust building. This is done by analysing contractual clauses, using a comprehensive set of trust antecedents as a framework. This study focuses on the contractual clauses because ‘the types of information included in a contract can induce specific behaviors and views of the relationship’ (Schilke & Lumineau, 2018, p. 2830). The aim of this study is to enhance the understanding of the relationship between trust and contracts.

The study was conducted by analysing eight contracts made between the Finnish Defence Forces (FDF) and its partners, using a framework of trust-building factors proposed in Järvinen (2019). This approach was chosen because the framework provides a comprehensive chart of trust-building factors that can be applied to the contracts. The framework is also developed in an environment that is governed by the same contracts in the sample. Such an empirical study is likely to provide a valuable insight into how contracts may influence trust building and increase the understanding of the relationship between trust and contracts. It also looks beyond mere presence, absence, or completeness of contracts but instead affords an insight into the content of the clauses, as suggested in Klein Woolthuis et al. (2005).

The study is organised as follows. The next section explores the concepts of trust and contracts, as well as their interrelations. Subsequently, the data, methods, framework for analysis, and results are described. Finally, the results, implications, and limitations are discussed.

1.1 Trust and contracts

Trust has multiple definitions. McKnight and Chervany (2001) analysed 56 articles with a definition of trust and found that they included elements from four categories: benevolence; integrity; competence; and predictability. Krishnan et al. (2006, p. 895) define trust as ‘the expectation held by one firm that another will not exploit its vulnerability when faced with the opportunity to do so’. A widely used definition proposed by Roussou et al. (1998, p. 395) is that trust amounts to ‘a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another’. As previously stated, this study adopts the definition provided by Roussou et al., because it incorporates all the elements proposed by McKnight and Chervany (2001) as well as the framework of trust, i.e. the ‘psychological state’. This enables the logic where contract clauses involving trust-building factors can be regarded as enhancing the psychological state, i.e. trust.

Trust is usually considered to exist at three levels: individual; organisational; and institutional (see e.g. Fulmer & Gelfand, 2012; Zaheer, McEvily, & Perrone, 1998; Bachmann, 2001). Trust at the individual level refers to the degree of trust of an individual, while organisational trust denotes a degree of trust shared collectively by individuals within a unit (Fulmer & Gelfand, 2012). Institutional trust, on the other

hand, is defined as ‘a form of individual or collective action that is constitutively embedded in the institutional environment in which a relationship is placed, building a favourable assumption about the trustee’s behaviour vis-à-vis such conditions’ (Bachmann & Inkpen, 2011, p. 284, emphasis removed). It is important to describe the interrelation between these levels. Wehme, Rieder, and Schneider (2001) argue that trust can only be granted by individuals, but can apply not only to individuals but also to institutions and abstract systems. On the other hand, trust can also be organisational, where people collectively consider another organisation to be trustworthy (Zaheer et al., 1998). This study subscribes to the notion that levels of trust are interrelated in a way that the institutional trust affects the actions of individuals and organisations. Simultaneously, individuals consider institutions as trustworthy, thus granting them the possibility to influence the actions of individuals. This interrelation will become important later, when the concept of framing is explored.

Trust building can be accomplished in various ways. Zaheer and Harris (2006) present a list of previous studies that identify numerous antecedents of trust. These include a history of social interaction, the parallel execution of overlapping tasks, informal commitment, shared values, communication, consistency in dealings, relational asymmetry, cooperation, a positive reputation, integrity, confidentiality, consistency, sincerity, specific investments, tact, timeliness, frequency of interaction, flexibility, and so on. Furthermore, ‘[t]rust is based on a body of evidence about the other party’s motives and character, from which a belief, prediction or faith judgment about that party’s likely future conduct is derived’ (Dietz, Gillespie, & Chao, 2010, p. 11). In this respect, trust-building measures must enhance the actor’s opinion that the trustee is more likely to act in a preferred way. Therefore, if a clause in a contract can be viewed as convincing the trustor to believe that the trustee is likely to act as expected, the contract can duly be considered to build trust.

Contracts serve various purposes and have multiple functions (Schilke & Lumineau, 2018). Contracts consist of clauses dealing with protection of property rights (e.g. ownership of products or methods, patents, licences) or spill-over (e.g. sanctions on spill-over, pledge of secrecy, limitation of freedom to work with others), and clauses on the management of the relationship (e.g. duration, division of tasks, roles and responsibilities, accountability, investments, processes for monitoring, conflict resolution or mediation, relationship termination) (Klein Woolthuis et al., 2005; Poppo & Zenger, 2002). In other words, contracting ‘consists of the codification and enforcement of inputs, outcomes and interorganizational activities’ as well as processes designed to support exchanges in the future as well (Vlaar, 2013, p. 83). Klein Woolthuis et al. (2005) identify three functions of contracts: coordination; safeguarding contingencies; and serving as a sign of commitment. Coordination refers to contracts as tools that specify goals and the means of achieving them. Safeguards for contingencies deal with the contracts as a framework of actions in the event of unforeseeable contingencies. The sign of commitment views contracts as having a function where partners express trust and their intention to be loyal. However, contracts can have different functions based on the framework: actors fearing opportunism see contracts as safeguards, while actors in a trusting relationship view contracts as tangible expressions of trust (Klein Woolthuis et al., 2005).

Cooperation is governed by contractual and relational governance. Governance structures create a lens through which actors evaluate the appropriateness of their partners and their own behaviour (Lumineau & Malhotra, 2011). Contractual governance is understood here as formal contracts. Formal contracts state obligations, promises, and processes for dispute resolution (Poppo & Zenger, 2002), i.e. force actors to do or omit doing certain actions, as stated in the above definition of contract. Contracts also help to create shared expectations and reduce uncertainty (Malhotra & Murnighan, 2002); they ‘represent promises or obligations to perform particular actions in the future’ (Poppo & Zenger, 2002, p. 708). However, formal contracts alone are insufficient to govern actions in a network. The network also requires a relational aspect where ‘[g]overnance emerges from the values and agreed-upon processes found in social relationships’ (Poppo & Zenger, 2002, p. 709). Empirical work has associated trust with relational governance (Poppo & Zenger, 2002). Therefore, trust and contracts are not mutually exclusive concepts but are closely related. For example, ‘relational characteristics, like trust and relational norms, significantly influence interfirm contracts’ (Schepker, Oh, Martynov, & Poppo, 2014, p. 201). Similarly, a cultural and institutional setting can facilitate trust if, for example, institutions provide knowledge that can be taken for granted (Bachmann & Inkpen, 2011; Vlaar, 2013).

The relationship between trust and contracts has been elusive. Scholars have considered trust and contracts to be either complements or substitutes. The complement perspective ‘proposes that the combined use of contracts and relational governance promotes cooperation’ (Schepker et al., 2014, p. 201), because contracts reduce domain and severity of risk, thereby increasing trust (Poppo & Zenger, 2002). Furthermore, contracts may complement trust by creating congruent expectations that help the actors to interpret the behaviour of their counterparts (Vlaar, 2013). The substitute perspective, on the other hand, regards relational norms (e.g. trust) as a sufficient safeguard against unwanted behaviour, relational governance as a function that eliminates the need for contracts, and contracts even as a signal of distrust which can disrupt the process of trust building (Poppo & Zenger, 2002; Malhotra & Lumineau, 2011). The latter takes place if one actor interprets the need for contracts as doubt concerning their competence or goodwill (Vlaar, 2013). However, ‘contracts are in practice often not used and interpreted in a strictly legal fashion with opportunism as a central focal point’ (Klein Woolthuis et al., 2005, p. 835). In a similar vein, ‘the effects of contractual provisions might be influenced by environmental dynamism and partner interdependence’ (Schilke & Lumineau, 2018, p. 2828). Contracts are also embedded in a social context and influence relationships’ development (Klein Woolthuis et al., 2005). In other words, contracts do not simply fulfil a single purpose but are an element with various interrelations embedded in a complex system. The relationship between trust and contracts is therefore seen here as complementary, because it is seen to better embody the complicated nature of the relationship between trust and contracts.

In addition to the substitute and complement perspectives, a third perspective has emerged. Schilke and Lumineau (2018) identify contracts as framing devices. They suggest that contractual provisions affect the interaction and perception of partners. The provisions thus affect the social processes characterising the relationship. In a similar vein, Bachmann and Inkpen (2011) suggest that trust-building processes are

influenced by institutional arrangements, i.e. institutional trust. They argue that trust building is usually regarded as a micro-level phenomenon, where repeated face-to-face interactions eventually build trust. However, actors can base their actions and decisions on institutional factors, which is considered to build trust, particularly in the early stages of cooperation, even without any previous experience in dealing with other actors. These factors are legal provisions, corporate reputation, certification of exchange partners, and community norms, structures, and procedures. Legal provisions incorporate contracts, and although Bachmann and Inkpen consider contracts as tools that can merely refer to the law, the notion of institutional trust can be regarded as viewing contracts as having a framing effect on trust building.

In sum, this study adopts the framing perspective as the relationship between trust and contracts. This study also follows the complement perspective, because trust and contracts are largely interrelated and contracts are used in a multitude of functions. These perspectives enable this study to follow a logic in which contract clauses incorporating trust-building factors are viewed as influencing the social framework, thereby building trust. If the substitute perspective were adopted, trust building would need to be considered as taking place, regardless of the actual content of the contracts.

2 METHODOLOGY

2.1 Framework

The framework for this study consists of the trust-building factors pertaining to a cooperative multi-supplier network. The following section describes the network used in the development of the framework and the trust-building factors in question.

A cooperative multi-supplier network is a form of cooperation network which, according to Järvinen (2019), has four distinct attributes. First, it is an alliance consisting of a prime actor, usually the client, and other actors (e.g. suppliers). The suppliers may also have sub-contractors, but they connect to the network only through the suppliers. Thus, sub-contractors are viewed as not influencing the actions of a multi-supplier network. Second, each supplier has a designated task. Fulfilling this task usually requires them to cooperate with other suppliers despite the fact that they are potential competitors. Third, the suppliers are bound to the network by dyadic contracts made only with the prime actor. This is also the main reason dyadic contracts are used here as data for studying trust building within these networks. Fourth, the network entails various and changing relationships between suppliers: some cooperate and interact constantly, while others are barely conscious of each other's existence.

A framework of trust-building factors in this kind of network was formed because it is created in a setting that is coordinated and controlled by the same contracts used as the data for this study. A framework derived from Zaheer and Harris (2006) was also tested as a framework for analysis. However, it was deemed unusable for many reasons, some of which were closely related or overlapping concepts, while others

were incomparable. This made the coding process difficult, because the codes used were ambiguous (see Gheyle & Jacobs, 2017, for more detail).

Table 1 describes the framework of trust-building factors used and the kind of references sought from each factor in the analysis. The descriptions are based on the results of a previous study reported in Järvinen (2019). The framework divides the factors into two groups: structural and functional (see Figure 1). The structural group consists of two themes: system-level factors; and organisational and individual-level factors. The system-level factors do not result from or reside in a single organisation or individual, but are attributes of the system. They affect the actions of every supplier in the network. Besides system-level factors, a network also has individual and organisational-level factors that are intrinsic to specific actors. The functional group, on the other hand, incorporates the rules that define how the actors expect others to behave and conduct the exchange. It has one theme: the rules of interaction which include functions taking place within as well as between actors. Altogether, the framework contains nine sub-themes that act as elements sought in the data.

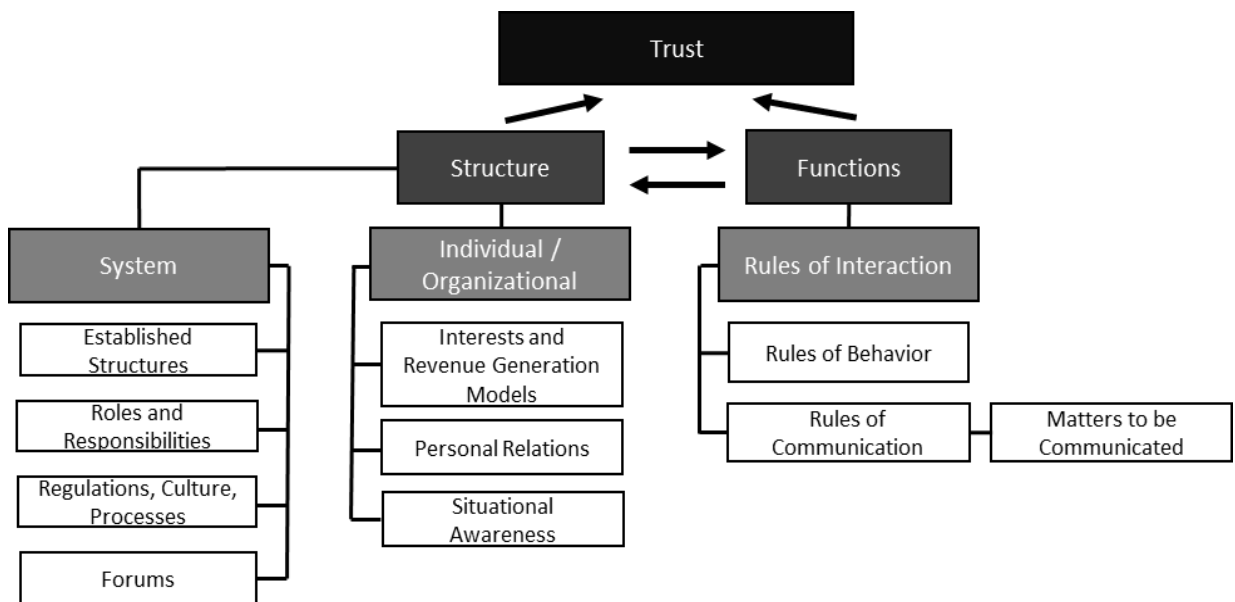


Figure 1: Framework of trust-building (Järvinen, 2019)

Table 1: The framework of trust-building factors

Theme	Sub-theme	Description	Characters searched in the analysis phase
System-level features	Established structures	Structures, processes, models, actors' opinions, etc. formed in previous encounters	References to previously developed models, processes, descriptions, etc., previous encounters, and their possible effects on current exchange
	Roles and responsibilities	The commonly agreed boundaries along which the actors operate and conduct the exchange	References to particular roles and responsibilities assigned to an actor, as well as processes that are to be followed in cooperation
	Regulations, culture, processes	The normative framework of behaviour	References to norms that are to be followed and processes that come as given to actors. Also, clauses considering the existence of such norms or attempts to influence the normative framework
	Forums of communication	The official and unofficial forums in which the actors communicate	References to where the communication takes place
Individual- and organisational-level features	Interests and revenue generation models	The self-centred goals and objectives as well as ways of increasing revenue	References to ways of earning revenue, as well as goals or objectives of an individual or organisational actor
	Personal relations	Entails the interpersonal relations within a network	References to the effects or considering the personal relations within an exchange
	Situational awareness	Actors' understanding of the status of the network	References to how the situational awareness is formed and distributed
Rules of interaction	Rules of behaviour	Expectations of actors' internal functions, e.g. planning or goal setting	References to how the actors should conduct themselves within a network
	Rules of communication & matters to be communicated	Matters related to the processes of interaction between the actors, e.g. information exchange, negotiation	References to the format and process of communication. Also, the kind of information to be shared

2.2 Data and sampling

The primary data for the study comprises eight contracts, all of which are between the FDF and its partners (see Table 2). The contracts consist of 845 pages. The purpose of the contracts is either to agree on partnership terms and conditions, or the delivery of certain capabilities and services. The sampling was conducted using the following steps. First, the contract database of the Finnish Defence Forces (FDF) was searched for contracts signed between 2010 and 2018. This timeframe was chosen to include contracts that are currently relevant for networks. The older contracts either expired or were deemed to represent a narrow field, or for example, a single service which was seen to potentially reduce the usability of the framework of analysis. The first step yielded 797 contracts. Second, the list of contracts was narrowed down based on the other party to the agreement. Contracts with defence contractors engaged in procurement projects were searched, and four representatives of the Finnish Defence Forces Logistics Command were consulted to identify the relevant contracts. The representatives consulted were people responsible for maintaining and administrating contracts in the FDF. This reduced the sample to 64 contracts. Third, the list was further reduced by the subject of the contract. Contracts influencing procurement projects conducted in a network were identified. This led to nine contracts. Finally, one contract was excluded because it contained sensitive information regarding a highly important project. This led to the final sample of eight contracts. The contracts are between companies that have been associated with the FDF for varying durations: some companies have been partners for decades; some are just starting their partnership. All the contracts are in Finnish, and translations are made by the authors.

Table 2. Contracts used in the study

Contract number	Other party to the agreement	Name of contract	Description	Year	Length	Confidential
1.	A large multi-national consulting firm	Contract for improvement services for PVSAP	A contract outlining the conditions and process for delivering improvements for the SAP ERP system for the FDF, and by which the FDF can procure services. It also states the agreement on the rights and obligations of the parties.	2016	10 pages	No
2.	A large multi-national consulting firm	General agreement for development support services	A contract for developing a central information system and its components. Outlines processes, roles, methods, testing, auditions, integration, etc.	2014	391 pages	Yes
3.	A large multi-national consulting firm	Contract for PVSAP maintenance and development services as well as related training services for 2017–2020	A contract outlining the conditions and process for delivering maintenance, development, and personnel training for the SAP ERP system for the FDF (PVSAP), and by which the FDF can procure these services. It also states the agreement on the rights and obligations of the parties.	2016	163 pages	Yes
4.	A large software company	Partnership contract	A contract for the mutual partnership by which services are produced. It defines the general terms that are to be followed in cooperation.	2018	61 pages	Yes
5.	A medium-size consulting firm	Contract for support and maintenance	A contract for mutual partnership by which services are produced. It defines the general terms that are to be followed in cooperation.	2018	73 pages	Yes
6.	A large defence contractor	Strategic partnership contract	A contract for the mutual strategic partnership by which services are produced. It defines the strategic partnership and the general terms that are to be followed in cooperation.	2016	113 pages	Yes
7.	A large defence contractor	Wartime economy contract	A contract to ensure the availability of maintenance and consultant services in different situations.	2014	11 pages	Yes
8.	A large defence contractor	General agreement (material procurement)	A contract to define a general framework for procurement projects between the FDF and the partner	2011	23 pages	No

2.3 Ethics

Two of the contracts are publicly available and six are classified. A permit for accessing and using classified contracts as data was requested and obtained from the Finnish Defence Forces Logistics Command. The confidentiality aspect was addressed in that the classified contracts were handled accordingly, and verbatim quotes were chosen carefully. In addition, the names of the companies are not disclosed, and only their size and line of business are included in Table 2. A short description on the subject of the contract is also provided.

2.4 Analysis

A qualitative approach was adopted in analysing the data. The method of analysis was theory-driven with a deductive approach, which entailed using the trust-building factors as codes (see Table 1 for the searched characteristics) (see Yin, 2009, for more detail). The analysis was performed in six steps. First, the elements, i.e. codes and searched characteristics were established from the framework described above. Second, a sentence was chosen as a recording unit (Weber, 1990). The data was studied, and sentences deemed to represent a code were highlighted. In this step, the marking of clauses referring to roles and responsibilities, as well as related processes, was abandoned quite swiftly, because, as suggested in the Introduction, the purpose of contracts is to define these aspects. Marking the clauses was deemed to lead to thousands of data points demonstrating only matters that were self-evident. Furthermore, clauses regarding the possibility of working in a multi-supplier network were also identified, using an inductive approach (Saunders, Lewis, & Thornhill, 2012). This was done to avoid potential misinterpretations, because the framework consisted of a multi-supplier network, while the contracts controlled mainly dyadic relations. Third, the data was scrutinised again, and the highlighted parts were updated, improved, and made more consistent. This yielded a total of 509 data points, i.e. sentences pertaining to a code derived from trust-building factors. Fourth, the data points were transferred to an Excel spreadsheet and arranged according to the factors. Fifth, a summary of each sub-theme was produced in a Word document. Sixth, the data was analysed by the second writer to check the reliability and reproducibility of the analysis (Weber, 1990).

3 FINDINGS

The description of the findings of this study begins with system-level features, followed by individual and organisational-level features. The findings on the rules of behaviour and communication are then explored. Finally, the findings briefly address the clauses regarding the multi-supplier network. Examples of quotes representing each element are compiled in Table 3.

Table 3: Examples of quotes pertaining to each element

Element	Examples of quotes (the contracts' number as presented in Table 2)
Established structures	<p>'Changing the current SAP environment into a DFPS environment requires changes to existing information structures. The requirement for change is due to the operating logic of the DFPS application' (2)</p> <p>'The plan will be updated to consider legacy structures when the contract is signed' (2)</p> <p>'The Client has, for internal operations, defined the planning and building of capacity in its own internal process descriptions. Based on these, the [actor] responsible for the system is responsible for planning and building the material capacity' (5, 6)</p> <p>'Software development is executed as described in the Supplier's software development process description' (8)</p>
Roles and responsibilities	<p>'The Buyer provides the Supplier with workspace and instruments' (1)</p> <p>'The Supplier is not responsible for the sufficiency of the Buyer's or third party's staff' (2)</p> <p>'The Supplier works in cooperation and negotiates with other suppliers and consultants if the client asks it to do so' (3)</p> <p>'A collaboration instrument specialist is responsible for the functioning of collaboration instruments' (8)</p>
Regulations, culture, processes	<p>'...the Finnish Law concerning the contract is also applied' (1)</p> <p>'Projects are also supported in following the common policies of the Finnish Defence Forces' (2)</p> <p>'The Supplier must follow the requirements of AQAP 2110 Edition No. 3 or newer when supplying the services...' (3)</p>
Forums of communication	<p>'Cooperation teams are of two levels: 1) Partnership teams, 2) Production teams' (4)</p> <p>'The Supplier commits to presenting a plan of production that addresses the production reservations made...' (7)</p> <p>'A party provides a decision in the other party's Engineering Change Proposal (ECP), Request for Discussion (RFD), and Request for Waiver (RFW)' (8)</p>
Interests and revenue generation models	<p>'The Supplier has, in its own trade, the right to use and sell products made with the Client's specification...' (4)</p> <p>'The Supplier [...] has the right to forbid the handover if the documents arguably contain special technology or inventions [...] that might lead to the Supplier losing its competitive advantage...' (4)</p> <p>'The Supplier also has the right to use Client's instruments and testing equipment in other projects than those made for the Client' (5)</p> <p>'The Supplier can, without this contract as a constraint, also produce services for third parties and use Client's instruments, testing equipment, instructions and specifications in production with the preconditions described in Appendix</p>

	D' (6)
Personal relations	N/A
Situational awareness	<p>'The Supplier is responsible for collecting data regarding the situation and statistics of the maintenance services, as well as for improving the monitoring of these services' (3)</p> <p>'The forming and monitoring of situational awareness within cooperation takes place in a separately defined process using a status report prepared for Cooperation groups' (5)</p> <p>'The Supplier and the Client maintain an index of the services and actions that are produced by [an actor] for the firm' (7)</p>
Rules of behaviour	<p>'The replacement person must have experience and expertise similar to that of the person being replaced' (1)</p> <p>'Both parties are to make the decisions necessary for carrying out the project without unnecessary delay' (2)</p> <p>'If the competence and experience of the new person are not as good as those of the original person, the Supplier is obligated to pay [a fine]' (3)</p> <p>'The personnel of the Supplier are not allowed to telework [...] in a space audited by the Finnish Defence Forces' (3)</p> <p>'The Supplier is neutral and impartial when producing support services for the Client's material procurement projects outlined in [this contract] and will not ally with new providers or suppliers in a way that certain suppliers are unjustifiably preferred' (4, 5, 6)</p>
Rules of communication & matters to be communicated	<p>'both parties are to name a contact person' (1)</p> <p>'the Client complies with confidentiality and publicity regulations that are enacted in legislation...' (3)</p> <p>'Suggestions for changes must be made in writing' (3)</p> <p>'If changes take place in the ownership of the Supplier, the Supplier must inform the Client without unnecessary delay' (6)</p> <p>'he contact person is also responsible for keeping the company's management informed about matters related to the wartime economy contract' (7)</p>

3.1 System-level

Contracts include a vast number of clauses pertaining to the influence of the system-level factors on cooperation. Most elements occur in numerous clauses, while references to established structures are scarce. In the analysed contracts, only a few data points fall under established structures. All the clauses can be understood to identify a previously developed process or product that also needs to be applied in current relationship.

The actors' roles and responsibilities appear to be comprehensively described, particularly on the individual level. Each individual (e.g. project manager, technical engineer, or chief of security) seems to have a very precise list of duties they must carry out. Similarly, the roles and responsibilities are extensively defined at the organisational level. Beyond this, however, it is difficult to assess whether the roles and responsibilities are sufficiently and clearly defined, because of the massive amount of potential data points. In another vein, the inductive approach in the analysis phase helped to identify clauses concerning the joining of a third party to the network. Concerning multilateral relations, the contracts consider the possibility of a third party joining the cooperation. Yet the contracts also state that a particular actor is not responsible for mistakes or delays caused by a third party. Hence, the prime actor is responsible for the whole network, while the suppliers' role is to participate and to undertake only their respective responsibilities.

The contracts make numerous references to different laws and regulations influencing the cooperation. The parties agree that it is Finnish Law that must be adhered to, that certain regulations affect the procurement processes, that all data is to be handled in accordance with the regulations, that work is to be done in accordance with certain standards, and so on. In other words, the legal framework in which the cooperation takes place is mapped in detail.

References to culture, on the other hand, are more difficult to find. None of the clauses directly discerns that a culture normatively influences the exchange. However, some of the clauses can be viewed as implying an effort to develop or transform a culture when they define the exchange in general and abstract terms. For example, a clause in Contract 4 states: 'With a partnership that is long-term and close, benefiting both the Client and the Supplier, a cooperative relationship is pursued [and the relationship] is based on interaction and openness, constant mutual development, transparency of operation, and trust, which fulfils the mutually agreed principles of cooperation.' Naturally, such clauses were primarily coded under the rules of behaviour, because they refer to expectations of partner behaviour. Nonetheless, the clauses can be viewed as potentially influencing trust because of their general aspirations. For example, if the actors act in a trustworthy manner because of the aspired nature of the exchange, the trust building can be viewed to take place via cultural elements supported by contracts.

A massive number of different forums are mentioned in the contracts. Cooperation takes place, and information is conveyed through contracts, plans, cooperation teams, meetings, requisition forms, laws, regulations, reports, orders, requests,

roadmaps, descriptions, documentation, and lists. Indeed, this study identified more than a hundred forums. When combining the forums with others that are likely to have similar content, such as a project plan as an integral part of project documentation, the final number amounts to between 60 and 90. Naturally, some of the forums are by-products of other forums. For example, a cooperation team may have a meeting that produces a report. However, these forums include different actors, have varying processes, and target different audiences, and are therefore considered to constitute different forums in this study.

3.2 Individual and organisational levels

The first of the elements are interests and revenue-generation models. Not a single data point directly expressed the interests of individuals or organisations. It can therefore be stated that the contracts do not directly consider the possible effects of diverging interests. Revenue-generation models, on the other hand, were present in the contracts. For example, several clauses deal with the terms for using the client's equipment in producing services for other parties. Such clauses enable the suppliers to increase their revenue in mutual agreement with the client. Moreover, some of the clauses also help to protect the actors' competitive advantages by limiting the information sharing with potential competitors.

Personal relations were another trust-building factor absent from the data. The contracts only state that a person can be removed from a post for legal or significant reasons such as sick leave or maternity leave. Hence, a glitch in interpersonal relations is insufficient reason for removing a person. Such reasons would need to include a lack of skill, wrongdoing, shortcomings, and so on. Moreover, the contracts rarely state a clear sanction if a person is unfit to work in the network. Only one analysed contract clearly states the penalties for engaging someone unfit to perform the work, and this was coded under the rules of behaviour.

Situational awareness, on the other hand, is often present in the data. The contracts determine how situational awareness should be formed and distributed among the cooperating parties. For the most part, it is formed in a cooperation team. These teams are responsible for gathering and combining information, as well as distributing it among the actors. The teams are composed of key personnel who in practice carry out the distribution of information. The contracts also define responsibilities related to creating and maintaining situational awareness. Similarly, the contracts define the kind of information that is relevant for situational awareness, but this will be covered later in the section about matters to be communicated.

3.3 Rules of behaviour and communication

The first of the functional factors is the rules of behaviour within the cooperation. The identification of the clauses relevant to this element was difficult because of the close proximity to the process description. Nonetheless, several clauses were identified, most of which deal with decision-making. For example, the rules state that all decisions should be made without unnecessary delay. Moreover, certain decisions call for unanimity or require special approval. For example, '[t]he Supplier is responsible for requesting an approval of the Client for significant changes' (5), or changes

concerning subcontractors cannot be made without the client's approval. Numerous contracts also contained provisions about how actors should conduct themselves on a general level, as previously observed. In other words, the actors should be transparent, behave trustworthily, work for a common objective, etc. Finally, the contracts also impose requirements for personnel working within the network, which affects who can be hired for a project. For example, if a person is removed from a project, their replacement must be equally qualified.

Interestingly, the contracts seldom explicitly define penalties that will ensue if these rules are not followed. In most cases, breaches of contract lead to discharge. These violations must be major in nature, which in turn implies that minor breaches may not be punishable. Only in certain cases is the contract violator required to pay a fine. In Contract 3, the parties have agreed that if a replacement is not as experienced and skilled as the person being replaced, the supplier is required to pay a fine. This is an exception; the other contracts do not contain similar clauses.

The final element under scrutiny was the rules of communication. In general, these deal with the format and process of communication. The contracts state that numerous functions should be done in writing, such as changes with regard to key personnel or contacts, plans for presenting products to a third party, and deviation or shortcomings vis-à-vis common objectives. In addition to the format, the contracts state who must inform whom concerning dealings within the network. For example, they stipulate that a point of contact must be named. These personnel are then to relay relevant information within their own organisations. Information security is also an important aspect affecting communication. The contracts determine the rules by which information security is integrated with cooperation. For example, Contract 8 states that classified information cannot be relayed to a third party.

Matters to be communicated are frequently referenced in the data. The contracts often state that the actors should immediately inform others when a phase is completed, or if anything unexpected occurs. In other words, actors should communicate all information related to the progress of the project, such as risks, personnel changes, impediments, delays, budget overshoots, the completion of a phase, inspection results, and so on. These aspects are also identified as being important for forming situational awareness. Matters affecting cooperation should also be communicated. However, only a few clauses were regarded as affecting cooperation, but not the project's progress. These matters relate to payment transactions and billing (e.g. price setting, incorrect invoicing).

3.4 Clauses on multi-supplier networks

The data was also inductively analysed to identify clauses referring to cooperation within a network. Some provisions were identified as affecting such cooperation. The contracts contain clauses determining cooperation in a multi-supplier network, as well as the actions of a third party. Most focus on disowning the mistakes of a third party. For example, '[t]he Supplier is responsible only for its own work and defects appearing in the product' (2). However, the contracts also include the possibility of working in a multi-supplier network. This is exhibited in clauses such as '[t]he Supplier collaborates and negotiates with other suppliers and consultants used

by the Client if the Client requests it' (2, 3). Similarly, Contracts 4 and 5 state that the supplier can function as a prime supplier in a larger project when necessary.

4 DISCUSSION

The purpose of the study was to explore how contracts support the forming of a favourable environment for trust building. The contracts were seen as the framework on which cooperation is built. Overall, the study enhances the understanding of contracts' relation to trust by focusing on the content of contracts. It moves beyond studying contract completeness (e.g. Luo, 2002), considering provisions to have either a controlling or coordinating role (e.g. Malhotra & Lumineau, 2011), or focusing on merely the legal implications. Instead, it deepens the understanding of relational capabilities of contracts, which was suggested as a venue for future research by Schepker et al. (2014). The following section focuses, first, briefly on how contracts support the trust-building environment, and second, on how they should be improved from this perspective. This section concludes with an assessment of managerial implications.

The positive aspects of contracts' support of trust building are well documented. The data of this study also shows that contracts deal with several aspects of trust building. For example, Faems et al. (2008, p. 1070) propose that 'a broad (narrow) contractual interface structure facilitates (hampers) joint sensemaking on unanticipated technological problems'. This study found numerous provisions on communication and the forming of situational awareness. These provisions can thus be regarded as supporting the environment for trust building, because they enable adaptation, which is important in unanticipated situations (Luo, 2002). However, contracts have shortcomings in supporting the environment for trust building. The contracts do not explicitly consider all aspects of cooperation which, in turn, may lead to confusion in interaction or even to unwanted behaviour.

Clarity concerning roles and responsibilities has a positive effect on contracts, as precision in this respect is a fundamental requirement for cooperation. Mayer and Argyres (2004) found that contracting supports trust by clarifying the actors' roles and responsibilities. The contracts can therefore be viewed as supporting the environment, because they appear to state the roles and responsibilities. A second positive aspect to be considered is the rules of communication. Communication has been previously seen as an important factor in trust building (Mayer & Argyres, 2004), and contracts have previously been observed to deepen inter-partner communication (Reuer & Ariño, 2007) and influence the frequency, content, and timeliness of communication (Schilke & Lumineau, 2018). The rules identified here were highly detailed in what should be communicated and how. Not only do they focus on the communication of problems; they also focus on how news of success should be relayed/announced. This is important from the perspective of trust building. The actors should be able to form an opinion on the ability of other actors to carry out their duties (Zaheer & Harris, 2006), and this cannot be achieved if problems constantly come as a surprise. However, if problems can be foreseen and their impact mitigated, it is likely to build trust.

The contracts also considered the possibility of a third party joining the alliance. To this end, contracts can render the roles and responsibilities that are more adaptive to the needs of the multi-supplier network. Without such an enabler, the actors would probably encounter difficulties in cooperating with third parties because, for example, they have to exercise caution when giving out information. Thus, trust building would become more difficult if the actors withheld information because they are uncertain about whether the information would unwittingly enhance the position of others.

However, contracts also give rise to problems when it comes to the trust-building environment. The study identified five aspects that could be improved: establishing fewer forums of communication; encompassing personal relations and potentially deviating interests; providing more communication via avenues other than key personnel; carefully considering the need for restrictive confidentiality clauses; and using contracts to pursue a certain culture. These aspects are explored more closely in the following section. The aspects are highlighted because they can be viewed as factors that influence communication, which is often seen as highly important in cooperation (e.g. Klein Woolthuis et al., 2005). The study also found that established structures and their effects were almost non-existent in the contracts. However, the established structures were not included in the aspects for improvement, because the methodology used cannot precisely determine why the structures are missing.

The media of communication, i.e. forums, have been previously identified to have an effect on trust. For instance, face-to-face interaction generates more trust compared to online or phone communication (Fulmer & Gelfand, 2012). The study identified a large number of forums where communication takes place. If a network has dozens of different forums in which information is relayed and cooperation takes place, the actors may have difficulties in coping with an information overload. An individual's performance is increased by the information he or she receives, but will start to decline after a certain point (Eppler & Mengis, 2004). As a consequence, too many forums may lead to a plethora of information which, in turn, will lead to a decline in performance, which then leads to a decrease in trust. Naturally, this study cannot determine at which stage the number of forums will start to affect performance but this is nevertheless a factor that should be considered when planning cooperation and contracts.

Personal relations and the actors' interests are important factors effecting the trust-building environment. For example, trust is deeper when the actors have a similar identity, shared values, and common goals (Lewicki & Bunker, 1995) when interacting. However, the contracts do not seem to take into account that some actors' have different goals, or that people may not get along. This is expressed in the rules for changing personnel, which only allow alterations if a person resigns or lacks the necessary skills. The contracts should therefore be improved so that they include a process by which personnel changes can be made due to personal disagreements. This would lead to enhanced trust building when, for example, people become better acquainted and start to open up more readily.

The contracts indicate that interorganisational communication should be carried out via key personnel. This is another issue that might affect the trust-building environment if the individuals do not communicate adequately, for example, by distributing information within and between organisations, or by informing others regarding potential problems. Moreover, it can increase segregation between different parts of the network if people do not get to know each other. On the other hand, communication cannot be unregulated, because information must be coherent, reliable, and targeted. Thus, the contracts should be developed to foster interaction between actors while sensibly regulating the flow of information.

Confidentiality and information security clauses have functionalities similar to communication via key personnel. For example, partners can prohibit an information exchange to protect their competitive advantage. These clauses are highly important but can also hinder communication, resulting in different parts of the network becoming segregated, for example. The clauses can also be viewed as having an overarching function, since they also affect other aspects. For example, if an actor is not allowed to cooperate with a third party because of confidentiality issues, this may affect the culture, situational awareness, and formation of personal relations. Hence, from the perspective of trust building, confidentiality should be taken into account in a way that safeguards important functions, products, and processes, but does not unnecessarily complicate collaboration within a network.

Culture was an elusive element. It was difficult to identify any clauses distinctively related to its existence. Although culture cannot be seen as something that is actively recognised and promoted, some clauses can be viewed as exerting an indirect impact on the trust-building environment. For example, clauses stating how actions should be taken and whose procedures should be followed may help to define a culture which eventually begins to normatively influence the exchange. Furthermore, '[t]rust and contracting can take different forms, something that is largely dependent on the institutional and cultural context' (Vlaar, 2013, p. 83). Defining this context in contracts might also support the environment, because it could form a common understanding on numerous matters within the cooperation, such as the goals of the alliance (Schilke & Lumineau, 2018).

For managerial implications, this study suggests focusing on clauses potentially hindering communication. Contracts greatly influence the communication processes, and managers therefore need to carefully draft these clauses to avoid problems with the flow and withholding of information, delays in communication, etc. Managers must aim for transparent networks and open communication, while balancing the need to protect confidential information. This may be achieved with clauses clearly defining what information should be relayed to particular organisations, teams, or individuals. The second proposed implication is a focus on the utilisation of established structures. If the actors have previously cooperated, the current exchange can benefit from previous relations (Zaheer & Harris, 2006). Managers can therefore support the trust-building environment by incorporating processes and structures already familiar to the actors.

4.1 Limitations and future research

The main limitation of this study concerns the ability to determine the quality of the contracts. In this vein, the study was unable to determine, for example, whether the roles and responsibilities are clear and reasonable. Determining quality would require a long-term study focusing on how personnel regard the content of the contracts, whether there is a need to update them, and whether there is a need to agree on matters through other means. Furthermore, determining the clarity of the roles and responsibilities would probably require a study focusing solely on this field. A qualitative study would be an interesting direction for the future, because it might also shed light on the foundation on which cooperation is built.

The second limitation is the framework used in the analysis. The framework incorporated roles and responsibilities that could not be completely coded because of the sheer number of potential data points. Similarly, processes within the network and the actors' roles within them were extensively described in the contracts, and coding every sentence was seen to eventually lead to a loosening of the study's focus. Employing a framework focusing on a more limited group of trust-building factors (e.g. the normative aspects or actors' behaviour) would therefore probably lead to intriguing results for that group.

Third, contracts may evolve over time (e.g. Mayer & Argyres, 2004), and time is an important factor in trust building. Time is important because trust building can be viewed as a self-reinforcing process, in which positive experiences increase trust. They can even lead to confirmation bias, in which the trustors seek evidence of trustworthiness in others while ignoring and discounting evidence to the contrary (Möllering & Sydow, 2019). This was not covered by the data, because of the sampling. Thus, a study focusing on the changes made to contracts and the reasons for them would also yield relevant information on the trust-building environment. Fourth, the purpose or focus of the contract is also a relevant factor (Schilke & Lamineau, 2018). In this study, the sample contained contracts relevant to multi-supplier networks. A differently sampled study would therefore probably shed light on the trust-building environment in a different setting, such as a dyadic buyer-supplier exchange.

Finally, an interesting subject for research would involve the quantity of information within a network. Studying the distribution of information in different parts of the network might yield two advantages: first, a better understanding of how information sharing and the rules of communication should be formed for individuals, teams, and organisations to have an optimal amount of information at their disposal; and second, the organisations could balance between communication via key personnel and unhindered communication. For example, if it is apparent that communication via key personnel leaves some part of the network without the required information, the actors could update their instructions accordingly.

5 CONCLUSION

The aim of this study was to enhance the understanding of the relationship between trust and contracts. The study deepened the understanding concerning the kinds of clauses contracts incorporated, and how they might influence the trust-building environment. Understanding improved, because the study explored the factors on a more practical rather than a general level. For example, when it is stated how communication should be organised, the actors can direct their efforts accordingly. The study also highlighted the absence of certain trust-building factors, such as personal relations or cultural influences. Including these factors in contract clauses might enhance the interorganisational trust-building environment. The results should be relevant for different kinds of networks. Hence, personnel and managers responsible for drafting contracts can apply the results in their work. This will lead to better functioning networks if the contracts optimally support trust building.

REFERENCES

- Bachmann, R., & Inkpen, A. C. (2011). Understanding Institutional-Based Trust Building Processes in Inter-organizational Relationship. *Organization Studies*, 32(2), 281–301.
- Blomqvist, K., Hurmelinna, P., & Seppänen, R. (2005). Playing the collaboration game right – balancing trust and contracting. *Technovation*, 25, 497–504.
- Dietz, G., Gillespie, N., & Chao, G. T. (2010). Unraveling the complexities of trust and culture. In M. N. Saunders, D. Skinner, G. Dietz, N. Gillespie, & R. L. Lewicki (Eds.), *Organizational Trust: A Cultural Perspective* (pp. 3–41). New York: Cambridge University Press.
- Doz, Y. L., & Hamel, G. (1998). *Alliance Advantage: The Art of Creating Value through Partnering*. Boston, MA: Harvard Business School Press.
- Eppler, M. J., & Mengis, J. (2004). A Framework for Information Overload Research in Organizations: Insights from Organization Science Accounting, Marketing, MIS, and Related Disciplines. *The information society* 20.5, 20(5), 325–344.
- Faems, D., Janssens, M., Madhok, A., & van Looy, B. (2008). Towards an Integrative Perspective on Alliance Governance: Connecting Contract Design, Trust Dynamics, and Contract Application. *Academy of Management Journal*, 51(6), 1053–1078.
- Ferrin, D. L., & Gillespie, N. (2010). Trust differences across national–societal cultures: much to do, or much ado about nothing? In M. N. Saunders, D. Skinner, G. Dietz, N. Gillespie, & R. J. Lewicki (Eds.), *Organizational Trust: A Cultural Perspective* (pp. 42–86). Cambridge: Cambridge University Press.

Fulmer, C. A., & Gelfand, M. J. (2012). At What Level (and in Whom) We Trust: Trust Across Multiple Organizational Levels. *Journal of Management*, 38(4), 1167–1230.

Gheyle, N., & Jacobs, T. (2017). Content Analysis: a short overview. Internal research note.

Gulati, R., Dialdin, D. A., & Wang, L. (2002). Organizational networks. In J. A. Baum (Ed.), *The Blackwell Companion to Organizations* (pp. 281–303). Oxford: Blackwell.

Järvinen, M. (2019). Trust-building in a cooperative multi-supplier network. *Journal of Public Procurement*, 19(2), 146–164.

Klein Woolthuis, R., Hillebrand, B., & Nooteboom, B. (2005). Trust, Contract and Relationship Development. *Organization Studies*, 26(6), 813–840.

Krishnan, R., Martin, X., & Noordhaven, N. G. (2006, October). When Does Trust Matter to Alliance Performance? *The Academy of Management Journal*, 49(5), 894–917.

Laumann, E. O., Galaskiewicz, J., & Marsden, P. V. (1978). Community structure as interorganizational linkages. *Annual Review of Sociology*, 4(1), 455–484.

Lewicki, R. J., & Bunker, B. B. (1995). Trust in Relationships: A Model of Development and Decline. In B. B. Bunker, & J. Z. Rubin (Eds.), *Conflict, Cooperation and Justice* (pp. 133–173). San Francisco: Jossey-Bass.

Lewicki, R. J., Tomlinson, E. C., & Gillespie, N. (2006). Models of Interpersonal Trust Development: Theoretical Approaches, Empirical Evidence, and Future Directions. *Journal of Management*, 32(6), 991–1022.

Lumineau, F. (2017). How contracts influence trust and distrust. *Journal of Management*, 43(5), 1553–1577.

Lumineau, F., & Malhotra, D. (2011). Shadow of the contract: How contract structure shapes inter-firm dispute resolution. *Strategic Management Journal*, 32(5), 532–555.

Luo, Y. (2002). Contract, cooperation, and performance in international joint ventures. *Strategic Management Journal*, 23, 903–919.

Malhotra, D., & Lumineau, F. (2011). Trust and collaboration in the aftermath of conflict: the effects of contract structure. *Academy of Management Journal*, 54(5), 981–998.

Malhotra, D., & Murnighan, J. (2002). The Effects of Contracts on Interpersonal Trust. *Administrative Science Quarterly*, 47(3), 534–559.

- Mayer, K. J., & Argyres, N. S. (2004). Learning to Contract: Evidence from the Personal Computer Industry. *Organization Science*, 15(4), 394–410.
- Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An Integrative Model of Organizational Trust. *The Academy of Management Review*, 20(3), 709–734.
- McKnight, D., & Chervany, N. L. (2001). Trust and Distrust Definitions: One Bite at a Time. In R. Falcone, M. Singh, & Y.-H. Tan (Eds.), *Trust in Cyber-societies: Lecture Notes in Computer Science*, vol 2246 (pp. 27–54). Berlin, Heidelberg: Springer.
- Möllering, G., & Sydow, J. (2019). Trust Trap? Self-Reinforcing Processes in the Constitution of Inter-organizational Trust. In M. Sasaki (Ed.), *Trust in Contemporary Society*. Leiden, Boston: Brill.
- Perroni, V., Zaheer, A., & McEvily, B. (2003). Free to Be Trusted? Organizational Constraints on Trust in Boundary Spanners. *Organization Science*, 14(4), 422–439.
- Poppo, L., & Zenger, T. (2002). Do Formal Contracts and Relational Governance Function as Substitutes or Complements? *Strategic Management Journal*, 23, 707–725.
- Reuer, J. J., & Ariño, A. (2007). Strategic alliance contracts: Dimensions and determinants of contractual complexity. *Strategic Management Journal*, 28(3), 313–330.
- Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Not So Different After All: A Cross-Discipline View of Trust. *Academy of Management Review*, 23(3), 393–404.
- Saunders, M., Lewis, P., & Thornhill, A. (2012). *Research Methods of Business Students* (6th ed.). Harlow: Pearson.
- Schepker, D. J., Oh, W.-Y., Martynov, A., & Poppo, L. (2014). The Many Futures of Contracts: Moving Beyond Structure and Safeguarding to Coordination and Adaptation. *Journal of Management*, 40(1), 193–225.
- Schilke, O., & Lumineau, F. (2018). The double-edged effect of contracts on alliance performance. *Journal of Management*, 44(7), 2827–2858.
- Vlaar, P. W. (2013). Trust and contracts: together forever, never apart? In R. Bachmann, & A. Zaheer (Eds.), *Handbook of Advances in Trust Research* (pp. 82–105). Cheltenham, UK; Northampton, MA: Edward Elgar Publishing.
- Weber, R. P. (1990). *Basic Content Analysis* (2nd ed.). Newbury Park: Sage.
- Wehmeyer, K., Riemer, K., & Schneider, B. (2001). Roles and Trust in Interorganizational Systems. *Proceedings of the Eight Research Symposium on Emerging Electronic Markets (RSEEM 01)*. Maastricht.

Yin, R. K. (2009). *Case Study Research: Design and Methods* (4th ed.). Thousand Oaks, CA: Sage.

Zaheer, A., & Harris, J. (2006). Interorganizational Trust. In O. Shenkar, & J. J. Reuer, *Handbook of Strategic Alliance* (pp. 169–197). Thousand Oakes, CA: SAGE.

Zaheer, A., McEvily, B., & Perrone, V. (1998). Does Trust Matter? Exploring the Effects of Interorganizational and Interpersonal Trust on Performance. *Organization Science*, 9(2), 141–159.

APPENDIX 3. Routinisation in a Cooperative Network between the Military and the Private Sector

Accepted for publishing in Intl. Journal of Procurement Management. Inderscience retains the copyright of the article.

ABSTRACT

Routines have been regarded as a critical factor in organisations' success. However, the forming of routines, or routinisation, has received less attention. In particular, the routinisation in cooperative networks between the military and the private sector has not been covered. Hence, the aim of this study is to describe what the actors in a cooperative network are trying to routinise and how they are trying to accomplish that. The study found that actors try to routinise processes and structures within an emerging network. They do this via functions (e.g. communication) and constraints (e.g. contracts, regulations). The routinisation is also supported or hindered by matters related to time, framework, actors, and actions within the network. The study finally proposes that actors in a cooperative network between the military and the private sector should focus on four aspects for routinisation to be successful: communication, interpretation, understanding the framework, and stability.

Keywords: *routines, routinisation, cooperation, military, private sector, public procurement, networks*

1 INTRODUCTION

Routines are a vital part of networks and organisations. They facilitate and improve communication, information gathering, decision-making, coordination of activities, production of goods, and overall governance (Bapuji et al., 2019; Feldman et al., 2019; Zollo et al., 2002). They can also give a competitive edge (Parmigiani and Howard-Grenville, 2011), support adaptation by reducing the rate of change (Yi et al., 2016), help work out conflicts between organisational goals (Salvato and Rerup, 2018), or even bring novelty when applied in unconventional ways (Lavie et al., 2019). Moreover, coordinating routines effectively has been viewed to be a capability of strategic importance in itself (Steinberger and Jung, 2019). Routines can lead to both rigidity and change within an organisation (Parmigiani and Howard-Grenville, 2011; Pentland and Feldman, 2005). They have even 'been regarded as the primary reason why organisations accomplish much of what they do' (Feldman and Pentland, 2003, p. 94). The benefits of routines are well studied. However, the forming of routines, or routinisation, has received less attention (see e.g. Quinn &

Hiebl, 2018). Especially the research on routinisation in the cooperation between the military and the private sector is non-existing. The aim of this paper is to bridge this gap by describing what the actors in this kind of cooperation are trying to routinise and how they are trying to accomplish that. The aim is undertaken by interviewing personnel operating in the defence sector, namely, the networks between the Finnish Defence Forces (FDF) and its private sector partners. The purpose of this study is to improve the understanding of the routinisation process because ‘[t]he question of how individual routines emerge and change over time remains a central concern for routine dynamics’ (Feldman et al., 2016, p. 510).

1.1 Routines

Routine is a multifaceted concept. Routines appear to be stable when viewed from a distance but closer observation reveals them to be constantly changing (Goh and Pentland, 2019; Pentland and Feldman, 2005). Empirical evidence even demonstrates that the enactment of routines is rather flexible and open-ended (Wenzel et al., 2020). Routines can be referred to as recurrent behaviour patterns, rules or procedures, or dispositions (Becker, 2008). The content of the patterns has been referred to as action, activity, behaviour, or interaction (Becker, 2004). Routines are not simple monoliths but ‘consist of both abstract understandings and specific performances’ (Pentland and Feldman 2005, p. 794). ‘Routines are almost never carried out by humans alone: they are carried out by sociomaterial ensembles of actants [(human and nonhuman actors)] that include artefacts’ (Pentland et al., 2012, p. 1486; Sele and Grand, 2016). Routines are generative in nature meaning they have the seeds to their own continuity and change (Parmigiani and Howard-Grenville, 2011; Pentland and Feldman, 2008). Furthermore, it is the actual behaviour patterns that constitute a routine rather than the managerially desired patterns (Becker et al., 2005). Similarly, Hodgson (2008, p. 19) points out that ‘routines are not behaviour; they are stored behavioural capacities or capabilities’ because the ability to perform a routine action exists even if the routine is not performed at a given time. This means that the patterns of action have to be regarded as potential to perform rather than the actual performance of the patterns. These few examples show that routines have numerous aspects, and they can be examined from multiple different perspectives and in various settings. The following maps these aspects, perspectives and settings, first, by defining the concept, second, by viewing how routines have been studied, and finally, by exploring how routines are formed and how they evolve.

The word ‘routine’ is often used to refer to repeated sequences in behaviour (Hodgson, 2008) where recurrence is a key characteristic (Becker, 2004). However, according to Hodgson (2008), a consensus has now emerged that habits refer to individual action patterns and routines refer to groups or organisations. He argues that routines are not merely habits shared by many individuals but ‘organisational meta-habits, existing on a substrate of habituated individuals in a social structure’ (p. 18). Thus, routines and individuals are interlinked although they exist on different levels. This link enables studying routines via individuals, because individuals can recognise patterns of action and talk about them as a routine (Pentland and Feldman, 2005).

The most widely used definition of routines is that they are ‘a repetitive, recognizable pattern of interdependent actions, involving multiple actors’ (Feldman and Pentland, 2003, p. 96). They ‘are recognizable when one action can be used to predict the likelihood of the next action’ (Pentland et al., 2012, p. 1491). Routines are also predictable and regular by nature (Nelson and Winter, 1982), must have recognizable components (Annosi et al., 2018), and are omnipresent in functioning of organisations (Sele and Grand, 2016). According to Levitt and March (1988, p. 320), they not only include ‘forms, rules, procedures, conventions, strategies, and technologies around which organizations are constructed and through which they operate [but also] the structure of beliefs, frameworks, paradigms, codes, cultures, and knowledge that buttress, elaborate, and contradict the formal routine’. Therefore, a routine is a pattern that in itself entails the boundaries and guidelines that constrain and enable performance (Pentland and Feldman, 2008). In this study, routines are understood as established, repetitive, recognizable, and predictable patterns along which multiple actors perform organisational actions.

Routines are context-specific and often regarded to be embedded into the organisation and its structure (Becker, 2004). This creates multiple interrelations. This is because ‘routinized behavior is constrained and enabled by the cognitive structures of individuals, such as scripts, as well as the physical and social structures of the organization. At the same time, it must allow for the individual effort and agency that gives rise to the particular pattern we observe’ (Pentland and Reuter, 1994, p. 489). Changes in one part of the routine may lead to unexpected consequences in other parts of the organisation (Yi et al., 2016).

The extant literature has approached routines from different perspectives. Scholars have attempted to identify the micro-foundations of routines via patterns of action (e.g. paying an invoice), or attributes of individual human actors (e.g. motivations, incentives, or psychological properties) (Pentland et al., 2012). Routines have also been studied as deposits of tacit knowledge (Becker, 2004; Nelson and Winter, 1982), or as sources of stability and change within organisations (e.g. Feldman, 2003). Moreover, the creation, reorientation or change of routines has been theorised (e.g. Bucher and Langley, 2016; Cohendet and Simon, 2016), and their benefits have been mapped. Routines have also been studied in numerous settings. Most of the studies focus on private sector. For instance, Deken et al. (2016) studied routines’ relation to novelty in an international automotive company, and Bertels et al. (2016) studied the role of culture in the oil industry. Other studies include, for example, Pentland and Feldman (2008) studying routines in two outreach programs of a university, and Yi et al. (2016) studied routines in a simulation. This study is based on a setting where actors from the private sector cooperate with actors from the defence sector that, to the best of the author’s knowledge, has not been studied previously. It differs from most studies because it covers an interorganisational network. This network and its attributes are discussed later. The study focuses above all to the creation and change of routines within an interorganisational setting of the military and the private sector. It is an important setting to study because it can yield important information to be applied in procurement projects, civil military cooperation (CIMIC), coping with a state of emergency, etc.

The study of routines has been done using three different approaches. According to Pentland and Feldman (2005), routines can be studied by treating them as black boxes, examining one aspect of a routine, or examining the interactions between several aspects. They argue that considering routines as black boxes enables the study of inputs and outputs of the routine without having to measure or map the internal structure of the routine. Examining the aspects of the routines, on the other hand, means studying the internal structure. The internal structure consists of three aspects: ostensive, performative, and related artefacts (Pentland and Feldman, 2005). The ostensive aspect is the idea or the routine in principle (e.g. a musical score), performative is the enactment or actual performance (e.g. performance of the score), and artefacts are the physical manifestation of the routines but have little influence on the actual performance (e.g. a book containing notes for the score) (Feldman and Pentland, 2003; Parmigiani and Howard-Grenville, 2011; Pentland and Feldman, 2005). These three aspects are interrelated and their interplay is mediated by both human and nonhuman actors, i.e. actants (Sele and Grand, 2016). Routines' internal dynamics has been conceptualised as a recursive relation between ostensive and performative aspects (Deken et al., 2016; Feldman et al., 2016).

This study adopts the black box approach. Treating routines as black boxes is justified if research questions consider descriptions, predictions, or comparison concerning the routine as a whole (Pentland and Feldman, 2005). Therefore, the black box approach is adopted because the study aims to describe the routines and routinisation as a whole rather than to describe the forming of the internal aspects of routines. However, the internal structure cannot be completely disregarded. This is because the study is done by interviewing individuals whose observations might include or be affected by the inner workings of routines. Thus, to a degree, the existence of the internal structure of routines has to be taken into account.

1.2 Routinisation

Routinisation is about converting individual and collective memory and knowledge into routines (Lazarcic, 2008). It is also the extent to which organisational processes are stable and repetitive at a given time (Lazarcic, 2008; Wohlgemuth and Wenzel, 2016). Furthermore, routinisation refers to automaticity in behaviour or when performing a certain task (Ohly et al., 2006; Yoon and Choi, 2019). In these definitions, routinisation is referred to either as a process, an attribute or a quality. This study focuses on the evolution of routines so the process perspective is warranted. Thus, routinisation is understood here as an organisational process of developing and evolving routines based on knowledge.

Routinisation takes place in many ways. It can be knowledgeably designing and re-designing routines (Bapuji et al., 2019). Routines can be copied, replicated, adapted, or transferred (Parmigiani and Howard-Grenville, 2011; Hague et al., 2017). However, they are never merely repeated but always go through an active, creative, and emergent process of routine replication (Aroles and McLean, 2016). For instance, Davies et al. (2018) found that routines are created and replicated through four sequential steps of envisioning, experimenting, entrenching, and enacting. Evidence from field studies and laboratory experiments also suggest that repetition is vital in the forming of routines (Pentland et al., 2012). Routines can diffuse to other organisations via personnel moving between organisations or franchising, or they can be

changed by people if the routine does not achieve the intended or aspired outcome (Parmigiani and Howard-Grenville, 2011). Routinisation happens also via learning. Learning processes occur at individual, team, and organisational levels and influence the selection, variation and retention of routines (Annosi et al., 2018). Routines also evolve in response to performance feedback if the performance is not satisfactory in a given environment (Pavlov and Bourne, 2011). Moreover, routines evolve through the interaction of individuals' ideas of the routines (Pavlov and Bourne, 2011), or when people coordinate and communicate in the processes of collective learning and so create new routines (Annosi et al., 2018). Routines can be endogenously changed by the internal structures and dynamics of the routines (Yi et al., 2016). This is because routines are not automatic but effortful accomplishments where actors strive to produce the same pattern of action (Deken et al., 2016; Feldman et al., 2016; Pentland and Reuter, 1994).

The ways of routinisation have three commonalities. First, routines are always based on something. They never appear from scratch but rather as a result of individuals' knowledge and experience sharing. This eventually leads to organisational learning and the improvement of routines. Second, all of the above-mentioned ways of routinisation require time; routines cannot be absent in a moment and appear the next. Routinisation can, however, take place over a wide variety of time scales, from very fast (minutes or seconds) to rather long (weeks, months) (Pentland and Feldman, 2008). Third, routinisation also requires stability. Bapuji et al. (2019, p. 6) argue that '[s]table patterns of interdependent actions provide a learning foundation for routine participants, enabling them to develop insight into their own role in the routine, and establish expectations regarding the actions of other participants'. If patterns of action change constantly, routines cannot exist.

2 METHODOLOGY

The primary data for the study was gathered via semi-structured interviews. Semi-structured interviews draw out subjective views and understand the phenomenon from the perspective of the respondents (Brinkmann and Kvale, 2015). This was the chosen method of data collection because routines are heavily subjective phenomena observable by individuals. On the other hand, during the planning of the study, observations were also considered as a data collection method. However, this was rejected because the network was seen as too vast and complex for observations to actually provide other than arbitrary results.

The final sample amounted to 15 interviews, including nine employees of the Finnish Defence Forces (FDF) and eight representatives of companies cooperating with the FDF. Two of the interviews had two respondents present at the same time due to time constraints, while other interviews had a single respondent. The interviewing of two respondents simultaneously was not seen to influence the results because in both cases the respondents were from the same company and expressed similar views. The process also included two pilot interviews, which were not included in the final sample. Each respondent was interviewed once. The interviewees were chosen based on their experience, background, and current duties. The main criteria were that they had experience in operating in a network between the FDF and its

partners. The network was understood as a cooperative partnership with the FDF and one or more companies, e.g. a partnership handling military logistics, or a procurement project. The interviewees were chosen from multiple positions on different hierarchical levels. Their backgrounds were varied; some had worked for decades in different positions on both the private and the public sector while others have only recently begun operating within a cooperative network. Nonetheless, all respondents had experience in operating in a network consisting of actors in both the military and the private sector.

The data gathering process included the following steps. The interviews were conducted during two military exercises dealing with military logistics. The first exercise took place in late October and early November 2018 and the second in January 2019. The researcher's participation was confirmed via a point-of-contact a year before. In the first exercise, the respondents from the private sector were interviewed while the representatives of the FDF were interviewed during the second exercise. The exercises were chosen because they enabled easy access to a large pool of potential interviewees (ca. 60–80 people). This then enabled choosing enough suitable respondents to saturate the data. The interviews lasted 27 minutes on average and happened in conference rooms with only the researcher and the respondent(s) present. The interviewees received only a little information on the study beforehand. Most respondents were contacted a few hours before the interview while a few were contacted only minutes before. This was only when the situation allowed the interview to begin immediately. Two respondents were called the day before to verify timetable. The respondents were told the purpose and the ethical code before the interviews but they did not, for instance, receive the questions beforehand. All of the respondents asked to participate agreed.

The participants were told the following ethical code. They were promised that everything said was confidential. The participants were also told that the data would be handled according to regulations, analysed and reported anonymously, and the data would not be given to a third party for research purposes. However, for the reasons of reporting the findings, a possibility of separating between respondents of the FDF and the private sector was reserved. Finally, a permission to record was asked both before the interview and on tape.

The interviews themselves were conducted with the following steps. At the beginning of the interview, the purpose and the ethical code were repeated. The respondents were requested to answer the questions from their personal point of view to ensure the comparability of the data. They were also requested to refrain from going into detail about the substance and purpose of the cooperation networks to avoid issues of confidentiality. In other words, they were asked to only consider relations and routines without going into detail on, for example, what exact capability is supposed to be created by the network. After the introduction phase, the interviews began. The questions were devised to progress from simple to more abstract. They were designed not to require detailed knowledge of how the routines are performed because individuals may not be able to provide such a description (Bucher and Langley, 2016). The questions did not change during the process apart from minor clarification in wording and such. The first questions were about the background and experiences of the respondent. Then they progressed into what processes they

have observed to be established into routines and how they feel routinisation has been attempted. At this point, a broad definition of a routine was also given. However, the word 'routine' was seldom used because, in the pilot interviews, it was seen to refer to a highly established behaviour and mature organisations in the Finnish language. Thus, a different expression was used, which enabled focusing on the early stages of networks and the routines in them. The expression would translate into 'standardised behaviour or action'. Finally, the interviews were transcribed verbatim. The quotes presented below have been translated by the author.

The analysis was performed using data-driven content analysis with an inductive approach. The process included five steps. First, statements were searched from the transcriptions and combined using an Excel sheet. This yielded 347 points of data, which were color-coded to identify the respondent. Second, the points of data were combined under themes of 'What is routinised', 'How to routinise', 'What supports the routinisation', and 'What hinders the routinisation' to represent the topic of the statement. Third, the statements under the themes were then coded into 37 codes altogether, such as 'Training' (under 'How') or 'Individuals and personal relations' (under 'What supports'). Fourth, the codes were iteratively combined into 11 sub-themes. Finally, these sub-themes were then used to build a narrative on what the actors in an emerging network are trying to routinise and how they are trying to accomplish that.

3 RESULTS

This section describes routinisation within a cooperation network. This is done via the four themes and the 11 sub-themes identified from the interview data (Figure 1). The first theme of 'What is routinised' divides into sub-themes of processes, as well as structures and roles. The second theme of 'How to routinise' divides into functions and constraints. The third theme of 'Supporting factors' divides into four sub-themes, namely actor and action-related factors, time and experience, and framework. Finally, the 'Hindering factors' divide into actor and action-related factors, and framework.

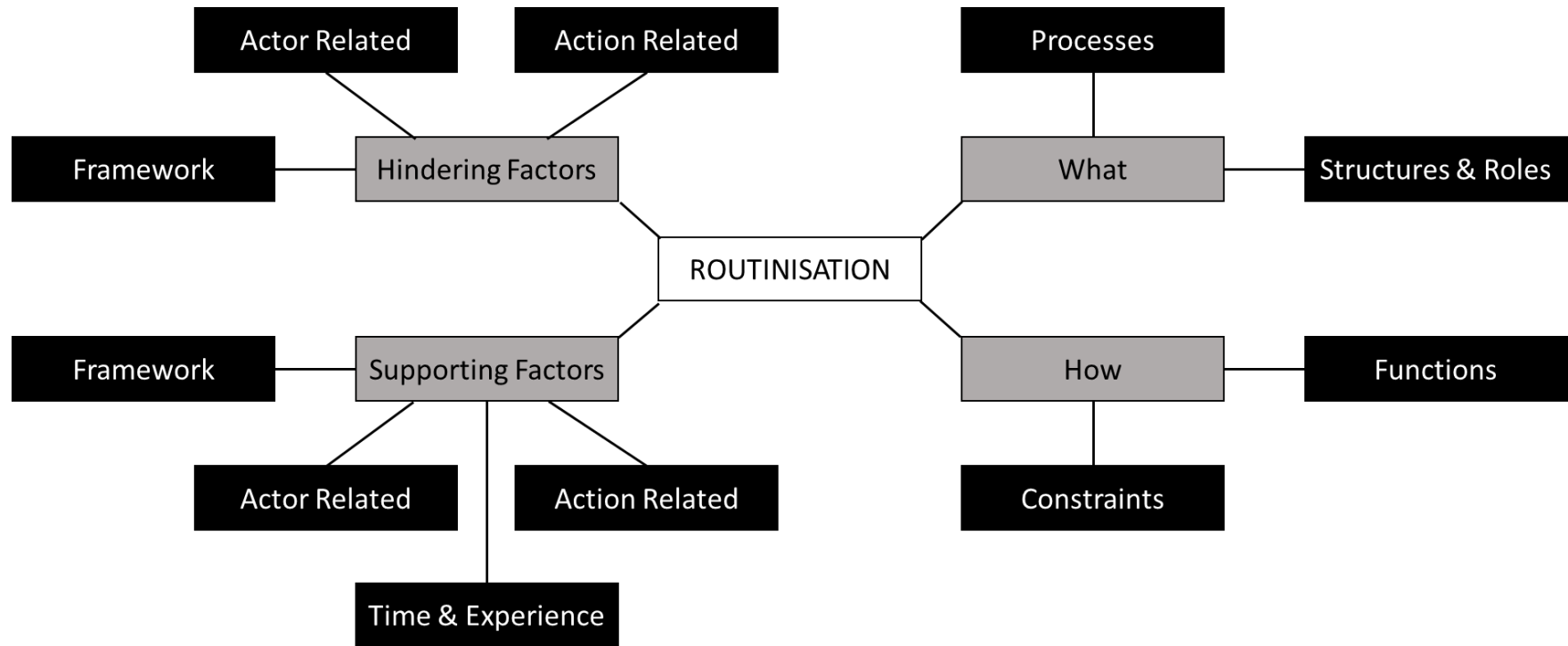


Figure 1: Framework of routinisation

Table 1: Examples of quotes pertaining to each sub-theme

Sub-theme	Examples of quotes (MIL = representative of the military. PS = representative of the private sector)
Routinising processes	<p>‘we have tried to find certain types of routinised models dealing with communication so that there would be clarity [...] on how communication should be conducted’ (PS)</p> <p>‘leadership models, mediums, operational security, taking into account information security’ (MIL)</p>
Routinising structures and roles	<p>‘drawing a line on what concerns who’ (PS)</p> <p>‘the commercial side has to be agreed on’ (MIL)</p>
Routinisation via functions	<p>‘both parties have to train [the new person]’ (PS)</p> <p>‘meetings are held and there the issues in the field are discussed’ (PS)</p> <p>‘contracts as such do not do anything but the actions taken based on those contracts and the actions of these groups is where the actual job is done’ (MIL)</p>
Routinisation via constraints	<p>‘when big organisations cooperate, there has to strict policies’ (PS)</p> <p>‘we have standardised ways of guiding partnerships and cooperating in them’ (MIL)</p> <p>‘contents of a contract and its timeliness are central questions’ (MIL)</p>
Framework as a supporting factor	<p>‘cooperation is labelled by mutual motivation, although it is not easy to make this kind of cooperation to work’ (PS)</p> <p>‘some companies have a positive attitude towards national defence which makes it easier to implement changes within the organisation’ (MM)</p> <p>‘although people change positions, there is still norms and same contract templates’ (MIL)</p> <p>‘dealings are based on commercial treaties’ (PS)</p>
Actor related elements as supporting factors	<p>‘partnership is based on how people and companies want to make it happen.’ (MIL)</p> <p>‘cooperation has [...] increased Finnish Defence Forces’ understanding of our business and ways of working’ (PS)</p> <p>‘agile progression of matters is currently based on the fact that individuals have become acquainted with one another’ (PS)</p>
Action related elements as supporting factor	<p>‘we would be very grateful if...we would know in advance what is resources will be required of us and when so that we can plan accordingly’ (PS)</p> <p>‘routines follow a very similar cycle every year’ (PS)</p> <p>‘our leadership model is more robust’ (MIL)</p>

Time and experience as a supporting factor	<p>‘experience is the best tool [in dealing with difficulties]’ (MIL)</p> <p>‘successes have brought willingness to other actors as well’ (MIL)</p> <p>‘partnerships are tested annually’ (MIL)</p>
Framework as a hindering factor	<p>‘we have become used to different kind of operating culture in the business environment’ (PS)</p> <p>‘the same operating model which is used in conscripts service [...] is not applicable in this case when private companies are taking part voluntarily’ (MIL)</p>
Actor related elements as hindering factors	<p>‘there may have been bad chemistry between specialists’ (MIL)</p> <p>‘and of course, they have the model imposed by corporate law according which they have to operate’ (MIL)</p>
Action related elements as hindering factor	<p>‘the danger is that the information is not conveyed to those who are using the services or other way around’ (MIL)</p> <p>‘left hand does not know what the right hand is doing which is the risk of stove-piping’ (MIL)</p>

3.1 What is routinised

Actors within a network desire to routinise processes as well as structures and roles. Processes deal with the everyday functioning of the network. For example, billing, decision-making, inspection processes, technical and commercial activities, HR functions, training, production, and sanctions were mentioned. Communication and cooperation were also matters frequently mentioned. As one representative of the FDF said, 'we have tried to establish certain models of communication so that everyone would be on the same page as to how the communication should be carried out'. Furthermore, these processes included the sharing of situational awareness, interactions, meetings, informing third parties, and announcements. Another issue to frequently emerge in the data is security. Every respondent mentioned it at some stage in the interview. They all agreed that processes regarding security matters, confidentiality, and secure communication are vital.

Structures and roles relate to the framework of the network. They include issues related to the actors' functional role within the network (e.g. integrator, decision-maker, producer, supplier, point of contact), and the structure of the network (e.g. hierarchical position of different groups or organisations). For instance, one private sector respondent stated that 'a line needs to be drawn on what is who's responsibility', and another said 'the commercial side of cooperation has to be agreed on'. Clarity in all these matters was seen as paramount to the success of the network because it was seen to enable the network to function in practice. For example, in a case of uncertainty on who is allowed to use certain services, the actors need to focus resources on resolving the issue, which, again, is resources taken from other functions.

3.2 How to routinise

Routinisation can be done via functions or constraints. Functions deal with actions taken within the network that lead to learning. They are mostly interorganisational functions but also include organisational functions. They can take place *ex ante* or *ex post*. Interorganisational functions are above all communication on how things are supposed to be done. On the other hand, they also include working and exercising together, or inspections which are not necessarily related merely to communication.

Communication is critical in routinisation. It can be done, for example, by contracting, negotiations, in meetings, unofficially, or via points of contact. Communication is important in developing the ostensive and performative aspects. As one representative of the FDF stated, 'a contract as such does not provide anything but it is the functions and groups where the actual work is done'. Similarly, another respondent of the FDF said that 'guidelines need be put into practice'. These statements imply that without communication the performative aspects cannot evolve.

In addition to communication, other functions were identified as well. Most of these can be attributed to take place mainly within an organisation. First of these is training. It was seen as a critical part of routinisation because it is a way to transfer information to personnel. The information needs to be transferred because it conveys the ostensive part of routines. Training can be done, for example, via workshops,

exercises, or familiarisation within the organisation. However, there is also an inter-organisational aspect to training. Numerous respondents felt that the training of individuals should be done not only by the employer but also in other organisations of the network. This was viewed to introduce the individual to other organisations and their ways of conducting operations. By transferring this kind of information, the routinisation process can be eased because the individual gets a more comprehensive picture of the different ostensive and performative aspects of routines. Training is also important in learning from mistakes that enables actors to learn what is not acceptable within the network. Naturally, training is a function that can be attributed to be also an interorganisational function because the substance trained are derived from the network. However, it is viewed here mainly as an intraorganisational function because it usually takes place within an organisation.

Feedback and inspections were mentioned several times during the interviews. These both are important in routinisation because actors need to receive information on their performance to know if they need to change or evolve their routines. Some respondents felt that actors should strive to constantly give and receive feedback for the routines to develop. Other respondents also mentioned inspections as an important part of gathering feedback. For instance, an FDF representative stated that ‘we inspect with our security advisors that things are done exactly according to regulations and established models’. If there are irregularities, the knowledge of this enables the actors to act appropriately.

Constraints are the second sub-theme under how to routinise. They regard matters influencing routinisation by setting boundaries along which patterns of action need to develop. Although constraints can be viewed as products of actions, they were separated from the functions sub-theme because constraints lead to or even force certain functions. Two of the most frequently mentioned factors within this sub-theme were contracts and guidance from above or outside. The contracts were seen as the starting point or foundation of cooperation. For instance, respondents from the FDF stated that ‘everything is based on contracts’, and ‘a written contract is needed’. The contracts obligate the actors to operate and behave in a certain manner that, in turn, was seen to create stability. Guidance from above or outside was also seen as an important factor. This includes factors from legislation and organisational regulations to actors on higher hierarchical levels. Legislation was mentioned a few times to regulate actions, e.g. the handling of confidential material, or classifying documents. Organisational regulations, on the other hand, were mentioned frequently. Organisations have their own regulations on all kinds of matters, such as safety and security, communication, or commercial functions. These were seen to greatly influence the forming of routines. Finally, actors on higher hierarchical levels can set boundaries to operations. For instance, firms can steer projects, corporate strategy can influence behaviour, or ministries can steer public entities. Certain legacy structures or functions can also be included under guidance from outside. Few interviewees mentioned that previous encounters and the processes between the actors also influenced the subsequent cooperation. This was also seen to apply when a person is transferred between organisations. Finally, a calendar or a timetable influences routinisation by setting constraints on when certain patterns of action should occur. In practice, this can mean, as one representative of the FDF stated, that ‘the planning process of the partners is [...] done using the yearly planning cy-

cle of the FDF'. Thus, the routines need to adapt to a certain timeframe and the actors need to plan accordingly.

3.3 Factors supporting routinisation

Routinisation is supported by factors dividing into four sub-themes. First are the actor-related factors. These include above all attributes related to individuals and their relations which were seen to ease the routinisation process. Many respondents mentioned individual qualities (e.g. skills and know-how) and personal relations as helpful in the routinisation process. They felt that familiarity eases overall interactions and communication. On the other hand, some also stressed that while personal relations help routinisation, they cannot be the only way of interaction. In addition to substance related to individuals, a few organisational attributes were also identified. For example, small companies were seen as agile in adopting new routines, client organisations need to be consistent, and a customer-oriented mindset mitigates problems.

Action-related factors focus on leadership and communication within the network. Successful communication can help routinisation. Many respondents also stressed the importance of clear, honest, and direct communication. It involves, for example, distributing situational awareness (e.g. communicating the stage of a project), exchanging information on all matters related to cooperation, and familiarising with other actors. Communication was also seen to lead to good relations which 'ease contacting [actors] and [...] dealing with matters' (a private sector representative). Leadership is important because it creates predictability, helps planning, and mitigates self-seeking. It involves a lot of communication but here it is separated from communication because it was viewed to centre on certain actors or roles. It was often viewed as something that the FDF should execute because it is the client to many networks. For instance, one representative of the private sector stated, 'we would be grateful [...] if we knew in advance what resources will be needed and when so we could plan ahead'. Leadership may also support routinisation if the leader defines and communicates clear roles, processes, timetables, instructions, etc. Finally, as described previously in the section 'how to routinise', planning and operating according to a clear timetable was seen as something creating predictability. Thus, it was also categorised under matters supporting routinisation because it supports the forming of patterns of action.

Routinisation can also be supported by the framework in which the cooperation takes place. This sub-theme includes matters related to culture, attitudes, opinions, and the way the actors conduct business and cooperation. The cultural aspect was evident in the statements by the private sector representatives: 'working with the [FDF] is an honour for us' or 'the cooperation is labelled by mutual motivation'. Multiple interviewees also mentioned, for example, the attitude towards other actors, setting converging goals, patriotism, similar organisational or security cultures, willingness to work together, and the understanding of other organisations as factors helping routinisation. In particular, mutual benefits were seen as something that helps routinisation tremendously because it mitigates resistance. Mutually beneficial situations can be created, for instance, by making it possible for all the actors to learn something; actors were seen to be more prone to adopt new patterns of action

if a new process saves resources, communication technology improves operational security, or other operating models can be adopted.

Time and experience were identified as the final sub-theme in the supporting factors. The respondents saw this as a highly important factor influencing routinisation. They mentioned that a long relationship enables open and equal interaction, experience makes reacting to problems easier, working together reveals challenges, and common successes help cooperation. Thus, time and experience deepen and develop the above-mentioned supporting factors as well.

3.4 Factors hindering routinisation

The factors identified to hinder routinisation are of similar sub-themes to the factors supporting routinisation. The actor-related factors, first, entail changes in personnel and matters bound to individuals. The respondents felt that numerous functions are highly dependent on individuals, especially in an emerging network. Changes in personnel could mean that even an organisational pattern of action might change if a key person is transferred or resigns. The difficulties were seen to take place due to insufficient competence that follows. Similarly, personal relations can hinder routinisation in a case of 'bad chemistry between specialists' (representative of the FDF). Second, the routinisation can be hindered by organisational factors. These incorporate organisational goals and the reason for companies' existence, as well as existing organisational processes. For instance, a corporation has to make profit for stockholders, and therefore, it may not be able to take certain actions. Respondents felt that differences in organisational goals have to be taken into account when trying to form patterns of action. Additionally, as one representative of the private sector said, 'both sides have their processes and coordinating them is not a simple task'. Thus, the existing processes may hinder the routinisation if they are incompatible.

The action-related factors deal with communication and leadership. These can hinder routinisation if the actors do not share information both within and between organisations. For instance, the respondents mentioned jealousy of information, forming of stove-pipes, conflicting instructions, and systems' inability to communicate between one another to hinder routinisation. As one representative of the FDF mentioned: 'the danger is that information is not conveyed to those who are using the services'. In other words, if the information does not transfer to the actor needing it, routines are not formed.

Finally, the hindering factors related to the framework attribute to culture. Many respondents felt that different cultures between the private and public sectors had a hindering effect on routinisation. For example, actors operating in a defence organisation are used to rapid changes while the actors on the private sector expect certain stability. Similarly, the attitude towards security matters was often seen as a difference between the defence organisation and the private sector. Both of these examples may influence the routinisation process because a different culture might need to be adopted before certain patterns of action can establish.

4 DISCUSSION

The aim of this study was to describe what the actors in a cooperation between the military and the private sector are trying to routinise and how they are trying to accomplish that. The study shows that the actors are trying to routinise processes and structures within a cooperation network. Routinisation is done via certain functions and constraints. The functions are actions leading to learning while the constraints are boundaries inside which patterns of action need to occur. These concepts are, thus, related because functions take place within a set of constraints. However, the structure alone is not sufficient because, as suggested by Pentland and Reuter (1994, p. 504), ‘structure defines the set of possibilities but not the particular sequence we observe’. Therefore, the routine needs also the sequence or the performative aspects. Furthermore, processes and structures also become routinised by the influence of constraints affecting the network. Functions and constraints are supported and hindered by certain factors. This section explores routinisation, first, via framework in which routinisation happen and, second, via functions identified to affect routinisation.

The framework needs to be stable for routinisation to happen because routines tend to improve over time (Pentland et al., 2012). This is because routinisation is above all a process (Becker, 2004), and a process cannot occur in a single moment. In addition, learning is fundamental to routinisation and it cannot take place if the framework changes constantly (Bapuji et al., 2019). Thus, this study follows Bapuji et al. (2019) and proposes that the framework has to be stable and predictable enough for time to have an effect on the patterns of action. For instance, actors need to commit themselves to mutually beneficial long-term goals, or fulfil their appointed roles (e.g. act as integrator or supplier) without attempting to increase their share of business. This way the framework stays intact and, for its part, enables routinisation.

Actors also need to understand the framework in which the cooperation takes place. This can be viewed to be in line with previous research because ‘shared understanding among participants facilitates enacting of routines’ (Deken et al., 2016, p. 661). Moreover, participants may have different understandings of the ostensive patterns of routines (Deken et al., 2016) which affects the enactment of the routines. Understanding also includes the understanding of the background of actors because routines do not appear from nothing but are evolved from other routines (Becker, 2004). Understanding can be regarded as the product of learning, and learning has been often regarded as an important part of routinisation (Pentland et al., 2012). As stated above, routines can be copied, replicated, adapted, diffused, or transferred (Parmigiani and Howard-Grenville, 2011). All of these imply a degree of continuity in routines that can be observed and exploited by the actors. However, this requires them to understand the framework if they desire to find the routines that are able to function in the new network as well. Furthermore, cultural understanding can be argued to have importance because people’s actions are informed by culture (Bertels et al., 2016). For example, if actors do not identify differing security cultures, routinisation in this sector is bound to be more difficult. In contrast, by identifying similarities in organisational cultures, actors can enhance the routinisation process by exploiting these similarities. In a way, they can mix and match available routines to suit their needs (Yi et al., 2016).

Routinisation requires multiple functions performed by the actors. The First of these is communication. This is a similar notion to Dittrich et al. (2016) who argue that talking enables actors to collectively reflect on the routine and find new ways of enacting it. Communication proves to be critical in routinisation because it enables the actors to share and reflect on both the ostensive aspects as well as the performative aspects of routines. It also enables learning processes by providing information on matters such as performance of the network, expectations of actors, or guidelines to be followed. The Second function is interpretation. In a network, multiple actors need to interpret information conveyed via communication, such as the situation, actions, constraints, goals, etc. The actors need to interpret information similarly enough for cooperation to be successful. As a respondent of the Finnish Defence Forces put it in the interview, 'guidelines need be put into practice'. This cannot happen without the interpretation on how the actors expect it to take place. Communication is also a critical function in this because otherwise the actors are likely to make decisions on insufficient information. In other words, interpretation is required for the performative aspects of the routine to emerge. It is needed for the evolution of routines. As Pavlov and Bourne (2011) proposed, routines evolve when the actors feel that they do not provide the expected results or performances. This feeling can only be attained by communicating the results and the interpretation of feedback. The third function is regularly exercising and working together because those provide regularity to cooperation. This notion is linked to previous studies finding the frequency of repetition to be important in the creation of regularity (Becker, 2004). Moreover, regular interaction provides feedback on how the routines need to be improved and lead to intraorganisational processes that improve patterns of action.

In sum, this study proposes that four aspects are crucial for routinisation in the cooperation between the military and civilian actors: communication, interpretation, understanding of the framework, and stability. The findings appear to be consistent with Feldman et al. (2016, p. 510) arguing that routine formation is not 'based solely on psychology or economic incentives of the individual actors'. Rather, routine formation is processual by nature demanding certain interactions and frameworks to be present for routines to emerge. As managerial implications for both the private sector and the military, this study proposes focusing on the four aspects identified. By focusing on these aspects, personnel and organisation can cooperate effectively and efficiently in various situations.

4.1 Limitations and future research

The main limitation of this study in the generalisability of the findings is the focus on actors within the defence sector. This might lead to respondents emphasising certain functions that are relevant in their field. For instance, security concerns and confidentiality were present in numerous interviews. This might not be the case if the respondents represented a different sector. The second limitation is the black box approach. For example, routinisation occur on multiple levels. The respondents in this study mentioned several levels on which the ostensive and performative aspects are formed, e.g. personnel interpreting the guidelines, corporate entities setting goals, points of contact communicating, or firms negotiating terms. Thus, the black box approach provides one perspective to routines but leaves out, for example, the

possible idiosyncrasies associated with actors on different levels. Additionally, the black box approach only enabled this study to explore the possible implications the factors had on the ostensive and performative aspects of routines. For example, the study can propose that the creation and evolution of ostensive and performative aspects involve interpretation but it cannot conclude how it precisely takes place. The third limitation is the use of the interview data. For example, some respondents focused on the social dimension of routines while others emphasised the cognitive dimension. Although this was not seen as an issue because it did not produce outliers, it still could emphasise certain aspects of routinisation over others. Thus, a multi-method approach would be warranted to tackle potential issues of bias.

The study proposes three venues for academics to explore in the future. First, looking inside the black box of routine in cooperative networks between the military and the private sector. This would provide insight into, for instance, how the ostensive and performative aspects evolve in the early stages of cooperation, or whether artefacts are seen to affect routinisation differently than in more established networks. Second, focusing on comparing routines *ex ante* to routines *ex post* would possibly yield important information on what aspects of routines are transferred to cooperation networks. This might, in turn, provide insight into what kind of understanding actors need to identify potentially beneficial routines that can be adopted. Finally, studying routinisation in cooperation networks could provide crucial insight into how networks could become more productive. After all, networks are a contemporary way of doing things and making them productive is highly important.

5 CONCLUSION

The purpose of this study was to enhance the understanding of a routinisation process. The understanding was enhanced as the study described what is routinised in a cooperative network and how it is done. For example, communication, interpretation, stability, and understanding were identified as crucial aspects in the routinisation process. The results are applicable particularly in a network operating in a defence sector but should also be applicable to networks in other fields as well. Hence, personnel, teams, and organisations operating in a network can apply the results in their work.

REFERENCES

- Annosi, M. C., Martini, A., Brunetta, F. & Marchegiani, L. (2018). Learning in an agile setting: A multilevel research study on the evolution of organizational routines. *Journal of Business Research*.
- Aroles, J. & McLean, C. (2016). Rethinking stability and change in the study of organizational routines: Difference and repetition in a newspaper-printing factory. *Organization Science*, 27(3), pp. 535–550.

- Bapuji, H., Hora, M., Saeed, A. & Turner, S. (2019). How Understanding-Based Redesign Influences the Pattern of Actions and Effectiveness of Routines. *Journal of Management*, 45(5), pp 2132–2162.
- Becker, M. C. (2004). Organizational routines: a review of the literature. *Industrial and Corporate Change*, 13(4), pp. 643–677.
- Becker, M. C. (2008). The past, present and future of organizational routines: introduction to the Handbook of Organizational Routines. In: M. C. Becker, ed. *Handbook of Organizational Routines*. Cheltenham, UK and Northampton, MA, USA: Edward Elgar, pp. 3–14.
- Becker, M., Lazaric, N., Nelson, R. & Winter, S. G. (2005). Applying Organizational Routines in understanding organizational change. *Industrial and Corporate Change*, 14(5), pp. 775–791.
- Bertels, S., Howard-Grenville, J. & Pek, S. (2016). Cultural molding, shieldin and shoring at Oilco: The role of culture in the integration of routines. *Organization Science*, 27(3), pp. 573–593.
- Brinkmann, S. & Kvale, S. (2015). *Interviews: Learning the Craft of Qualitative Research Interviewing*. 3rd ed. Thousand Oakes, CA: SAGE.
- Bucher, S. & Langley, A. (2016). The Interplay of Reflective and Experimental Spaces in Interrupting and Reorienting Routine Dynamics. *Organization Science*, 27(3), pp. 594–613.
- Cohendet, P. S. & Simon, L. O. (2016). Always playable: Recombining routines for creative efficiency at Ubisoft Montreal’s video game studio. *Organization Science*, 27(3), pp. 614–632.
- Davies, A., Frederiksen, L., Cacciatori, E. & Hartmann, A. (2018). The long and winding road: Routine creation and replication in multi-site organizations. *Research Policy*, 47(8), pp. 1403–1417.
- Deken, F., Carlile, P. R., Berends, H. & Lauche, K. (2016). Generating Novelty Through Interdependent Routines: A Process Model of Routine Work. *Organization Science*, 27(3), pp. 659–677.
- Dittrich, K., Guérard, S. & Seidl, D. (2016). Talking About Routines: The Role of Reflective Talk in Routine Change. *Organization Science*, 27(3), pp. 678–697.
- Dosi, G., Faillo, M. & Marengo, L. (2003). Organizational capabilities, patterns of knowledge accumulation and governance structures in business firms: An introduction. *LEM Working Paper Series*, Volume 2003/11.
- Feldman, M., D’Adderio, L., Dittrich, K. & Jarzabkowski, P. (2019). Routine dynamics in action: replication and transformation. *Research in the Sociology of Organizations*, Volume 61, pp. 1–10.

- Feldman, M. S. (2003). A performative perspective on stability and change in organizational routines. *Industrial and corporate change*, 12(4), pp. 727–752.
- Feldman, M. S. & Pentland, B. T. (2003). Reconceptualizing Organizational Routines as a Source of Flexibility and Change. *Administrative Science Quarterly*, 48(1), pp. 94–118.
- Feldman, M. S., Pentland, B. T., D'Adderio, L. & Lazaric, N. (2016). Beyond Routines as Things: Introduction to the Special Issue on Routine Dynamics. *Organization Science*, 27(3), pp. 505–513.
- Goh, K. T. & Pentland, B. T. (2019). From actions to paths to patterning: Toward a dynamic theory of patterning in routines. *Academy of Management Journal*, 62(6), pp. 1901–1929.
- Hague, S. N., Østerlund, C. S. & Fagan, L. M. (2017). What's Ideal? A case study exploring handoff routines in practice. *Journal of Biomedical Informatics*, Volume 65, pp. 159–167.
- Hodgson, G. M. (2008). The concept of a routine. In: M. C. Becker, ed. *Handbook of Organizational Routines*. Cheltenham, UK and Northampton, MA, USA: Edward Elgar, pp. 15–30.
- Kremser, W. & Schreyögg, G. (2016). The Dynamics of Interrelated Routines: Introducing the Cluster Level. *Organization Science*, 27(3), pp. 698–721.
- Lavie, I., Steiner, A. & Sfard, A. (2019). Routines we live by: From ritual to exploration. *Educational Studies in Mathematics*, 101(2), pp. 153–176.
- Lazaric, N. (2008). Routines and routinization: an exploration of some micro-cognitive foundations. In: M. C. Becker, ed. *Handbook of Organizational Routines*. Cheltenham, UK and Northampton, MA, USA: Edward Elgar, pp. 205–227.
- Levitt, B. & March, J. G. (1988). Organizational Learning. *Annual Review of Sociology*, 14(1), pp. 319–338.
- Nelson, R. R. & Winter, S. G. (1982). *An Evolutionary Theory of Economic Change*. Cambridge, Massachusetts, and London, England: The Belknap Press of Harvard University Press.
- Ohly, S., Sonnentag, S. & Pluntke, F. (2006). Routinization, work characteristics and their relationships with creative and proactive behaviors. *Journal of Organizational Behavior*, Volume 27, pp. 257–279.
- Parmigiani, A. & Howard-Grenville, J. (2011). Routines Revisited: Exploring the Capabilities and Practice Perspectives. *The Academy of Management Annals*, 5(1), pp. 413–453.

- Pavlov, A. & Bourne, M. (2011). Explaining the effects of performance measurement on performance: An organizational routines perspective. *International Journal of Operations & Production Management*, 31(1), pp. 101–122.
- Pentland, B. T. & Feldman, M. S. (2005). Organizational routines as an unit of analysis. *Industrial and Corporate Change*, 14(5), pp. 793–815.
- Pentland, B. T. & Feldman, M. S. (2008). Designing routines: On the folly of designing artifacts while hoping for patterns of action. *Information and Organization*, Volume 18, pp. 235–250.
- Pentland, B. T., Feldman, M. S., Becker, M. C. & Liu, P. (2012). Dynamics of Organizational Routines: A Generative Model. *Journal of Management Studies*, 49(8), pp. 1484–1508.
- Pentland, B. T. & Reuter, H. H. (1994). Organizational Routines as Grammars of Action. *Administrative Science Quarterly*, Volume 39, pp. 484–510.
- Quinn, M. & Hiebl, M. R. (2018). Management accounting routines: a framework on their foundations. *Qualitative Research in Accounting & Management*, Volume 15, pp. 535–562.
- Salvato, C. & Rerup, C. (2018). Routine Regulation: Balancing Conflicting Goals in Organizational Routines. *Administrative Science Quarterly*, 63(1), pp. 170–209.
- Sele, K. & Grand, S. (2016). Unpacking the Dynamics of Ecologies of Routines: Mediators and Their Generative Effects in Routine Interactions. *Organization Science*, 27(3), pp. 722–738.
- Steinberger, T. & Jung, J. Y. (2019). Designing the microstructure of routines. *Journal of Organization Design*, 8(1), pp. 1–18.
- Wenzel, M., Danner-Schröder, A. & Spee, A. P. (2020). Dynamic Capabilities? Unleashing Their Dynamics through a Practice Perspective on Organizational Routines. *Journal of Management Inquiry*, pp. 1–12.
- Wohlgemuth, V. & Wenzel, M. (2016). Dynamic capabilities and routinization. *Journal of Business Research*, Volume 69, pp. 1944–1948.
- Yi, S., Knudsen, T. & Becker, M. C. (2016). Inertia in Routines: A Hidden Source of Organizational Variation. *Organizational Science*, 27(3), pp. 782–800.
- Yoon, H. J. & Choi, J. N. (2019). To routinize or not to routinize? Employee task routinization, situational motivation, and creativity. *Social Behavior and Personality: An international journal*, 47(3), pp. 1–11.
- Zollo, M., Reuer, J. J. & Singh, H. (2002). Interorganizational Routines and Performance in Strategic Alliances. *Organization Science*, 13(6), pp. 701–713.

APPENDIX 4. TRUST AND ROUTINES AS INDICATORS OF THE FUTURE

Accepted for publishing in National Defence University, Department of Leadership and military Pedagogy, Series 3: Working Papers

ABSTRACT

Organisations need predictability to be able to operate in today's complex environment. I argue here that predicting requires indicators of future events, and that trust and routines can serve as these kinds of indicators. The indicators need to focus on relevant subjects in order to predict with accuracy. I also argue that in order for trust and routines to effectively indicate a future event, they need to be studied from a process ontological point of view instead of a subject ontological perspective.

Keywords: *trust, routines, predictability, complexity*

1 INTRODUCTION

Complexity and interconnectivity are useful in describing and conceptualising the contemporary world. Complexity is used in myriad contexts, such as physics, business, computation, mathematics, physiology, organisational studies, and so forth. Complexity is a characteristic of behaviour in a system. A complex system is understood here as “a system in which large networks of components with no central control and simple rules of operation give rise to complex behavior, sophisticated information processing, and adaptation via learning or evolution” (Mitchell, 2009, p. 13). Such systems have been extensively addressed in numerous settings and environments during the last few decades. However, one aspect of complexity has received less attention, namely predictability in complex systems. Papers focusing on this subject usually deal with natural phenomena such as earthquakes, droughts, climate change or medicine (Sarewitz & Pielke Jr, 1999). In organisational studies, however, the study of predictability has been limited to the prediction of effectiveness and productivity (e.g. Born, Hendrix, & Pate, 2017; Dikmen, Birgonul, & Kiziltas, 2005), or planning in a chaotic environment (Cartwright, 1991). Hence, predictability should be studied more extensively because examining it only in some instances does not lead to comprehensive understanding.

Scholars have been divided as to whether behaviour can be effectively predicted. Cilliers (2000), for example, argues that complex systems in particular cannot be predicted effectively because they always have parts that are unknowable and that produce emergent consequences. In another vein, scholars such as Jalonen and Lönnqvist (2011) argue that events always have similarities that can be used to predict

other events, at least to some extent. This essay follows the latter reasoning because predicting is not an either/or question, but rather a question of accuracy. Therefore, predictions can be made even in complex systems if relevant information is produced because it increases the accuracy despite the fact that behaviour in complex systems cannot be predicted by definition. I will focus here above all on the question of what constitutes relevant information for predictability. By relevant information, I mean information on factors that can causally influence the complex system, and thereby indicate future events.

Predictability is beneficial for organisations. For example, it allows them to focus on leanness rather than agility (Weber, 2002), can act as a potential guide for decision-making, or even allow for manipulation of the natural world via technology (Sarewitz & Pielke Jr, 1999). Tsoukas and Chia (2002) even argue that an organisation exists to make human behaviour more predictable in an ever-mutating environment. However, as the saying goes, it is difficult to make predictions, especially about the future. Usually, predictions are based on knowledge of a prior state (see Brown, 2014) or sufficient information on the rules governing actors' behaviour (Cartwright, 1991). In this regard, predictability could be increased by measures such as increasing knowledge about the actors, actions, and environment involved, for example. The problem here lies in the difficulty in determining a future trajectory by referring to the past or the present (Brown, 2014) because of vast amounts of information and numerous variables. The second problem concerns predicting an organisation's response to exogenous pressure. Organisations respond to endogenous conditions via a pattern that is dependent on the organisation's self-understanding, but an organisation's response to exogenous pressure is complex, multi-layered and evolving (Tsoukas & Chia, 2002). It is particularly difficult to predict occurrences at a global level beyond the immediate future even if most of the governing rules are known (Cartwright, 1991). However, actors need to prepare for the future in some way. They can, for example, increase resilience where the impacts of unforeseen contingencies are mitigated, or they can attempt planning. In order to make plans, create strategies, set goals, and so forth, actors need to be able to predict the future at least to some extent. I will propose in this essay that actors should focus on factors potentially indicating the future occurrences. The factors proposed here are trust and routines because they provide relevant information to predict the future more accurately. Hence, the aim of this essay is to explore the potential use of trust and routines as indicators of future events and, in so doing, to further the discussion on how trust and routines are understood as concepts.

I adopt a process ontological approach, which allows for discussion on how trust and routines contribute to the unfolding of future events. An event is understood as "a 'one-off' occurrence with a definite beginning and end; it has a completion, typically lasts a short time (relative to the temporal scale of the context in which it is described), and can even be instantaneous", while "a process is open-ended, continues indefinitely, need never reach a state of completion, may be extended over a long period, possibly involving a variety of different activities" (Galton, 2016, p. 4). Although these concepts are ontologically different, the process ontological approach is viable because it "does not deny the existence of events, states, or entities, but insists on unpacking them to reveal the complex activities and transactions that take place and contribute to their constitution" (Langley & Tsoukas, 2010, pp. 2–3).

Therefore, the main focus here is on discussing how attributes or qualities of processes can indicate the unfolding of events that reside and are constituted within these processes.

In the following section, I firstly discuss the concept of process ontology in more detail. Secondly, predictability is discussed in relation to process ontology. Thirdly, trust and routines are defined and discussed in relation to both predictability and process ontology, followed by a discussion on the theoretical and managerial implications.

2 PROCESS ONTOLOGY AND PREDICTABILITY

The world can be viewed from process or substance perspectives. In the substance perspective, everything is made out of substantial entities, while in the process perspective, the world consists of processes. Substance ontology considers processes to be incidental and views them as happening to essentially unchanging substances (Langley & Tsoukas, 2010). This perspective would enable, at least to some extent, predicting occurrences because measuring substantial entities yields information that can be used as the basis of the prediction. However, the process perspective enables a different kind of comprehension of actuality that can better accommodate trust and routines as a means of increasing predictability. Röck (2019, p. 44) even argues that the process perspective (or dynamic ontology as she calls it) is the only way to “systematically find active and creative (and non futile) engagement with the future through acting on the present”.

A process can be defined as “the injection of possibility into actuality” (Demos, 1926, pp. 234–235), or as “a coordinated group of changes in the complexion of reality, an organized family of occurrences that are systematically linked to one another either causally or functionally” (Rescher, 1996, p. 38). Occurrences can be actual or potential (Rescher, 2000). The former definition is beneficial when discussing the effects of trust and routines on an organisation because they are viewed here to affect the possibilities that can be formed into actuality. The latter regards a process as a series of linked and coordinated occurrences producing change or transformation. In this view, a process is not random or chaotic. A chaotic environment would render the effects of trust and routines inconsequential because “chaos is order without predictability” (Cartwright, 1991, p. 44), and thus, trust and routines would not increase predictability because it does not exist in the first place. This essay adopts the latter definition because it incorporates the notion of interlinked occurrences, which take place or reside regardless of their surroundings.

Process ontology has two basic contentions: entities cannot do without processes and processes are more fundamental than entities (Rescher, 1996). The existence of substance, or things, is not denied but substance is regarded as being subordinate to process because substantial entities need dispositional properties to be observable (Rescher, 1996; Rescher, 2000). In other words, entities cannot be observed if they do not reside in a process. Moreover, occurrences are not necessarily actions taken by individual entities but, because of the fundamentality of processes, actions are merely a part of a process.

Process ontology also has other features relevant to predictability. The first of these is the priority of change and development over persistence and fixity (Rescher, 1996). This enables processes to change and evolve if trust is built and routines are developed: if processes were regarded as being in a state of stagnation, then they would not be affected by the introduction of higher trust or better routines. The second relevant aspect is that in process ontology, organisations are not viewed as complete but as being in the making (Langley & Tsoukas, 2010). Therefore, both the environment and the actors within it are constantly changing. Third, as suggested by Rescher (2000), processes are internally complex, which enables them to be single items and yet to change. Change is incorporated into processes via the transformation of phases and stages. This means that trust and routines can make processes more predictable via phases and stages, and not necessarily by affecting entities directly. Fourth and finally, processes are influenced by probability. This is defined here as “a disposition or tendency of certain particulars to produce certain outcomes” (Brown, 2014, p. 296). Occurrences and changes can be actual or potential and they can take place in different ways, with some being more probable than others. Thus, factors such as trust or routines can influence the probability of certain outcomes taking place.

The concept of time is relevant when change and predictions are discussed. According to Röck (2019), the ontological nature of time can be viewed as temporal or as without temporality. The former means that time is linear and the latter that time is an abstract where one cannot distinguish between different moments in time. The former is usually seen to incorporate change to beings, and change is possible only if time is temporal. However, Röck (2019, p. 40) argues that “if temporality is considered a quality realized or instantiated by movement and change, i.e. by the process of becoming and changing beings, it is just as real as the becoming beings themselves”. Furthermore, Marchesani (2018, p. 142) argues that time is ceaselessly happening and “the illusive character usually attributed to change is a consequence of this tendency of the intellect to break it down into fixed snapshots, instead of considering its fluidity as something real”. Time and change are regarded here as existing continuously rather than as consisting only of mere snapshots in space. Therefore, trust and routines are qualities of continuous processes that shape the events taking place within those processes.

The process ontological approach is paramount in order to predict behaviour in complex systems. This is because “[t]he behavior of the [complex] system is determined by the nature of the interactions, not by what is contained within the components” (Cilliers, 2000, p. 24). In particular, the aspects concerning change and becoming are important because relevant information on these can be beneficial for predictability. Without these notions, namely with a subject ontological approach, the focus would be on the components and not on their interactions. This would omit relevant information, thereby disrupting predictability. In other words, the process ontological approach focuses on interactions rather than the components, duly making it a relevant approach when complex systems are studied.

Besides process ontology and its aspects, predictability is also a relevant concept for this essay. It is understood here as the degree to which certain occurrences can be correctly predicted beforehand. It is above all a continuum rather than having mere-

ly right and wrong options because a prediction can be sufficiently correct for it to be relevant in decision-making, for instance. As stated above, prediction is usually associated with weather or natural events. In this context, prediction with regard to complex systems deals with contingent relations among a large number of natural phenomena, rather than trying to identify the invariant behaviour of a single isolated phenomenon (Sarewitz & Pielke Jr, 1999). Predictions are seen here to similarly anticipate the future by dealing with contingent relations within a system, rather than focusing on the qualities and attributes of a single entity.

Prediction can be carried out using different approaches. According to Sarewitz and Pielke Jr (1999), it can be conducted using two such approaches: either a mathematical characterisation of systems' components and their interactions, or an identification of specific environmental conditions and precursors that are significant in terms of a particular occurrence. Mathematical modelling is usually employed in the prediction of ongoing and evolving processes (e.g. atmospheric circulation), while the identification of conditions is used in episodic and temporal events (e.g. earthquakes, storms). In this essay, both approaches have to be taken into account: components and their interactions can be measured and quantified while environmental conditions and precursors also have an impact on the future. This is even more crucial in a constantly changing environment because information generally makes predictions more accurate. Naturally, there are problems associated with information (e.g. manipulation or misuse), which have to be taken into account (Sarewitz & Pielke Jr, 1999). Without information on both the processes and the entities within, however, accurate predictions would not be possible.

Another way to understand predictions is through the concept of change. This is particularly relevant because organisations are considered to be in a constant state of change, rather than change being a consequence of actions (Tsoukas & Chia, 2002). Van de Ven and Poole (1995) distinguish between four basic ways in which change and development are explained in organisational studies. They defined change as "an empirical observation of difference in form, quality, or state over time" (p. 512) and proposed that it is explained via lifecycle, evolution, dialectic or teleological theories. In lifecycle theories, change takes place imminently through birth, adolescent growth, maturity and decline, or death. Teleological theories explain change in the sense that an entity proceeds purposefully and adaptively towards a goal or an end state. Dialectical theories explain change via conflict because an entity is seen to consist of conflicting goals, views and positions, for example. This will lead to a state where, at some point, conflicting forces, values and events confront the status quo. Lastly, evolution explains change as "a recurrent, cumulative, and probabilistic progression of variation, selection, and retention of organizational entities" (p. 518). All of these theories mainly focus on explaining why change takes place but they can also be used to predict occurrences. Theories can aid understanding of what the next stage is likely to be, and what kind of process is expected to unfold. Theories as such do not increase predictability per se, but when coupled with relevant information on environment as well as entities and their actions, they can lead to more accurate predictions of future occurrences. In other words, I consider causality to exist even in complex systems, which enables relevant information to be used as an indicator of future events.

3 TRUST AND ROUTINES

Trust has traditionally been regarded as being intrinsic to an entity. It has been referred to as “a psychological state” based on positive expectations of another actor (Rousseau, Sitkin, Burt, & Camerer, 1998), or “the expectation held by one firm that another will not exploit its vulnerability when faced with the opportunity to do so” (Krishnan, Martin, & Noordhaven, 2006, p. 895). Rousseau et al. (1998, p. 395) also argue that “trust is not a behavior (e.g. cooperation) or a choice (e.g. taking a risk), but an underlying psychological condition that can cause or result from such actions”. Trust is above all about what an entity can be trusted with rather than whether or not an entity can be trusted (Lewicki, Tomlinson, & Gillespie, 2006). If an actor has a justified belief that another actor can be trusted with a certain task, trust can be viewed as an indicator of future events. In other words, trust is about expectations. Expectation is a belief that something will happen, hence making it essentially about predicting the future. Naturally, the expectation does not mean that the future will take place exactly in a certain manner, but rather it gives an indication of how the future might unfold. If the expectation is based on relevant information, it is likely to be accurate.

Trust can exist at multiple levels. It is most often deemed to exist at individual, team, organisational, and institutional levels (e.g. Fulmer & Gelfand, 2012). At all levels, trust appears to be viewed as being intrinsic to an actor. Even institutional trust can be defined as one’s belief that “with feelings of relative security, that favorable conditions are in place that are conducive to situational success in a risky endeavor or aspect of one’s life” (McKnight & Chervany, 2001, p. 37). There is always a trustor and a trustee involved (e.g. Levine, Bitterly, Cohen, & Schweitzer, 2018), who interact in some sort of environment. In other words, trust and its impacts are highly complex phenomena that are difficult to attribute to a single level or entity. Despite this, the philosophical approach to trust often appears to be subject ontological. For example, McKnight and Chervany (2001) present an overview of how trust is conceptualised. Their paper shows that all of the studies treat trust as a belief, attitude or behaviour. Even studies focusing on institutional trust regard trust as one’s view of favourable conditions, namely as a subjective phenomenon. Moreover, scholars often attempt to determine the antecedents of trust, qualities of actors, and psychological conditions leading to a trusting behaviour. Some scholars, however, study the relations between the actors rather than their qualities (see e.g. Dietz & Den Hartog, 2006 for an overview). They can duly be viewed as taking a process ontological stance because the focus is on the process rather than the components.

Naturally, the reason for the prevalence of the subject ontological approach is also pragmatic. This is because trust is easily studied by focusing on actors and their views. However, if, for instance, trust-building factors and actors’ opinions in a certain setting have been mapped, it might be beneficial to switch the focus to the process ontological point of view. In practice, this would mean focusing, for instance, on processes where trust is a factor among others, or on the nature of the interactions. This would likely yield insights into what is relevant when the predictability of complex systems is discussed because it would help identify the indicators of future events.

Along with trust, routines can also act as indicators of future events if relevant information is available. Routines are formal or informal processes that are institutionalised and regularised (Zaheer & Harris, 2006). They are also referred to as behaviour patterns, rules or procedures, dispositions (Becker, 2008), or repeated sequences in behaviour (Hodgson, 2008) with recurrence as a key characteristic (Becker, 2004). Routines are above all processes rather than attributes of entities because they are “flows of interconnected ideas, actions, and outcomes” (Feldman, 2000, p. 613). They are most often defined as “a repetitive, recognizable pattern of interdependent actions, involving multiple actors” (Feldman & Pentland, 2003, p. 96). Recognisability is achieved when “one action can be used to predict the likelihood of the next action” (Pentland, Feldman, Becker, & Liu, 2012, p. 1491). This characteristic of recognisability and, further, the ability of routines to predict the likelihood of future actions, is the main reason why routines should be considered to be related to predictability. Moreover, the notion of routines as rules is rather close to the idea of routines as an indicator of future events.

With regard to process ontology, routines do not reside merely within individuals as trust, but exist in entities, artefacts, processes, communication, and so on. Recent literature has progressed from considering routines as entities constituting organisations to focusing on the parts that constitute routines (Feldman, 2016). In other words, the literature on routines regards them as being a process ontological phenomenon (Feldman, Pentland, D'Adderio, & Lazaric, 2016). Therefore, the contemporary approach to routines does not need clarification or reconsideration but is in line with the one presented here, unlike trust, where some reconceptualisation is needed to better understand trust as an indicator.

Routines also have an internal structure, which consists of three aspects: ostensive, performative, and related artefacts (Pentland & Feldman, 2005). The ostensive aspect is the routine in principle (e.g. dance choreography), the performative aspect is the actual performance (e.g. performance of the choreography), and artefacts are the physical manifestation of the routine but with little influence on the performance (e.g. a book containing notes on the choreography) (Feldman & Pentland, 2003; Pentland & Feldman, 2005; Parmigiani & Howard-Grenville, 2011). These aspects can be considered to have an impact on predictability. All of them can be measured and examined, which adds to the information that increases the accuracy of the predictions. The measuring of ostensive aspects should be particularly beneficial because it yields information on how processes ought to unfold.

In sum, trust and routines can be understood as indicators. Both have qualities that help to predict future events by providing information, even in complex systems. The nature of complex systems calls for an approach that focuses on interrelations and the environment that the actors operate in, namely the process ontological approach. Without this approach, trust and routines would not add to the information relevant for predicting behaviour in complex systems because the focus would be too narrow.

4 CONCLUSION

The aim of this essay was to explore the potential use of trust and routines as indicators of future events. Predictions can be formed based on information on systems' components and their interactions, or on specific environmental conditions and precursors that are significant in respect of a particular occurrence. This relevant information has to be gathered, which, in turn, can be aided by trust and routines. Information on trust and routines is relevant because it offers insights into how events are presumed to unfold, and how actors are expected to behave. This is the case particularly when they are approached from a process ontological point of view because it enables actors to create "an adequate mindset allowing for anticipation in a temporal world" (Röck, 2019, p. 46, emphasis in the original). An adequate mindset is formed when it incorporates temporal information on entire processes and not just on actors and their qualities. Furthermore, trust and routines can also be seen as limiting the ways in which a single occurrence can take place, and hence information-gathering can focus on relevant aspects because information is required on fewer contingencies. In order for actors to capitalise on this opportunity for more relevant information, they must increase their understanding of trust and routines and their characteristics in their surroundings.

This essay also highlights theoretical and managerial implications. When it comes to theoretical implications, scholars should study whether complex systems are in fact more predictable when the level of trust is higher and actions are more routinised. In this case, the complexity still exists (e.g. actors operate without central governance), but the behaviour within the system should be more predictable. Greater predictability would be plausible if, for instance, actors indeed operate in an environment where the number of contingencies is more limited. As for managerial implications, managers should attempt to build trust between all actors in both interorganisational and intraorganisational settings. In this way, the managers may be able to reap the benefits of more accurate predictions. Furthermore, managers need to understand how routines are created and developed. If routines reside at multiple levels, subjects, artefacts, and so on, then managers have to focus comprehensively on numerous aspects to effectively create routines. Naturally, this has been studied extensively, but the results need to be implemented by the managers nevertheless. This is particularly true if the environment is complex. The failure to recognise these numerous aspects will also diminish the possible benefits of routines for predictability.

REFERENCES

Becker, M. C. (2008). The past, present and future of organizational routines: introduction to the Handbook of Organizational Routines. In M. C. Becker (Ed.), *Handbook of Organizational Routines* (pp. 3–14). Cheltenham, UK and Northampton, MA, USA: Edward Elgar.

Born, D. H., Hendrix, W. H., & Pate, E. (2017). Three Pillars of Organizational Excellence. *The Journal of Character & Leadership Integration*, 4(1), 45–54.

- Brown, H. (2014). A Process Ontology. *Axiomathes*, 24, 291–312.
- Cartwright, T. J. (1991). Planning and chaos theory. *Journal of the American Planning Association*, 57(1), 44–56.
- Cilliers, P. (2000). What Can We Learn From a Theory of Complexity. *Emergence*, 2(1), 23–33.
- Demos, R. (1926). Possibility and Becoming. *The Journal of Philosophy*, 23(9), 234–240.
- Dietz, G., & Den Hartog, D. N. (2006). Measuring Trust Inside Organisations. *Personnel Review*, 35(5), 557–588.
- Dikmen, I. M., Birgonul, M., & Kiziltas, S. (2005). Prediction of organizational effectiveness in construction companies. *Journal of Construction engineering and Management*, 131(2), 252–261.
- Feldman, M. S. (2000). Organizational routines as a source of continuous change. *Organisation science*, 11(6), 611–629.
- Feldman, M. S. (2016). Routines as process: Past, present, and future. In J. Howard-Grenville, C. Rerup, A. Langley, & H. Tsoukas (Eds.), *Organizational Routines: How They Are Created, Maintained, and Changed* (pp. 23–46). Oxford: Oxford University Press.
- Feldman, M. S., & Pentland, B. T. (2003). Reconceptualizing Organizational Routines as a Source of Flexibility and Change. *Administrative Science Quarterly*, 48(1), 94–118.
- Feldman, M. S., Pentland, B. T., D'Adderio, L., & Lazaric, N. (2016). Beyond Routines as Things: Introduction to the Special Issue on Routine Dynamics. *Organization Science*, 27(3), 505–513.
- Fulmer, C. A., & Gelfand, M. J. (2012). At What Level (and in Whom) We Trust: Trust Across Multiple Organizational Levels. *Journal of Management*, 38(4), 1167–1230.
- Galton, A. (2016). *The Ontology of Time and Process*. Third Interdisciplinary School on Applied Ontology. Bozen-Bolzano.
- Hodgson, G. M. (2008). The concept of a routine. In M. C. Becker (Ed.), *Handbook of Organizational Routines* (pp. 15–30). Cheltenham, UK and Northampton, MA, USA: Edward Elgar.
- Jalonen, H., & Lönnqvist, A. (2011). Exploring the Critical Success Factors for Developing and Implementing a Predictive Capability in Business. *Knowledge and Process Management*, 18(4), 207–219.

- Krishnan, R., Martin, X., & Noordhaven, N. G. (2006, October). When Does Trust Matter to Alliance Performance? *The Academy of Management Journal*, 49(5), 894–917.
- Langley, A., & Tsoukas, H. (2010). Introducing "Perspectives on Process Organization Studies". In A. Langley, & H. Tsoukas (Eds.), *Process, Sensemaking, & Organizing* (pp. 1–26). Oxford: Oxford University Press.
- Levine, E. E., Bitterly, T., Cohen, T. R., & Schweitzer, M. E. (2018). Who is trustworthy? Predicting trustworthy intentions and behavior. *Journal of personality and social psychology*, 115(3), 468–494.
- Lewicki, R. J., Tomlinson, E. C., & Gillespie, N. (2006). Models of Interpersonal Trust Development: Theoretical Approaches, Empirical Evidence, and Future Directions. *Journal of Management*, 32(6), 991–1022.
- Marchesini, P. (2018). The End of Time or Time Reborn? Henri Bergson and the Metaphysics of Time in Contemporary Cosmology. *Philosophy and Cosmology*, 21, 140–152.
- McKnight, D., & Chervany, N. L. (2001). Trust and Distrust Definitions: One Bite at a Time. In R. Falcone, M. Singh, & Y.-H. Tan (Eds.), *Trust in Cyber-societies. Lecture Notes in Computer Science*, vol 2246 (pp. 27–54). Berlin, Heidelberg: Springer.
- Mitchell, M. (2009). *Complexity: A guided tour*. Oxford University Press.
- Möllering, G. (2006). *Trust: Reason, Routine, Reflexivity*. Emerald Group Publishing.
- Parmigiani, A., & Howard-Grenville, J. (2011). Routines Revisited: Exploring the Capabilities and Practice Perspectives. *The Academy of Management Annals*, 5(1), 413–453.
- Pentland, B. T., & Feldman, M. S. (2005). Organizational routines as an unit of analysis. *Industrial and Corporate Change*, 14(5), 793–815.
- Pentland, B. T., Feldman, M. S., Becker, M. C., & Liu, P. (2012). Dynamics of Organizational Routines: A Generative Model. *Journal of Management Studies*, 49(8), 1484–1508.
- Rescher, N. (1996). *Process Metaphysics*. Albany: State University of New York Press.
- Rescher, N. (2000). *Process Philosophy: a Survey of Basic Issues*. University of Pittsburgh Press.
- Röck, T. (2019). Time for Ontology? The Role of Ontological Time in Anticipation. *Axiomathes*, 29, 33–47.

Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Not So Different After All: A Cross-Discipline View of Trust. *Academy of Management Review*, 23(3), 393–404.

Sarewitz, D., & Pielke Jr, R. (1999). Prediction in science and policy. *Technology In Society*, 21, 121–133.

Standish, R. K. (2008). Concept and definition of complexity. *Intelligent complex adaptive systems*, 105–124.

Tsoukas, H., & Chia, R. (2002). On Organizational Becoming: Rethinking Organizational Change. *Organization Science*, 13(5), 567–582.

van de Ven, A. H., & Poole, M. S. (1995). Explaining Development and Change in Organizations. *The Academy of Management Review*, 20(3), 510–540.

Weber, M. M. (2002). Measuring supply chain agility in the virtual organization. *International Journal of Physical Distribution & Logistics Management*, 32(7), 577–590.

Zaheer, A., & Harris, J. (2006). Interorganizational Trust. In O. Shenkar, & J. J. Reuer, *Handbook of Strategic Alliance* (pp. 169–197). Thousand Oaks, CA: SAGE.

National Defence University

P.O. Box 7, 00861 HELSINKI

Tel. +358 299 800

www.mpkk.fi

ISBN 978-951-25-3207-0 (pbk.)

ISBN 978-951-25-3208-7 (pdf)

ISSN 2342-9992 (print)

ISSN 2343-0001 (web)

SOTATAIDON YTIMESSÄ



Puolustusvoimat

The Finnish Defence Forces