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*Jouni Juntunen*

ENHANCING  
ORGANIZATIONAL  
AMBIDEXTERITY OF  
THE FINNISH DEFENCE  
FORCES' SUPPLY CHAIN  
MANAGEMENT

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*JOUNI JUNTUNEN*

**ENHANCING ORGANIZATIONAL  
AMBIDEXTERITY OF THE FINNISH  
DEFENCE FORCES' SUPPLY CHAIN  
MANAGEMENT**

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## **Juntunen, Jouni, Enhancing organizational ambidexterity of the Finnish Defence Forces' supply chain management.**

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### *Abstract*

Strategy is the use of combats to accomplish the goal of the war, but because each war differs in terms of its background and motives, creating a universal strategy for military purposes may not be possible. The military can have one peacetime sourcing strategy, but their wartime strategy is highly situation dependent. If resources are not available in wartime, there may be enormous losses. Resources must be secured through an efficient peacetime sourcing strategy, which demands a high level of organizational ambidexterity.

The military in Finland are known collectively as the Finnish Defence Forces, although here we refer to the organization here in the singular as the FDF. The FDF is highly dependent on private transportation, but is also an important driver trainer and buyer of logistics services. Because a transportation system is central to society's basic services, and its functionality is important for citizens, the private sector, securing vital functions of the nation and for emergency supply security. There is strong mutual dependency between the private transportation sector and the FDF, which makes for an interesting context in which to study also strategic partnerships.

The articles included in this thesis consist of two quantitative data sets. The first empirical data set was gathered from the LSP members of the Finnish Transport and Logistics (460 acceptable responses, 17.7 per cent). The second data set was collected from the military, the security-related public sector and private industrial companies (149 acceptable responses, 18.01 per cent). The analyses include descriptive statistics and structural equation modeling.

The purpose of this study is to reveal possible problems and offer insights into the cooperation between the private transportation sector and the FDF, and the development of organizational ambidexterity in the FDF's supply chain management.

From a game theory perspective, how the FDF enhance supply security is important because the private transportation sector is extremely important for the FDF and vice versa. Logistics strategy influences direct logistics costs, so the FDF has a lesson to learn from its own practices, concentrating on quality instead of direct cost reductions considerably reduces total logistics costs while improving domestic transportation resources.

*Keywords:* military logistics, modulation, network economies, organizational ambidexterity, outsourcing modes, structural equation modeling



# **Juntunen, Jouni, Suomen Puolustusvoimien toimitusketjun hallinnan organisaatiollisen kaksikäisyyden kehittäminen.**

Oulun yliopiston tutkijakoulu; Oulun yliopisto, Teknillinen tiedekunta, Tuotantotalous

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## ***Tiivistelmä***

Strategia on taistelujen ohjausta sodan tavoitteiden saavuttamiseksi, mutta koska jokainen sota eroaa taustoiltaan ja motiiveiltaan, lienee universaalinen strategian luominen sotilaallisiin tarkoituksiin mahdotonta. Armeijalla voi olla yksi rauhanajan hankintastrategia, mutta sota-ajan hankintastrategia on voimakkaasti olosuhteista riippuvainen. Sota-ajan resurssien saanti on kuitenkin pyrittävä turvaamaan jo rauhanajan hankintastrategialla, mikä vaatii korkeaa organisaatiollista kaksikäisyyttä, koska sota-ajan puuttuvan resurssit voivat aiheuttaa valtavia menetyksiä.

Suomessa Puolustusvoimat on erittäin riippuvainen yksityisen sektorin kuljetusyrityksistä, mutta toisaalta Puolustusvoimat on erittäin merkittävä kuljettajien kouluttaja sekä kuljetusyritysten asiakas. Suomessa kuljetukset ovat myös keskeisessä asemassa yhteiskunnan julkisten perustoimintojen turvaamisessa, lisäksi ne ovat erittäin tärkeitä kansalaisten, yksityisen sektorin ja huoltovarmuuden kannalta. Näin ollen kuljetusyritysten ja Puolustusvoimien välillä on vankka keskinäinen riippuvuus, jonka vuoksi ne ovat hyvä konteksti tutkia strategisia kumppanuuksia.

Tähän väitöskirjaan sisältyvät tieteelliset aikakauslehtiartikkelit rakentuvat kahden tutkimusaineiston ympärille. Ensimmäinen tutkimusaineisto on kerätty Suomen Kuljetus ja Logistiikka (SKAL ry) yhdistyksen jäseniltä (460 hyväksyttyä vastausta edusten 17.7 prosenttia valitusta kohderyhmästä). Toinen tutkimusaineisto on kerätty Puolustusvoimien ja muun julkisen turvallisuussektorin (poliisi, sairaanhoito ja palolaitokset) logistiikkapalveluiden hankinnasta vastaavilta henkilöiltä sekä soveltuvilta yksityisen sektorin toimijoilta (149 hyväksyttyä vastausta edustan 18.0 prosenttia valitusta kohderyhmästä). Molemmat tutkimusaineistot ovat analysoitu kuvallilla tilastollisilla menetelmillä sekä rakenneyhtälömallinnuksella.

Tämän tutkimuksen tavoitteena on löytää mahdolliset ongelmat ja tarjota alalla toimivien henkilöiden näkemys Puolustusvoimien ja yksityisten kuljetusyritysten yhteistyöstä. Näiden myötä pyritään kehittämään Puolustusvoimien toimitusketjun hallinnan organisaatiollista kaksikäisyyttä.

Peliteoreettisesta näkökulmasta on tärkeää kuinka puolustusvoimat parantamaan huoltovarmuutta koska kuljetusala ja Puolustusvoimat ovat erittäin merkittäviä toimijoita toisilleen. Koska ilmeisesti Puolustusvoimien logistiikkastrategia pyrkii vaikuttamaan pääasiassa suoriin kuljetuskustannuksiin, on Puolustusvoimilla opittavaa omista käytännöistään. Keskittymällä kuljetusten laatuun suorien kuljetuskustannusten sijasta voidaan logistiikan kokonaiskustannuksia alentaa ja samalla turvata kotimaisten kuljetusresurssien säilymistä.

*Asiasanat:* organisaatiollinen kaksikäisyys, rakenneyhtälömallinnus, sotilaslogistiikka, ulkoistamismuodot, verkostojen taloustiede





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When I started my second Doctoral dissertation, most people told me that it can surely be easily done as you already know how to do it. Naturally there were a lot of similar issues to deal with; however, what I learned was that there is no one way to do a Doctoral dissertation, and every project has its own research settings and working environment. Only one thing is certainly common for every Doctoral thesis: it is never done alone.

Hence, I wish to begin by thanking all those people in various organizations who helped me and made this thesis possible. First of all, I want to thank my supervisor Professor Pekka Kess whose comments, advice, cooperation and help for organizing resources have been vital. It has been a privilege to work with and to learn from a researcher as experienced as you. Thank you, Pekka.

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As I mentioned above, preparing a thesis all alone is not possible. Even though I have mentioned only those people by name who have been directly involved in the work relating to this thesis, there is a large number of people who have influenced and supported my work. In 1987, my teachers at a vocational school insisted that I should continue my studies in a technical institute, and in the Jyväskylä Institute of Technology, where I gained my degree of Bachelor of Science (Tech) in 1996, I cooperated with a lot of people: teachers, friends and colleagues, and I learned a lot from them. During my studies concerning economics

and business administration, I again had the honour of studying with valuable new friends, colleagues and Professors, and during those years I began to familiarize myself with the world of academia. Naturally there is also a large number of people I have met while working at various levels of the transportation business, and then at Universities, and who not only have taught me the customs of the academic world but also allowed me to gain experience in leadership under challenging business conditions, and how to roll up my sleeves and take care of blue collar work. It still happens that I am asked to help in problem situations and to work as a truck driver, and every now and then I say yes, both to help out and to remember where my roots are. Relatives and friends have their important role as well, for their help in daily routines and inspiration for my interests in engineering and logistics. Every one of you deserves my gratitude.

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## **List of abbreviations and definitions**

FDF	Finnish Defence Forces
LSP	Logistics Service Provider
NESA	National Emergency Supply Agency
GDP	Gross Domestic Product



## List of original publications

The thesis is based on the introductory chapter and the following essays:

- I Juntunen J, Juntunen M & Autere V (2011) Protecting Finnish defence security: A logistics challenge. *International Journal of Shipping and Transport Logistics* 3(3): 295–311.
- II Juntunen J, Juntunen M & Autere V (2011) A case study on the role of the Finnish Defence Forces in the transport sector. *Journal of Military Studies* 2(1): 34–43.
- III Juntunen J, Juntunen M & Autere V (2012) Outsourcing strategies of the security sector through acquisition procedures. *International Journal of Physical Distribution & Logistics Management* 42(10): 931–946.
- IV Juntunen J, Juntunen M, Autere V & Kess P (In press) Outsourcing strategies in the security sector. *International Journal of Logistics Economics and Globalisation*. (TIIM 2013 Special issue).



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# 1 Introduction

## 1.1 Background and research environment

According to Clausewitz (1832), strategy is the use of combats to accomplish the goal of the war. However, Lehto (2009) argues that war is not an independent phenomenon; each war is different in its background and motives, hence creating universal theory is challenging. A universal dominating strategy for military purposes may not be possible. In a business context, a firm's organizational strategies culminate in make-or-buy decisions (Ansoff 1965: 201). The central choice among governance mechanisms is to externally organize transactions outside the boundary of the firm in the market, or to organize transactions internally within the firm's boundaries (Bowen & Jones 1986). If we try to combine these perspectives for one nation, it is obvious that the military can have a peacetime sourcing strategy (designed around what they produce themselves and what they buy from the private sector), but wartime strategy is highly situation dependent.

Even though the demands for supply chain management of the Finnish Defence Forces (the FDF) are very different when it operates as a peacetime training organization than they would be in wartime, there is a strong interconnection between peacetime and wartime strategies. If resources are not available in wartime, it could cause enormous losses. Resources must be secured efficiently in peacetime, supporting the domestic private sector, to ensure it remains strong enough to provide resources during time of crisis.

Organizational ambidexterity suits the theoretical approach of this dissertation, as defined by Raisch and Birkinshaw, (2008) as, "*an organization's ability to be aligned and efficient in its management of today's business demands while simultaneously being adaptive to changes in the environment*".

The FDF is highly dependent on the private transportation sector (Juntunen *et al.*, 2011a). According to Kaskeala (2006), there is no doubting the importance of logistics and supply for the military. Today, the more segmented battlefield demands effective logistics. The FDF is an important training organization for drivers, and a major buyer of logistics services (Juntunen *et al.* 2011b). According to the National Emergency Supply Agency (NESA 2010), the transportation system is one of society's central basic services. Functionality is important for citizens, the private sector, and securing the vital functions of the nation and emergency supply security. In Finland, logistics is crucial. Finland is effectively a large island

(80% of foreign trade goes through sea transportation) and logistics costs (19% of GDP) are higher than most industrial countries (10–17% of GDP). Efficient logistics is very important for Finland to maintain international competitiveness (Solakivi *et al.* 2009). The private sector demands efficient logistics in Finland, but making use of the private sector during crises may be problematic. Crises may be well anticipated, but behind all private sector corporations are multiple essential subcontractors: Business relationships change all the time (Helsingius 2006). Moreover, specialization within logistics systems makes general usage difficult; specialized resources are probably not suitable for any but their intended purposes (NESA 2010). In fuel, chemical, thermo, and milk transportation resources, the usage rate is over 90% so spare resources are scarce. According to NESA (2010), skilled drivers are critical specialized resources. There is strong mutual dependency between the private transportation sector and the FDF, which provides interesting scope to study strategic partnerships. Rannikko (2006) supports this idea when stating that the basis of FDF logistics is appropriate integration between the private sector and military supply systems.

The theoretical roots of this dissertation are in game theory literature and strategic literature. Agent theory supports these two approaches. Game theory and strategic literature are harmonious. Strategic literature supports practical decision making; game theory applies optimal strategies and tactics to practical problems. From a theoretical perspective, the first and second manuscripts deal with the starting point of the game, and the third and fourth concentrate on optimal strategic decisions to achieve the goals of the FDF supply chain.

## **1.2 Objectives and scope**

The purpose of this study is to improve organizational ambidexterity in the supply chain management of the FDF. The context of this study is the logistics operations of the FDF. The main research question is how can the FDF enhance supply security, defined here as maintaining adequate level of supply security during both normal and crises situations, either in peace or war time, through the Finnish private transportation sector? The research is subdivided into four sub questions: the role of the Finnish private transportation sector from a military perspective; the FDF from an industry perspective; current military strategy for the acquisition of logistics services; and how the negotiating power of the military and logistics costs are affected by logistics strategy. These sub questions will be dealt with through analysis of the essays included with this dissertation, and the main re-

search questions addressed via the outcome of the sub questions' review. The work reveals possible problems and offers insight for cooperation between the private transportation sector and the FDF.

### **1.3 Research approach**

This study poses both ontological and epistemological questions. Burrell and Morgan (1979) suggest two procedures for analysing assumptions in social sciences: subjective and objective. When categorized by subjective and objective procedures, ontology can be divided into nominalism and realism, and epistemology into positivism and anti-positivism. In this research, the aim is to find causal relationships, and then establish rule-like generalizations, and hence this study can be considered in the objectivist tradition and as using nomothetic methodology (Neilimo & Näsi 1980). The approach is positivist, with reality considered objective, tangible, and fragmentable (Mentzer & Kahn 1995).

In other words, causal relationships can be discovered and, in addition, research findings can be considered value-free, time-free and context independent (Juntunen, 2010). The favoured research method in the positivist tradition is quantitative and surveys are the normal method of gathering research data (Mentzer & Kahn 1995). The research question and the research method of this study represent the deductive positivistic approach, which is, according to Arlbjorn and Haldorsson (2002), the predominant approach in business logistics research.

In practice, this thesis and included articles consist of two quantitative data sets. The first empirical data set was gathered from the LSP members of the Finnish Transport and Logistics (SKAL) association in 2008. In total, 460 acceptable responses were returned, representing a response rate of 17.7 per cent. The second data set was collected from the military, the security-related public sector and private industrial companies in the spring of 2009, and 149 acceptable responses were returned, representing a response rate of 18.01 per cent. In addition to the military forces, the respondents from the public sector include police, fire service personnel and health-care providers. More specifically, customer-relationship managers, service-production managers, brigade commanders, supply centre managers, rescue managers and materials managers were some among the professions responding to the questionnaires. The analyses include descriptive statistics and structural equation modeling.

#### **1.4 Research process and dissertation structure**

The next section presents earlier studies relating to strategic literature, game theory, and agent theory. The third chapter explains the methodological approach of this thesis and its supporting data. The fourth section is a discussion and the last comprises its conclusions. The paper version of the thesis includes the original publications of the included essays after the reference list, but the original papers are not included in the electronic version.

## 2 Theoretical background

### 2.1 Background

Theoretically, this dissertation is rooted in multiple compatible theories. The literature review deals first with strategic literature on business and military strategies. After examining the strategic literature, a brief summary of game theory will be presented. The last theoretical approach reviewed is that of agent theory.

All theoretical approaches are presented quite briefly, because the literature relating all of those theories incorporates a vast amount of research, practical reports and books. However, the main points are presented as they apply to this dissertation. Further, as this is compilation dissertation, each paper included has its own literature review and it would be fruitless to repeat that content.

### 2.2 Strategic literature and organizational ambidexterity

From the military perspective, strategy is the use of combats to accomplish the goal of the war (Clausewitz 1832). Strategy is subordinate to political goals, but superior to tactics. Tactics describe how to use troops in combat (Laaksonen *et al.* 2009). However, because a war is not an independent phenomenon, and each war is different in its background and motives, creating a universal theory of military strategy is challenging (Lehto 2009). The delineation between the strategic and the tactical is elusive. For example, since the first Gulf War in 1991 strategic airstrikes have been a common concept, though from some perspective airstrikes are merely tactical (Lehto 2009). Business borrowed the term strategy from the military in the 1950s, in response to the increasing volatility of the business environment (Laaksonen 2009).

According to Junni *et al.* (2013), a growing number of researchers argue that organizational ambidexterity is important for sustained competitive advantage of firms. Organizational ambidexterity, defined as “*an organization’s ability to be aligned and efficient in its management of today’s business demands while simultaneously being adaptive to changes in the environment*” by (Raisch & Birkinshaw 2008), has become a hot topic in organizational research (Birkinshaw and Gupta 2013). The original meaning of ambidexterity was the capacity to be equally skilful with both hands. Prefaced by the word organizational, this has been adapted to mean an organization’s capacity to do two different things equally

well, for example simultaneously exploiting existing competencies and exploring new opportunities (Raisch *et al.* 2009, Birkinshaw & Gupta 2013). However, according to O'Reilly and Tushman, (2013), confusion remains about the precise meaning of organizational ambidexterity.

Changing business demands may be justified in the private sector because, according to Markides (2013), several authors interpret a business model as an activity system made up of several interdependent activities, such as value chain activities. However, according to Tushman *et al.*, (2010), individuals, especially the front-line employees are not capable of reconciling conflicting goals for exploitation. Further, Salvadora *et al.*, (2014) argues that developing ambidexterity through individuals is indeed beneficial for companies, but this effect decreases in correlation with the increase in complexity. Thus, in a highly complex environment, such as a peace time military organization which at the same time has to maintain readiness for war time conditions, individuals may face challenges at various organizational levels while optimizing their activities either for peace or war time perspective.

According to Propper and Wilson (2003), performance and efficiency measures as organizational outcomes lack the evidence as to their usefulness in the public sector. However, organizational ambidexterity may serve as a new and relevant output indicator, especially in the public sector, which strives to use resources in efficient ways (Smith & Umans 2013). Hence, in this study, I offer a new perspective on organizational ambidexterity by examining the case of the FDF. On the one hand, the FDF must meet the demands imposed by diminishing funding and demonstrate that it can meet its obligations within its budget, while on the other hand, it must simultaneously prepare for the worst possible scenario where efficient delivery of troops and supplies is crucial. I will define organizational ambidexterity slightly differently to Raisch and Birkinshaw (2008). My definition for organizational ambidexterity in the security sector is the organization's ability to be well-adapted and efficient in its management of today's activities while simultaneously maintaining readiness for changes in the environment.

### **2.3 Strategy and organization structure**

In the business literature, it was widely recognized decades ago that the structure of an organization mirrors its strategy (e.g. Chandler 1962, Jones & Hill 1988), and hence outsourcing becomes a strategic level decision. Naturally, there may be different outsourcing strategies (e.g. Juntunen *et al.* 2012). Outsourcing may be

used to address issues of lack of competence, lack of capacity, financial pressures or technical failure (Greaver 1998). Supernormal returns on the other hand, are mostly a function of a firm's belonging to an industry with favourable structural characteristics (Porter 1980, Dyer & Singh 1998), but the situation is more complex than that. In today's global business environment, sustainability of the supply chain may be very important and, according to Buddress (2013), firms must pursue strategies recognizing that supply chain risk and sustainability are inextricably intertwined. The question is no longer simply a trade off between price and quality, or whether to buy domestically or overseas, but must include several other perspectives.

What this means in practice for the military, for example, is that strategic management of innovation may be extremely important in crises where change becomes revolutionary rather than evolutionary (e.g. Davies 2001, Keupp *et al.* 2012). One goal of strategic military management is survive through periods of revolutionary development and use the power of change instead of fighting against it (Lehto 2009). Innovative supply arrangements during periods of revolutionary change are easier to manage with support from strategic partners. Tushman and O'Reilly proposed in 1996 that the simultaneous pursuit of both incremental and discontinuous innovation requires ambidextrous organizational models.

To combine logistics and supply security with military strategy, we can borrow from General Antoine Henri Jomini, who claimed that "Strategy decides where to act; logistics brings the troops to this point" (Jomini 1975). When attempting to understand the importance of logistics to the military, and because of the well-known significant role of logistics in business, the question is: Why would anyone who regards logistics as a source of competitive advantage want to turn the activity over to someone outside the organization (Lim 2000)? A fundamental answer is that businesses outsource logistics to avoid excessive capital expenditure (e.g. on head count or fixed costs) while improving flexibility through reduced inventory, increased productivity, improved customer satisfaction and services and reduced transportation costs (Lim 2000). Table 1 presents a comprehensive list of literature on the expected benefits and risks of outsourcing (Kremic *et al.* 2006).

**Table 1. Anticipated benefits and risks of outsourcing.**

Expected benefits	Potential risks
Cost savings	Unrealized savings or hidden costs
Reduced capital expenditures	Less flexibility
Transfer fixed costs to variable	Poor contract or poor selection of partner
Quality improvement	Loss of knowledge/skills and/or corporate memory and the difficulty in reacquiring a function
Increased speed	Loss of control/core competence
Greater flexibility	Power shift to supplier
Access to latest technology/infrastructure	Supplier problems (poor performance or bad relations, opportunistic behavior, not giving access to best talent or technology)
Access to skills and talent	Losing customers, opportunities, or reputation
Increase focus on core functions	Uncertainty/changing environment
Get rid of problem functions	Poor morale/employee issues
Copy competitors	Loss of synergy
Reduce politic pressures or scrutiny	Create competitor
Legal compliance	Conflict of interest
Better accountability/management	Security issues
	False sense of legal obstacles
	Skill erosion

FDF goal is a logistics system integrated with the private sector but not requiring significant change between normal and crisis situations (Pakarinen 2006). For the FDF, outsourcing its logistics services is more complex than for companies who can use global logistics services providers as it requires adequate domestic transportation capacity to meet crisis situations (Juntunen *et al.* 2011a). The FDF must understand their outsourcing strategy in different circumstances and scenarios. Game theory is eminently suitable to analyse FDF outsourcing in a “what if we have to raise defence readiness” context.

## 2.4 Game theory

According to Gresham’s law, bad money drives out good (Giffen 1891). Gresham’s law is often studied with the classic prisoners’ dilemma from game theory (e.g. Heal 1976). In practice, in the “short run game”, Gresham’s law means that if there is no trust between actors, returns are indefinite, and business suffers (Akerlof 1970). Once actors suspect that the value of bad money will go down, they offer only bad money and try to keep good money. When all actors behave



like this, only bad money is supplied in the markets. This phenomenon is called adverse selection and in addition to money, has been associated with the supply of goods including cars (Akerlof 1970, Heal 1976). However, according to Heal (1976), in the “long run game” the Nash equilibrium for the prisoners’ dilemma comes from high quality products. If actors play the “long run game”, adverse selection may not happen.

Today, the importance of supply chains is widely recognized by researchers. Modern competition is between supply chain and supply chain rather than firm versus firm (Ketchen & Hult 2007). It is therefore no surprise that strategic cooperation is an important phenomenon in the supply chain context. Cachon and Zipkin (1999) found that competition might actually raise costs in the supply chain, hinting that the short run game actually causes adverse selection in supply chains.

Consequently, the FDF may have to play the long run game to secure adequate domestic transport resources. This long run game probably implies protectionism to some extent, which may be incompatible with free trade between nations. We need better understanding of the behaviour of each participant in different situations. Game theory tries to reveal how different actors are likely to behave in different situations. It is very suitable for use in parallel with agent theory, which studies actors in a principal-agent context.

## **2.5 Agent theory**

According to Eisenhardt (1985, 1989), agency theory has similarities to transaction cost theory and the organizational and agency approaches are complementary. With transaction cost theory, there is a trade-off between markets and the firm’s internal hierarchy (Coase 1937). The military can either make or buy the resources it needs and, when buying resources, must ensure that sellers can provide goods and services, as promised in peacetime, during a crisis. Situations can be studied with agency theory, which attempts to describe the ubiquitous agency relationship, in which one party (the principal) delegates work to another (the agent) who performs that work (Eisenhardt 1989).

According to Laffont (2003), the influence of asymmetrical information is a central issue in agency theory. This means that the supplier (agent) knows more about his product or service than the potential buyer (principal) does. In the military context, once the agent has benefited from peacetime cooperation, the same first-class service may not be forthcoming during a crisis (moral hazard). There must be a win-win in every possible situation (Williamson 2008), and strategic

partners of the FDF have to be prepared to stand by the FDF during times of crisis.

Adverse selection may become a problem if the military choose peacetime partners based solely on the lowest price. While Gresham's law says that bad money drives out good (e.g. Giffen 1891, Akerlof 1970), poor quality companies may drive out good quality companies from markets. Hence, sorting good quality from bad is essential in the business world (Akerlof 1970), and even more important in the military world, where efficient supply must endure during crisis situations.

## **2.6 Theory synthesis**

As mentioned above, a common reason for outsourcing logistics operations is to avoid extensive capital expenditure (e.g. head count or fixed costs) while improving flexibility through reduced inventory, increased productivity, improved customer satisfaction and services and decreased transportation costs (Lim 2000). However, the FDF needs to understand the consequences of its outsourcing strategy if they have to raise defence readiness. The FDF and their partners have to maintain win-win situations during crises (Williamson 2008).

In addition to adverse selection (Giffen 1891, Akerlof 1970, Heal 1976), moral hazards may also cause problems (Laffont 2003). If the FDF needs to buy resources on international markets, its biggest issue is how to ensure those sellers will provide the goods and services guaranteed in peacetime in a time of crisis. Thus, in the military context, organizational ambidexterity demands sorting good quality from bad during peacetime to ensure quality during crises.

According to Carmeli and Halevi (2009), the idea of ambidexterity nests in the idea that an organization's task environment is always in some degree of conflict, so there are always trade-offs to be made. Hence, organizational ambidexterity is a highly apt umbrella term for the theoretical perspective of this research, because all the theoretical approaches included in this thesis also contain inevitable trade-offs to be made. Specifically, outsourcing is well known as a make or buy decision, game theory focuses on alternative decision possibilities, agent theory studies whether an agent keeps their promises or not and traditional economics assume a trade-off between the quality and price.

### 3 Description of the included articles

This chapter features a short description of the researchers' contribution to each article (please, see table 2) and findings of each paper included in this thesis. After this chapter follows a discussion, where I pull together the outcomes, answer the main research questions, and present further perspectives on the findings. Finally, I discuss research limitations and ideas for further study.

**Table 2. Authors' contribution in included articles.**

Author	Article			
	1	2	3	4
J. Juntunen				
Coordinating research team	x	x	x	x
Presenting paper's earlier version in conference	x			
Developing paper's theoretical background	x	x	x	x
Actively involving in data gathering	x	x	x	x
Coordinating, supervising and performing data analysis	x	x	x	x
Coordinating interpretations based on analysis	x	x	x	x
Finalizing paper	x	x	x	x
Coordinating review and publication process	x	x	x	x
M. Juntunen				
Developing theoretical background regarding to image of the industry	x			
Actively involving in data gathering	x	x	x	x
Participating in data analysis	x	x	x	x
Participating in interpretation of the results from business perspective	x	x		x
Actively involved in paper's writing process	x	x	x	x
Commenting on paper	x	x	x	x
V. Autere				
Actively involving in data gathering	x	x	x	x
Presenting paper's earlier version in conference	x		x	
Participating in data analysis	x	x	x	x
Participating to interpretation of the results from military perspective	x	x	x	x
Commenting on paper	x	x	x	x
P. Kess				
Commenting on paper				x
Presenting paper's earlier version in conference				x

### **3.1 Dependency between transport industry and FDF**

Juntunen J, Juntunen M & Autere V (2011) Protecting Finnish defence security: A logistics challenge. *International Journal of Shipping and Transport Logistics* 3(3): 295–311.

The main results of this research from the perspective of this doctoral dissertation are that the negotiation power of Finnish transport firms is low and may affect their ability to achieve acceptable profitability. Outdated contracts between buyers and sellers are almost useless. Contracts are ineffective without an efficient updating system and up-to-date contracts can deliver better profits to entrepreneurs, even when their negotiating position is weak.

Hence, properly updated contracts should be in place to maintain the profitability of trucking operations in a rapidly changing environment. This would also be beneficial to the FDF as a buyer of logistics services, making its logistics chain more reliable. Truckers should also endeavour to preserve the good image of their industry by providing only superior service: The military should buy services based on quality instead of price and support truckers who provide good service levels.

To conclude, powerful buyers of logistics services should understand that, in the long term, it is not wise to use a strong negotiating position to force down short-term prices in case quality transportation becomes unavailable due to adverse selection (e.g., Akerlof, 1970). In Finland, the situation is difficult for logistics providers and there is always the threat that domestic transportation resources will be inadequate in times of crisis. Understanding the role of the FDF is vital.

### **3.2 FDF's importance for transport industry**

Juntunen J, Juntunen M & Autere V (2011) A case study on the role of the Finnish Defence Forces in the transport sector. *Journal of Military Studies* 2(1): 34–43.

While the weak negotiating position of entrepreneurs reduces their recorded levels of satisfaction with the transport sector, the strength of the FDF as a buyer of transport services balances this. Cabotage operations emphasize the importance of the military as a buyer of transport services. There is a positive relationship between the importance of transportation to the FDF and the role of the FDF as a buyer of logistics. The military is an important force in Finland's transport sector.

The FDF plays a significant role in the transport sector on two levels. It buys a large volume of logistics services and it is to its advantage to use domestic operators. The military is also a very important source of skilful drivers: they train a high percentage of recruits as heavy goods vehicle drivers. When they finish military service, these drivers are a valuable labour supply for service providers. The FDF are instrumental in generating satisfaction with the transport sector among transport operators, as they help domestic operators in the competition brought about by cabotage. As in many other countries, the FDF need security of supply, so there are some elements of protectionism in their buying behaviour.

When competition is fierce, the significance of the FDF as a buyer of logistics services expands. With a powerful role in the logistics market as a buyer, FDF buying behaviour should have a strong market influence. This obviously directs attention to the current acquisition strategy of the FDF.

### **3.3 FDF's acquisition strategy**

Juntunen J, Juntunen M & Autere V (2013) Outsourcing strategies of the security sector through acquisition procedures. *International Journal of Physical Distribution & Logistics Management* 42(10): 931–946.

I studied the strategy of public sector military and security organizations through purchasing procedures and examining how purchasing power achieved the desired mode of outsourcing. The military have a dilemma similar to civilian shippers acting as customers: they require high service levels combined with low costs. This often means a trade-off between service levels and cost reduction. The military must maintain sufficient transportation capacity to react to potential crises, which requires a secure long-term relationship with their logistics service providers (LSPs).

The results show that the military uses a vertical mode of outsourcing. Since the military build long-term partnerships with LSPs, they can use relationships and negotiating power to improve the services they receive. Good service produces a reduction in indirect logistics costs. The military is a good example of how to buy logistics using the vertical outsourcing mode to gain transactional value, despite the common perception that good service and cost reduction are mutually incompatible.

It is very likely that a considerable amount of vertical-mode outsourcing already occurs in the market but since there are instances where legislation forces

buyers to focus on the horizontal mode, and because unit costs are much easier to control than transaction costs and transactional value, bidding games among LSPs are very common. In addition, the military and security-related public sector have to be prepared for mobilization to meet a crises, and during crises, performance is paramount and costs irrelevant. The security sector should therefore provide good examples of long-term partnerships and transactional value. It is reasonable to consider whether vertical outsourcing is just an operational practice in the security sector or if there are real strategic decisions behind the application of their negotiation power.

### **3.4 Outsourcing strategies and negotiation power**

Juntunen J, Juntunen M, Autere V & Kess P (Forthcoming) Outsourcing strategies in the security sector. *International Journal of Logistics Economics and Globalisation*. (TIIM 2013 Special issue).

Contrary to the classic assumption that strategy explains negotiating power, the findings of this paper indicate that strategy and negotiating power do not have a statistically significant relationship. Strategy is a long-term concept and changes a firm's positioning in the market position in the long term while negotiation power is dependent on the situation at the time of negotiation, and hence there is no direct relationship between the two. They need something, like the current market situation, acting as a mediating factor between them.

Existing strategy can explain direct cost reduction but does not explain perceived service quality. Strategy influences whether buyers use expensive or cheap LSPs, but those who use cheap ones do not differentiate between poor and good quality because their strategy is to use the cheapest and they never experience good service quality. Negotiation power does not influence direct costs as the market determines prices. Even the strongest buyers cannot bargain below market prices, however, buyers with strong bargaining positions receive good service, as LSPs are eager to secure their business.

Together strategy and negotiation power affect direct costs and perceived service quality, which consequently decreases indirect logistics costs. Thus, even if it seems that a negotiation model that argues that profit sharing follows actors' negotiation power does not work in a competitive market context with direct market prices; it works in the long run, through service quality and indirect costs.

From the managerial perspective, the results of this paper are challenging. It gives the impression that existing logistics strategies reduce direct logistics costs, but do not apparently enhance service quality. If buyers are ignorant of a certain procurement strategy, or choose to overlook it, they may still use their purchasing power to improve their buying performance from a total cost perspective. This is a better outcome than slavishly following a misguided strategy. In practice, having disobedient buyers could be good for a company. It is also possible that buyers have a considerably better understanding of total logistics costs than the managers who devised the strategy but became too focussed on direct costs.

To conclude, in practice, buyers should keep a few strategic partners without subjecting them to bidding games and instead follow market pricing and reward the best LSPs for good service. This kind of deep partnership may prevent opportunistic behaviour by LSPs and reduce the problems detailed in agent theory.





## 4 Discussion

As described in the previous chapter, the publications progress from positioning the mutual appeal of the FDF and its transportation business partners to addressing the FDF's mode of outsourcing. At the same time, the papers progress toward offering a more exhaustive understanding of business strategies and use of negotiation power.

### 4.1 Answers for research questions

The purpose of this study was to improve organizational ambidexterity in the supply chain management of the FDF. The main research question was how the FDF can enhance supply security through the Finnish private transportation sector. The research was subdivided into four sub questions to address the main research question.

The first sub question was to clarify what is the Finnish private transportation sector's role from military perspective. The answer is that the private transportation sector is extremely important in Finland, where the military relies on reservists. Further, it seems that there will be very complex challenges to maintain adequate domestic transportation resources in the near future, mainly because the transport sector suffers from low profitability, which could threaten the existence of small companies and cause a lack of skilled truck drivers.

The next sub question was identifying, what is the FDF's role from the private transportation sector perspective. The answer is that the FDF is a very important player in the domestic transportation market. It buys a large volume of transportation services from domestic companies and reduces the influence of foreign transportation companies in Finland. In addition, the FDF is a major trainer of truck drivers and an important source of skilled workers for the industry.

The third sub question sought to improve the understanding of what kind of logistics services' acquisition strategy the military currently employs. A study of the buying behaviour of the FDF reveals that it tries to concentrate on good service quality and forging deep partnerships. This seems to be a good strategy, and is very efficient from the perspective of total logistics costs.

The fourth sub question was to study how the existence of a logistics strategy influences the military's negotiation power and logistics costs. It was interesting that the existence of the strategy did not affect negotiation power, but did influence direct logistics costs. This is interesting because in the previous sub-topic, I

found that the FDF logistics purchasing strategy is one of forging partnerships instead of focusing on direct logistics costs. Thus, it seems that the strategy is not in line with behaviour.

From a game theoretic perspective, how the FDF enhances supply security is very important. The private transportation sector is extremely important for the FDF and vice versa. Because the logistics strategy influences only direct cost, the FDF has a lesson to learn from its own behaviour of concentrating on quality instead of short-term cost to reduce total logistics costs. This would also improve the maintenance of domestic transportation resources.

**Table 3. Answers for subquestions.**

Research question	Article and answer
1: What is the Finnish private transportation sector's role from the military perspective?	Article 1: The private transportation sector is extremely important in Finland, where the military relies on reservists. It appears there will be highly complex challenges to be able to maintain adequate domestic transportation resources in the near future.
2: What is the FDF's role from the private transportation sector perspective?	Article 2: FDF is a very important player in the domestic transportation market because it buys a large volume of transportation services from domestic companies. In addition, the FDF is a major educator of truck drivers and an important source of skilled workers for the industry.
3: What kind of logistics services acquisition strategy do the military forces currently employ?	Article 3: FDF reveals that they try to concentrate on high service quality and forging deep partnerships.
4: How the existence of a logistics strategy influences the military forces' negotiation power and logistics costs?	Article 4: The strategy did not affect negotiation power, but did influence direct logistics costs. Article 3: FDF logistics purchasing strategy is one of forging partnerships instead of focusing on direct logistics costs. Articles 3 and 4: The FDF sourcing strategy is not in line with behaviour.

## 4.2 Theoretical implications

The first important theoretical contribution of the papers included in this dissertation is that truckers should endeavor to maintain the good image of the industry because there is a relationship between image of the industry and profitability.

The second contribution is the finding that the military and security-related public sector presents a good example of how to buy logistics services using the vertical outsourcing mode to gain transactional value, despite the common perception that good levels of service and cost reduction through market competition are mutually incompatible.

Contrary to the classic assumption, strategy and negotiating power do not have a statistically significant relationship in this context. Strategy and negotiation power affect direct costs and perceived service quality, which consequently reduce indirect logistics costs. Thus, even if it seems that a negotiation model assuming that negotiation power's influence on profit sharing does not apply in competitive markets with direct market prices; in the effect is noticeable in the long run, through service quality and indirect costs.

The fifth and most important theoretical contribution is a new definition for organizational ambidexterity in the security sector. *Organizational ambidexterity is an organization's ability to be aligned and efficient in its management of today's activities while simultaneously being adaptive to changes in the environment.* This definition emphasize that instead of business demands, perhaps firms should concentrate their activities. I see support for this argument in the work of Markides (2013), who states that the trick is to find firm-specific ways to compete successfully with dual business models. Further, it is also appealing to think that organization culture and identity may be an important strategic capability in hosting ambidextrous organizational design over time (O'Reilly & Tushman 2013).

## 4.3 Practical implications

The first result of this research, from a managerial perspective, is that the negotiation position of Finnish transport companies is very unsatisfactory and may affect their ability to make acceptable profits from the shipping market. Non-updated contracts between buyers and sellers seem almost useless, but with adequately updated contracts, logistics entrepreneurs may gain better profits even if their negotiation power is weak. Truckers should also try to maintain the good image of

the industry, because image influences profitability in the Finnish transport industry.

The military and security-related public sector offers a good example of how to buy logistics services using the vertical outsourcing mode to achieve transactional value. They forge long-term partnerships with LSPs and use those relationships and the associated negotiating power to improve the service level they receive. In addition, a good level of service reduces indirect logistics costs. Hence, buyers of logistics services should understand the importance of quality to total logistics costs.

Companies employing the cheapest LSPs will not differentiate between poor and good quality, because they are unlikely ever to have encountered very good service quality. Negotiation power does not influence direct costs, but buyers with strong bargaining power get good service since LSPs are eager to secure their business relationships. Buyers of logistics could learn from the military how to use negotiating power and strategy to obtain both better service and direct cost reductions, as together those explain reduced indirect costs.

This research exposes the possibility that, in some situations, buyers of logistics services may have a considerably better understanding of total logistics costs than the managers who devised the strategies but who have become overly focused on direct costs. If buyers of logistics services are oblivious to a certain procurement strategy, or choose to ignore it, they may apply their purchasing power to get a better deal from a total logistics costs perspective than if they slavishly follow a unwise strategy. When managers are unaware of the practical consequences of different buying strategies, disobedient buyers can be good for a company.

If it were to adopt the findings above in combination, the FDF should have sufficient tools to improve its organizational ambidexterity and so be better prepared for changes in the security environment, and more efficient in its current activities. Obviously, these results are also applicable to private sector organizations developing or maintaining organizational ambidexterity.

#### **4.4 Reliability and validity**

The sound theoretical background of this dissertation and its constituent papers means there is no reason to doubt the validity of the research. Results are in line with previous research and common sense so there is no reason to doubt its reliability either. However, the generalizability of the findings is restricted for alt-

though the supporting literature is international, the data set encompasses organizations from only one nation.

Because all papers included in the dissertation have been carefully evaluated with statistical fit indices and found to be reliable and valid, and because this dissertation is heavily based on those papers, it follows that the validity and reliability of this dissertation is also adequate. I am also confident that using two different data sets and different kinds of research models reduces the probability of some systematic error, however if there were an undiscovered systematic error, I would have to admit that the same error may reoccur throughout the dissertation.

To conclude, all research has its limitations and potential for improvement, but there is no reason to think that the current research is not sufficiently valid and reliable to meet its stated purposes. In addition, while their wider generalizability is limited, the findings are generalizable to the field of logistics services, a positive aspect that gives me the confidence to claim that the research of this dissertation is of value.

#### **4.5 Recommendations for further studies**

As mentioned in the preceding section, the data originate from one country and one line of business. An obvious arena for further study would be to test findings in other lines of business or countries. Both data sets were collected during 2008 and 2009 when the global economy was entering recession, and new data might reveal interesting aspects of buying behaviour in different economic circumstances. In the near future, it would obviously be quite interesting to study whether logistics operators or FDF have actually taken stock of the findings of this thesis, or applied them in some way in their operations.

In addition, investigating other independent latent variables, like the agility and leanness of the supply chain, could increase understanding of how service performance in the supply chain could be improved. Another interesting approach would be to add image factors like the corporate brand image or image of the industry to the research model.

Last but not least, it could be productive to transfer the findings of this research across to the private sector and a different context, and then re-examine them. A comparison between the security sector and the private sector would probably be very beneficial from the perspective of theoretical development, and would certainly be very interesting from the perspective of possible managerial

implications. The organizational ambidexterity discussion certainly has the potential to unite security sector and private sector research in future.

## 5 Summary

The purpose of this study was to enhance the organizational ambidexterity of the FDF in relation to its supply chain by revealing potential issues and offering new ideas for cooperation between the private transportation sector and the FDF. The main research question addressed how the FDF might enhance supply security in cooperation with the Finnish private transportation sector. To address this question, the research was divided into four sub questions. In practice, the articles contributing to the dissertation addressed the sub questions and when combined the answers to those sub questions determined the answer to the main research question.

The first sub question sought to clarify the role of the Finnish private transportation sector from the military perspective. It is a particularly important topic in Finland, where the military relies on reservists. There will be complex challenges in maintaining adequate domestic transportation resources in the near future, mainly because profitability in the sector is low and there might be problems with small companies and a lack of skilled truck drivers.

The second sub question was about identifying the FDF's role from the private transportation sector perspective. The answer is that the FDF is an important actor in the domestic transportation market. It buys a large volume of transportation services from domestic companies and that reduces the influence of foreign transportation companies in Finland. In addition, the FDF is an important trainer of truck drivers and therefore important in providing a skilled workforce for the industry.

The third sub question sought to increase understanding of the military's current logistics services acquisition strategy. Studying the buying behaviour of the FDF reveals that it tries to concentrate on obtaining good service quality and forging deep partnerships. This seems to be a good strategy, because it is very efficient from the perspective of total logistics costs.

The fourth sub question examined how the existence of logistics strategy influences the military's negotiation power and logistics costs. It was interesting to note, that the FDF's logistics strategy did not affect its negotiation power, but did influence its direct logistics costs. This is interesting because in the previous sub questions I found that the FDF's logistics purchasing strategy focuses on partnership instead of concentrating on direct costs. Thus, it has to be that the existence of the strategy is not in line with observed behaviour.

From a game theory perspective, it is very important how the FDF enhance supply security: the private transportation sector is extremely important to the FDF and vice versa. Logistics strategy only influenced direct logistics costs, so the FDF has a lesson to learn from itself, concentrating on quality instead of short-term costs strongly affects total logistics costs, and in addition, improves domestic transportation resources.

With multiple theoretical and practical implications, this dissertation fulfilled its purpose and answered the research questions. By combining the answers, the FDF should have the tools to improve its organizational ambidexterity. These results are also applicable to the private sector in developing or maintaining organizational ambidexterity.

Validity, reliability, and generalizability were at an acceptable level, and limitations were evaluated. Further research was suggested. I hope this dissertation has combined clear packages of information and that researchers in the future can continue from the point where this research ends.



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## Original publications

- I Juntunen J, Juntunen M & Autere V (2011) Protecting Finnish defence security: A logistics challenge. *International Journal of Shipping and Transport Logistics* 3(3): 295–311.
- II Juntunen J, Juntunen M & Autere V (2011) A case study on the role of the Finnish Defence Forces in the transport sector. *Journal of Military Studies* 2(1): 34–43.
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