

Identifying total defense logistics concepts: a comparative study of the Swedish pandemic response

Imoh Antai and Roland Hellberg

Department of War Studies and Military History, Swedish Defence University, Stockholm, Sweden

Abstract

Purpose – The total defence (TD) concept constitutes a joint endeavour between the military forces and civil defence structures within a TD state. Logistics is essential for such joint collaboration to work; however, the mismatch between military and civil defence logistics structures poses challenges for such joint collaboration. The purpose of this paper is to identify logistics concept areas within the TD framework that allow for military and civil defence collaborations from a logistics operations perspective.

Design/methodology/approach – Pattern-matching analysis is used to compare patterns found in the investigated case with those prescribed from the literature and predicted to occur. The study seeks to identify logistics concepts within TD from the literature and from the events describing the Swedish response to the Covid-19 pandemic. Pattern matching thus allows for the reconciliation of logistics concepts from the literature to descriptions of how the response was handled, albeit under a TD framework.

Findings – Findings show quite distinct foci between the theoretical and observational realms in terms of logistics applications. While the theoretical realm identifies four main logistics concepts, the observational realm identifies five logistics conceptual themes. This goes on to show an incongruence between the military and civil parts of the TD.

Research limitations/implications – This study provides basis for further research into the applications and management of logistics activity within TD and emergency response.

Originality/value – Logistics applications within TD have not, until now, received much attention in the literature. Given this knowledge gap, this study is of original value.

Keywords Civil defence, Civilian response, Observational realm, Theoretical realm, Total defense, Total defense logistics

Paper type Research paper

1. Introduction

Total defence (TD) is an approach to national security typically undertaken by small, non-aligned states (Berzina, 2020), in which military and civil aspects of the state's infrastructure collaborate with public and private organizations towards national and territorial security (Wither, 2020). Based on the Total War concept (Black, 2010), a concept of war where war aggressions are aimed at the military forces and civilian populations of the enemy (Honig, 2012), the main objective of a TD strategy is to create deterrence by raising the cost of aggression (Wither, 2020). As such, within the TD approach, responsibility for such deterrence becomes a shared societal responsibility among the military defence, civil defence and the population at large (Wither, 2020).

Logistics is critical to military strategy and viewed at from a variety of perspectives. From a systems perspective, it creates and supports defence capabilities for military operations (Peppers, 1988). Eccles (1959) emphasizes the connectivity capabilities of logistics, describing logistics as “[. . .] a bridge

between the economic system of the nation and the combat forces”. In this way, Eccles (1959) links logistics to military strategy in a somewhat interdependent-type relationship. Other authors have gone on to link logistics to economics (Ballantine, 1988) by describing logistics as a link between the military front and the civilian front in the civilian environment, and as such see logistics as a coordinating activity between military defence and the economy. Therefore, the essence of logistics lies at the heart of integration and coordinating tactical, operational as well as strategic plans, considering actual situations on both “fronts” of the actual the battle – military and civil.

In spite of the importance and necessity of logistics management to the economy, the military and the population at large is clear; extensive societal changes have taken place in recent times that have changed the conditions of security and security of supply, given the 2022 invasion of the sovereign

The current issue and full text archive of this journal is available on Emerald Insight at: <https://www.emerald.com/insight/2042-6747.htm>



Journal of Humanitarian Logistics and Supply Chain Management
14/2 (2024) 208–222
Emerald Publishing Limited [ISSN 2042-6747]
[DOI 10.1108/JHLSCM-07-2022-0084]

© Imoh Antai and Roland Hellberg. Published by Emerald Publishing Limited. This article is published under the Creative Commons Attribution (CC BY 4.0) licence. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this licence may be seen at <http://creativecommons.org/licenses/by/4.0/legalcode>

Received 20 July 2022
Revised 16 November 2022
Accepted 7 February 2023

state of Ukraine by the Russian Federation. While the importance of logistics has garnered much attention concerning the military front, there is a lack of similar institutionalization of logistics within the civil defence front. It is hypothesized here that because of the security status of the military as the main line of sovereign defence, the military aspect of the TD structure is more organized, more equipped and more deeply embedded across different levels of administration and management than its civil defence complement within the TD structure.

This fragmentation is a problem as it hampers our understanding of why one front of the critical TD structure lacks a viable wartime and crisis logistics structure, which is clearly detrimental to the efficacy of the TD concept. Moreover, literature remains silent on the issue of logistics and its coordination within civil defence under the TD framework. As such, it is timely to examine the characteristics that underpin logistics within TD discourse to identify logistics as well as other discrepancies between the two fronts. Furthermore, given ongoing and potential threats to security, the viability of the logistics component on both sides (i.e. military and civil defence logistics) must be constantly evaluated for purposes of coordination and integration.

In this paper, we review academic literature, memos and governmental reports from both sides of the pattern-matching model to explore the status of logistics practice within the TD discourse, with the aim of developing a set of conceptual characteristics that depict the conditions under which logistics is discussed within this context. We then develop a framework based on a pattern-matching analysis of the theoretical and observational realms within TD. We develop the theoretical pattern (literature) by reviewing the literature within military and business logistics. Similarly, we develop the observational pattern via analysing the case of the 2020 Swedish Covid-19 response, seeking to contribute to the discourse of logistics around the TD concept. In doing so, our paper contributes to the discourse on humanitarian (Tatham and Pettit, 2009; Heaslip and Barber, 2016; Kaneberg, 2018; Kovacs *et al.*, 2019) as well as military logistics, viewed from a TD perspective. Our analysis helps to proffer an understanding of how stakeholders respond to logistics issues from the TD perspective, including enabling and disabling factors for both sides. Next, we report the method.

2. Method

The aim of this paper is to develop our understanding of logistics within the TD concept, identify frequently used concepts within the TD discourse and to develop conceptual characteristics for the academic as well as the management community working on issues of TD from the civil perspective.

Concepts are the building blocks of theories (Shoemaker *et al.*, 2004). Anchored on an internal realist ontology (Putnam, 1987), the study followed a single-case explanatory–exploratory methodology (Levy, 1988). The explanatory approach seeks to determine the extent to which patterns of acquisition and use established in one or more environments are applicable to other different environments, while exploratory approaches investigate the economic aspects of phenomena under study. The theoretical and observational

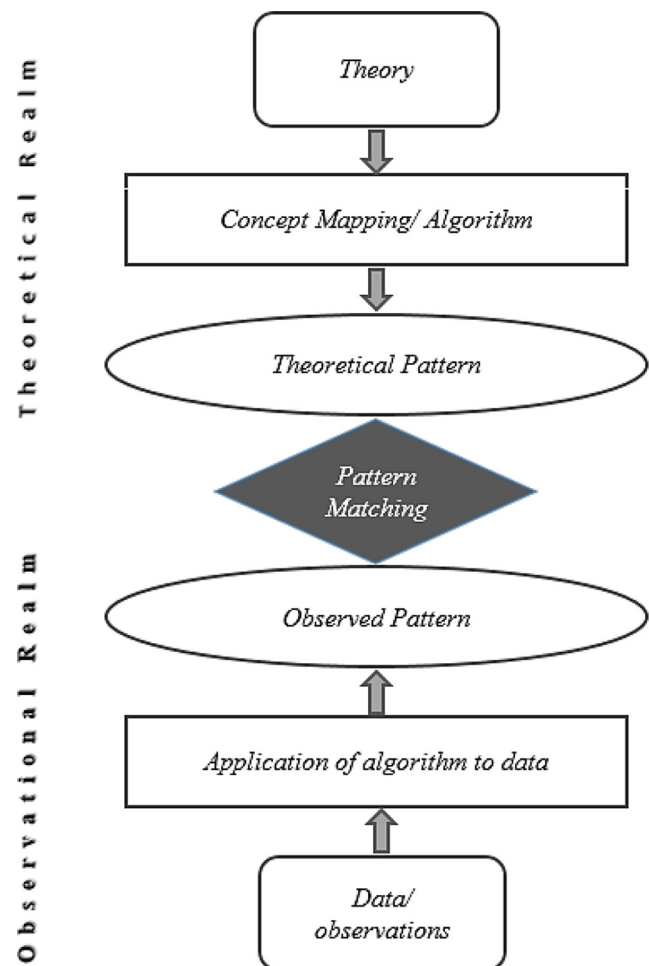
realms are seen as spanning the explanatory–exploratory spectrum.

We obtained freely available data on the handling of the pandemic by using reports, official documents and observations of events surrounding the service providers.

Sources provided insights into the “how’s” and “why’s” of the observation, as well as allowed for exploration of the data for the purpose of identifying different concepts of logistics used within the discourse of the response descriptions. While linking propositions to observed data remain under-developed within case studies, pattern-matching analysis may be used (Yin, 2003). Because we make sense of our world by matching those things we observe externally to those models we internalize mentally (Hammond, 1966), pattern matching allows us to externalize mental models and assumptions (Sinkovics, 2018).

Pattern-matching analysis (Figure 1) is a technique used to compare patterns found in study cases to those prescribed from the literature and predicted to occur (Trochim, 1989). This study seeks to develop logistics concepts based on the Swedish response to the Covid-19 pandemic. Thus, pattern-matching methodology allows for the reconciliation of

Figure 1 Pattern-matching analysis framework



Source: Authors’ adaptation from Trochim (1989)

logistics concepts between scientific literature (theory) and observations of how the Covid-19 pandemic under the TD framework was handled.

Within the theoretical realm of the model, two theory levels are recognized (Sinkovics, 2018). First is the theorizing level, which is the process of gathering, organizing, explaining and predicting phenomenon (Le Coze, 2008). Theory here can be understood as the idea used to explain a given situation or justify a certain course of action, which trickles down through the concept map/algorithm to reveal the resulting explanatory theory (theoretical pattern), which seeks to propose explanations for the expected observations, and thereby makes up the second theoretical level (Figure 1). The identified theoretical logistics concepts are described in Section 3.2.

Likewise, the observational realm includes two theory levels, an observational theory level that explains how believable inferences about the case are developed based on the material or data collected (Sinkovics, 2018), which in this case is the Swedish response to the Covid-19 pandemic from a total response perspective. Lastly, theory of data construction at the observational level ensures that relevant raw data were collected using appropriate modes, and subsequently treated for use in this realm. In Section 4.2, we describe the observed patterns. The matching between the theoretical realm (i.e. theory-identified concepts), and the observed realm (i.e. case-observed concepts) is undertaken in section 5.

Figure 2 presents a schematic of the research protocol developed for this study. General literature search of “total defence”, while broad, was used to gain diversity among academic sources and to qualify information obtained for

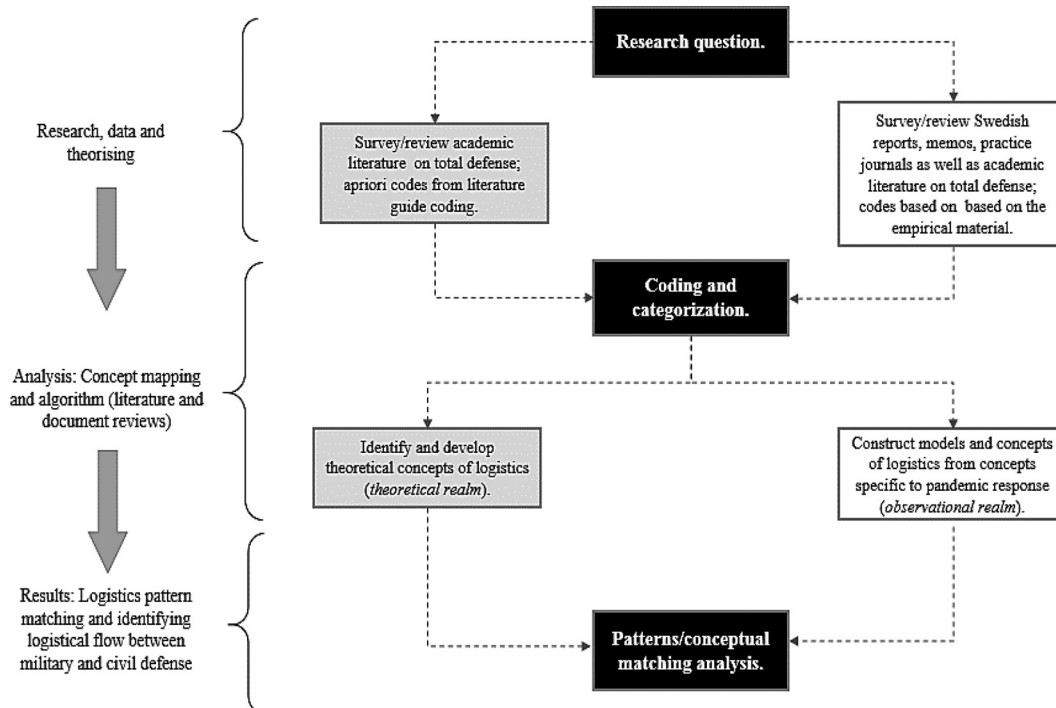
manageable results. The researchers selected the case based on the nature of the emergency, which required a TD posture to protect the citizens from the crisis. The next section reviews the concept of TD from a number of literature perspectives, followed by the state of logistics within the concept of TD.

3. Conceptualizations of total defence

TD is a concept developed largely from the idea of total war (Berzina, 2020). Based on the idea that national security, and hence wars, no longer operates within a separate environment from all others, but one in which all segments of society are affected by war (Spillman, 1987), total war has influenced the adoption of the TD concept. Developed in 1935 by German General Erich Ludendorff, the idea of total war is the notion that the armed forces and civilian population represent a single entity and that the sphere of aggression during war extends to the entire territory of independent nations (Berzina, 2020). As such, total war presents the rationale for the concept of TD, and thus depicts two sides of the same coin (Berzina, 2020).

The concept of TD also rests on the spirit and willingness of a nation to resist aggression from a foreign hostile entity (Berzina, 2020; Wither, 2020). This is exemplified in the case of Switzerland in 1973 (Spillman, 1987) and the former state of Yugoslavia, in 1974 (Dulić and Kostić, 2010), where the ability to protract a war via resistance and the constitutional prohibition of capitulation, respectively, formed the basis of the TD strategy for these states. This also embodies the idea of the Finnish total defence strategy (Harinen and Leskinen, 2009), where the concept of TD has been vital to Finnish hitherto peaceful coexistence with its Russian neighbour and Western

Figure 2 Research protocol



Source: Authors' conceptualization

states (Valtonen and Branders, 2021). Wither (2020) defines TD from a resilience perspective, i.e. the ability of the societal infrastructure to resist and recover quickly without much effort from shocks and attacks to the civilian, economic, commercial and military aspects of a nation.

TD generally consists of military and one or more forms of civil defence components (Wither, 2020), where the military defence component constitutes the centrepiece of the TD concept. However, the development of the concept of TD is not so straightforward. While at least ten countries undertake TD strategies around the world, the component parts of the concept differ across these countries concerning the pertinent dimensions of TD. For example, Singapore, a country with approximately 5.5 million people, presents the broadest organization of the TD concept across five pillars, including military, civil, economic, social and psychological defence (Matthews and Yan, 2007), and in 2019 added a sixth pillar, digital defence (Nicholson *et al.*, 2021). Sweden maintains four organizational branches under the TD concept, including military defence, economic defence, psychological defence and civil defence (Larsson, 2021b). While most other organizations of TD include these aspects, they are often discussed under the broad role of civil defence.

Based on Nicholson *et al.*'s (2021) investigation, military defence within the context of the Singaporean TD rests on the ability of the Singaporean Air Force to effectively and decisively confront aggression, should deterrence and diplomacy fail. Civil defence, on the other hand, provides safety and basic needs of populations to enable the continuation of societal functions in the best possible way during emergencies, crisis or strife. Economic defence seeks to support businesses from the economic shocks and destabilization of the system. Psychological defence addresses the commitment of individual citizens to the protection and the preservation of the country, while social defence focuses on building ethnic, religious and language tolerance among Singaporeans to build an effective TD structure. Lastly, digital defence presents as a national effort to defend citizens from cyber-attacks via, for example, fake news, by rolling out media literacy campaigns to teach citizens how to identify fake news stories.

For the most part, TD strategies are organized along two independent but complementary lines of action, i.e. military and civil defence. While the role of the military aspect of this defence strategy is quite well known, the purpose of the civilian aspect of TD is not to further militarize the civilian sector but to eliminate organizational and ideological barriers that may hinder the smooth collaboration between civil institutions (Missiroli and Rühle, 2020). In a broad sense, civil defence is discussed under two major roles: improving operational preparedness between key actors, and anticipating and preparing for broader, unconventional and even asymmetric challenges, including countering digital disinformation and cyber-attacks (Missiroli and Rühle, 2020). Thus, aside from the armed forces, civil defence seeks to institutionalize collaboration between government ministries, civic organizations, the private and business sectors as well as the general population that organize and carry out supporting civil defence activities and operations. Within the improvement of operational preparedness, which embodies the central hub of the civil defence, a number of critical and important activities

occur within this function. Among them are the improvement of stockpile and demand management, development of emergency response contingencies, training in emergency response scenarios, identifying and re-engineering critical supply chains and improving intelligence and information sharing (Missiroli and Rühle, 2020). Under preparation for asymmetric threats and unconventional challenges, activities include the development and improvement of counter-disinformation abilities, and the improvement and preparedness for chemical, biological, radiological and nuclear threats. In addition, this aspect seeks to use means available to them to discourage reckless behaviour concerning transparency of states and institutions concerning attacks and threats, and finally coming to terms with emerging technologies and disruptive capabilities capable of generating attacks on a population. Updating forecasting methods and techniques for faster and more accurate results also falls within this role.

3.1 Logistics: a total defence overview

The role and significance of logistics within the military has stayed relatively unchanged across military history (Prebilič, 2006), mostly because the fundamental prerequisites of operating and maintaining military systems have not changed. While those prerequisites have remained steadfast, the conditions around which the military undertakes operations are changing with new, increased and asymmetric threats to peace and security (Bellamy and Hunt, 2015). Military operations, for the purpose of war, break down along three levels of warfare activity – strategic, operational and tactical (Harvey, 2021). While literature also discusses a fourth level, these three main levels are most widely used to link tactical action to the achievement of national security objectives. The strategic level focuses on using the instruments of national power in a coordinated and integrated manner to achieve theatre and multinational objectives (U.S. Joint Staff, Joint Publication 1, 2013) and is applicable to all forms of war and conflict from military activities. The operational level is concerned with linking strategy and tactics to achieve military goals and strategic objectives (U.S. Joint Staff, Joint Publication 1, 2013), via the design, organization and management of campaigns and vital operations. Lastly, the tactical level is made up of activities and actions such as battles, manoeuvres and engagements that enable the execution of operations that seek to accomplish campaigns undertaken by the military forces with the purpose of creating advantage and combat power over enemies.

3.2 Levels of logistics organization and management

Logistics within the military is congruently organized at the strategic, operational and tactical levels (Kress, 2016). However, to use logistics seamlessly across these levels, we need to understand the nature and objectives of activities that are typically conducted within these three levels. Strategic logistics deals with creation, development and maintenance of the logistics infrastructure of the national military, including inventory, storage capacity and transportation technology and industry. However, doctrine, training and logistics-combat readiness are some of the operational issues that are handled at the strategic level. Common strategic-level decision-making problems include the distribution of economic resources among the broader logistic infrastructure and the best mix of

resources infrastructure within a focused area of logistics. Standardization and uniformity, macroscopic, aggregative and resource-based are some of the characteristics that differentiate strategic logistics for the others. It is predictable mostly because of the large quantities it routinely handles, unaffected by local and random variations in logistic demands, which makes it quite stable over time.

From a functional perspective, [Kress \(2016\)](#) defines operational logistics as [. . .]. “a collection of means, resources, organizations, and processes that share the common goal of sustaining campaigns and large-scale military operations”. They include components that make up the tasks and missions that need to be executed to support campaigns and large-scale operations. Within this view, tasks and missions are seen as the operators that convert logistics capabilities at the strategic level to logistics need at the tactical level. It is at this level that field manuals, doctrines, etc. are developed and distributed and thus serves as a bridge between the aggregate focus of the strategic level and the microscopic nature of the tactical level, at least from a logistics perspective. [Kress \(2016\)](#) defines such structures form the basis for operational logistics as follows: the logistics node (locations in the logistics network where logistics activities take place); logistics edge (transportation structures connecting two logistics nodes, a rear supply node with forward supply points, e.g. roads, railway lines, etc.); lines of communication (LOC; routes that connect frontline forces in a military operation to their rear area logistics base); and the logistic network itself, which is an organized array of nodes, edges and lines of communication as described above and generally disintegrated into source, intermediate and destination nodes.

Lastly, tactical logistics comprise “[. . .] basic and practical activities that facilitate the “production” of military outcomes” ([Kress, 2016](#)). Focusing on three vital features of tactical warfare, including protection, mobility and firepower, tactical logistics support troops by supplying needed materials such as ammunition, fuel and medical care. Given tactical logistics operate at the lowest level, i.e. the frontlines or close to it, conditions and circumstances on the ground can be volatile, sensitive to change and require a micro-management approach to activities at this level. The main activities undertaken within tactical logistics include replenishment, resupply (rations, hygiene, etc.), repair/maintenance, medical care, evacuation and construction/engineering services ([Kress, 2016](#)).

Similarly, logistics from the non-military perspectives espouse, for planning purposes, three identical levels to those of military logistics – tactical, operational and strategic levels ([Schmidt and Wilhelm, 2000](#)). While the taxonomy is similar between the two, the understandings they refer to and represent remain quite different. [Schmidt and Wilhelm \(2000\)](#), in their review of operation decision-making in multi-national logistics, argue that international logistics require these three levels of decision-making, given the complexities involved in modelling such complexities. The strategic level of logistics planning deals with the network itself, determining its design, facility locations, plant capacity and technologies to be used at each plant location, over relatively long (2–5 years) time horizons. The objective here is to maximize overall profit, and for that reason needs to integrate suppliers, transportation networks and customers to maximize the efficiency of the network.

The operational logistics level in essence deals with the production time (P-time), i.e. the total time it takes for a product to go through a logistics pipeline ([Harrison et al., 2019](#)). Operational logistics level hence plans production operations to guarantee on-time delivery of products. The central dilemma at this level is determining when to start a manufacturing process to meet the demand time (D-time) – the total time customers are willing to wait to have their demand (orders) fulfilled ([Harrison et al., 2019](#)).

The tactical logistics level, with a planning range of between 6 and 24 months, deals with material flow management, including production levels, inventory levels, lot sizes, etc. across plant locations in the network, bridging the time horizons of the strategic and operational levels. Given the strict hierarchies and interdependencies between the three levels, it is inevitable that conflicts arise amongst these different logistics levels. For example, while the tactical logistics level determines material throughput strategies, however, such strategies are largely futile if restricted by strategic-level logistics decisions in the development and management of the network ([Schmidt and Wilhelm, 2000](#)). It then follows that because strategic-level activities define the logistics design of the network, it then determines the settings under which tactical and operational levels must operate.

However, from the management perspective, business logistics is handled at two basic levels: the management and strategic levels ([Harrison et al., 2019](#)). The managerial perspective caters to the day-to-day management of activities and processes regarding time, cost and quality, while the strategic perspective focuses on developing and implementing principles, policies, motivations and attitudes shared by partners and service providers across the network.

The purpose of business logistics is to generate value for customers by performing activities and managing resources efficiently to increase competitiveness across the logistics chain ([Lambert et al., 1998](#)). As such, the scope of activities within business logistics remains broad and range from storage and warehousing, procurement, purchasing, schedule planning, transportation, materials handling, packaging, inventory, information management and control and many more. Given this extensive scope, logistics activities differ along industry and sector lines. For example, within the oil and gas industry, [Abdulla and Musa \(2021\)](#) identify 56 elements of logistics, which they further classify into seven groups, including information flow management, integration, agility, logistics information system, transportation, inventory management and order processing. Within E-grocery retailing, [Mkansi et al. \(2018\)](#) recognize five elements of logistics to include storage, communication, inventory, unitization and packaging and transportation – where excellence in the areas of inventory management, distribution and transportation is a vital key success factor and constitutes core competitive strategies within e-retailing ([Reiner et al., 2013](#); [Turban et al., 2015](#); [Hubner et al., 2016](#)). [Porter’s \(1985\)](#) value chain model understands the logistics undertaking by breaking it down into primary activities (inbound and outbound logistics, operations, marketing/sales and sales) and support activities (infrastructure, human resource, technology and procurement). As such, logistics from the value chain perspective presents a system that includes underlying

subsystems receiving input, which is subsequently processed to create some form of output (Pal and Altay, 2019) that is valuable to customers and end-users.

The Global Supply Chain Forum identified eight essential supply chain management processes as the basis for supply chain success, including customer relationship management; customer service management; demand management; order fulfilment; manufacturing flow management; supplier relationship management; product development and commercialization; and returns management (Lambert, 2004). Based on these processes, Marchesini and Alcântara (2016) developed 24 logistics activities for the eight key processes.

While current literature has highlighted the importance of logistics within the TD concept, much of its focus is on the military logistics aspect. Moreover, an especially significant gap is seen within the area of logistics within the civil aspect of the TD, where there has been no clear and extensive research attempts to identify and link both aspects of TD from a logistics perspective. Given the responsibilities of the civil defence to the military defence, at the very least, military and civil defence are highly interlinked; as such, there is a requirement for a high level of coordination between them.

Based on reviewed and extant literature, we identify and outline four major concepts that together depict TD, and are shown in Figure 3. This enables us develop a theoretical map/algorithm of TD logistics. For each of the major concepts developed, there is a military logistics component, with black directional arrows, and a non-military logistics part, with broken grey arrows to it.

The first part of the model (theoretical pattern) is developed here and is based on four major clusters of activities. The choice of a framework with a focus on management levels from both perspectives underscores the fact that within the contemporary peace, crisis and war environments, it is impractical for one part of the TD structure to be misaligned with the other concerning logistics. As such, coordination activities at the operational level within the military logistics framework should be compatible, if not similar to those of the civil defence, and vice versa, across management/organizational levels.

The four TD logistics concepts are attached to different managerial/organizational structures (strategic, operational and tactical levels), as depicted in Figure 4. The shaded areas show where there is a match between identified logistics clusters and organizational activity level. Logistics infrastructure is handled at the strategic level of organization, while production and logistics activities, respectively, function at the operational and tactical levels. The only TD logistics concept that is organized at two organizational levels is network design, which is present at the strategic and the operational levels. While the military logistics structure undertakes network design at the operational level, non-military logistics handles the design of its network at the highest level, the strategic level.

4. Total defence: the Swedish perspective

From the Second World War to the end of the 1990s, extensive contingency planning was carried out in Sweden in preparation for war within a TD posture (Motion till riksdagen, 1987). According to the Swedish Defence Research Agency (FOI) Memo 7900 (2022), civil defence consisted of various parts such

as economic defence and psychological defence, and authorities had clear coordination responsibilities within their TD roles. Such organizations included the Supreme Board for Economic Defence (Överstyrelsen för ekonomiskt försvar), the Board for Psychological Defence (Styrelsen för psykologiskt försvar) and later also the Supreme Board for Civil Contingency (Överstyrelsen för civil beredskap). Today the Swedish state organizes TD under a number of services (Larsson, 2021b): military defence, which includes the army, the air force, the navy and the home guard; psychological defence, which deals with issues of public media and information dissemination to counter disinformation campaigns within cyberspace; and economic defence, which handles the procurement, storage and supply of food, medicine, fuel and other necessary items (Försvarsdepartementet, 1995; Konow, 1961).

Civil defence, the second largest arm of the TD structure, entails three mutually reinforcing aspects (Tolis, 2018). First is the protection of the civilian population during a crisis, emergency or conflict. In other words, it focuses on undertaking some or all of the humanitarian activities to ensure the protection of civilians and to create conditions necessary for its survival, as stipulated by the Geneva Convention (United Nations, 1977). Second is to ensure the continued functioning of society's most vital functions. In this regard, the government set up the Swedish Civil Contingencies Agency (MSB) and tasked it with developing a strategy for the protection of vital societal functions (MSB, 2011). A function is vital if it is:

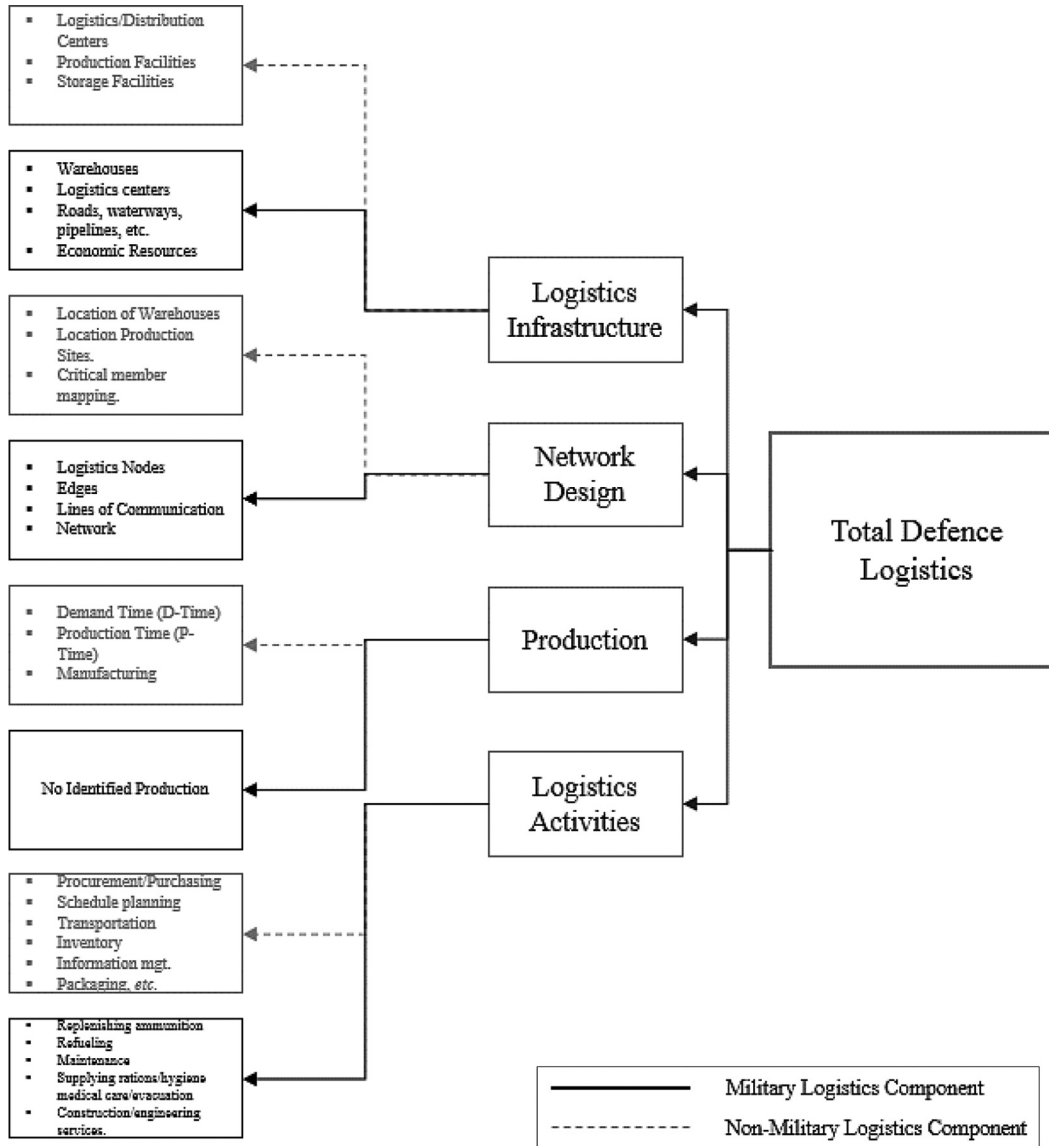
[...] of such importance that its loss or severe disruption to it could entail major risks or hazards for the life and health of the population, the functionality of society or society's fundamental values.

These vital functions include energy, financial services, food, health-care services, information and communication, public administration management, safety and security, social insurance, technical municipal services, trade and industry and transport (MSB, 2011).

Lastly, civil defence is to support the Swedish armed forces' capability to defend the nation in the event of an armed aggression or war. Aspects of such support vary over time and across a number of activities, e.g. transportation, logistics, food supply, fuel, electricity and telecommunications, access to health-care resources, etc. (Försvarsdepartementet, 2015). One area where reconstruction of the Swedish TD began in earnest was with the occurrence of the Covid-19 pandemic in 2020 and the weaknesses that emerged in its management, which raised questions about the planning and security of supply at various levels. The Russian invasion of Ukraine in February 2022 also acted to change the focus of defence and security policy.

According to Larsson (2021a), the TD agenda in Sweden today incorporates the elements of societal security, resilience and neoliberal governmentality that replaced the state-citizen relationship with citizen-citizen relations and dissolved the important war/peace and crisis/security distinctions. In its assessment of capabilities and shortcomings of civil defence from May 2022, the Swedish Civil Contingencies Agency (MSB) states that the municipalities need to be included more in TD planning (MSB, 2022). Municipalities play a significant role in protecting the populace by maintaining services like water and sewage, sanitation, trade in goods and services, schooling, childcare, and health care, and as a result, they have

Figure 3 Theoretical logistics concepts within total defence literature



Source: Authors' conceptualization

Figure 4 Total defence logistics–organization matrix

		Organisational/Management Levels		
		Strategic	Operational	Tactical
Total Defence Logistics	Logistics Infrastructure			
	Network Design			
	Production			
	Log Activities			

Source: Authors' conceptualization

an impact on the operation of other crucial societal functions. Transportation is one of the elements that support civil defence. A functioning transport infrastructure is also a prerequisite for the mobilization of the armed forces in the theatre of war. For the military, this applies to transport for food, fuel and fuel supply, medical service, police and other rescue operations. Transport of personnel and goods is also a prerequisite for the Armed Forces' security of supply (Departementsserien, 2017). However, the transport sector is dependent on other societal functions, e.g. electricity and fuel supply, to function. For example, a reduced capacity of the railway system can be expected as ordinary signalling systems and power supply cannot be expected in a war situation (Departementsserien, 2017, p. 175.). Thus, planning and rehearsing of plans will need to be carried out at central, regional and local levels, including receiving any international civilian or military support to Sweden. The distribution of goods and supplies must be reviewed and secured, i.e. the local nodes and edges for the supply of food, fuel, etc. can be established in different parts of Sweden.

Planning for transportation is expected to be conducted so that the Armed Forces can use state-owned vehicles, ships and aircraft as needed. Examples of such vehicles are the Swedish Maritime Administration's helicopters and icebreakers. To achieve a rational use of these types of state resources, it is important that responsible authorities in procurement take the needs of the TD into account (Departementsserien, 2017, pp. 177–178). Along those lines, all authorities are obliged to take the requirements of TD into account in their activities (Försvarsdepartementet, 2015). Like many other sectors, several socially important activities in the transport sector are owned, operated and managed by private actors. Examples include the air navigation service and airport operations, which include both Swedish and foreign companies, both state and privately owned. Another example is rail traffic, where private actors are vehicle owners, infrastructure managers and maintenance providers. In the event that the disposal legislation has not been applied, the Armed Forces' need for transport may be met through agreements with the suppliers concerned (Departementsserien, 2017, p. 178).

The proper organization of TD is also critical for handling crises and emergencies, but while major disruptions and emergencies have been dealt with in Sweden, there is no clear understanding of the organization of such responses, and how they are carried out from a logistics perspective in the event of an attack. Based on the above-discussed administrative background of TD from the Swedish perspective, the next section delves further into these perspectives by undertaking the case of the Swedish response to the Covid-19 pandemic from a TD perspective.

4.1 A Swedish case and lessons in total defence from the pandemic response

Studies abound on the choices and aftermath of the Swedish response measures to the Covid-19 pandemic, proffering explanations for Sweden's chosen response strategy (Ludvigsson, 2020; Diderichsen, 2021). Several suggestions reveal an overt reliance on voluntary-based strategies, two of which focused on micro- and macro-level factors, explaining the strategy either in terms of the psychologies of prominent

actors or by pointing to peculiarities in Swedish constitutional law (Olofsson, *et al.*, 2022). Laage-Thomsen and Frandsen (2022) in their work identify the underlying reason for the strategy undertaken by the Swedish Government as follows:

[...] ministerial governance is prohibited in Sweden, representing a sharp contrast to Denmark and Norway. This means that ministers and politicians are prevented from intervening in the daily operations of state agencies, granting public health experts in the state a high degree of professional autonomy. Further, agencies have a limited mandate to enforce policy on regional and municipal levels unless they are supported by parliament (p. 9).

Petridou (2020) supports the decentralization stand of Sweden mainly from a legal point of view as follows:

[...] decentralization and considerable autonomy of the regional and local levels are encapsulated in the idea of 'local self-government', a negotiated concept articulated in the Swedish constitution and formally governed by the Local Government Act of 1991 (SFS 1991:900). The term 'local government' includes both municipalities and counties/regions, which means that municipalities are not subordinate to the regional level; rather, the regional level acts as an intermediary between the local and the national levels. The decentralization of power in the Swedish system makes it legally very difficult for the central government to impinge on the jurisdiction of the country's 290 municipalities (p. 151).

In terms of crisis management, the Swedish constitution does not allow the declaration of a state of emergency during peacetime (Jonung and Nergelius, 2020). According to Petridou (2020) and Sparf *et al.* (2022), crisis preparedness and management are the responsibility of the municipalities and are governed by three principles: the principle of responsibility, under which the level of governance responsible for an activity during normal times retains this responsibility during a crisis or war; the principle of parity, under which authorities retain their structure and location during a crisis or war; the principle of proximity, under which crises should be handled at the lowest possible level of government (SOU, 2001, p. 41).

[...] the pandemic response regime at the local level mirrored the response that played out at the national level. Just as the national politicians stayed in the background, so was the case at the local level as well. This is an articulation of Swedish path dependency and political sensibilities privileging technocratic and evidence-based solutions. At the same time, a dialectic relationship, based on high trust between public servants and politicians facilitated by communication, characterized the interface between politics and administration at the local level (Sparf *et al.*, 2022, p. 14).

Sweden did not enforce legal measures, but relied on the voluntary compliance of citizens to follow public guidelines, for example, to socially distance and increase hand hygiene, amongst others (Simonsen, 2022). The right to freedom of movement that is enshrined in the Swedish constitution posed limitations on the Swedish crisis response. However, studies also show how other aspects of Swedish society responded to the pandemic; one such example shows that organizations could make important contributions to civil defence in a societal crisis, not least during the first wave of the corona pandemic in Sweden.

Based on the administrative documents of municipalities, regional and national government, local and national reports and academic literature, which made up the theory of data level at the observational realm, we identify five main logistics concepts, which we consider of note to the response.

When society lacked, for example, disinfectants, protective equipment and medicines, etc., the business community was able to adjust its production. With knowledge of an impending shortfall of critical products along regular supply chains, Sweden's resilience to the pandemic was dependent on the transformation of domestic business industry sectors. During

the pandemic, dependency on international raw materials and products for dealing with the consequences of the virus would become clear. For example, given that most manufacturing of protective equipment was located in Asia, there was an immediate shortfall in the demand for these items. During this period, 100% of protective equipment purchased by Sweden were manufactured outside Sweden (MSB, 2021, p. 15), as the dominant suppliers were located in Asia. Other critical products such as respirators presented fewer challenges, as there was significant production capacity at the Swedish company Getinge AB, but the supply chain of the components remained global at the time. Thus, it was clear at an early stage of the pandemic's first wave that Swedish resilience regarding the Covid-19 response was highly dependent on the functioning of international trade.

Within a few weeks, an industrial mobilization took place to meet the urgent societal need for scarce goods in Swedish health care, i.e. a mobilization without orders – a kind of organic form of mobilization, which takes place in the event of a state of emergency or war. The media frequently reported on how companies contributed to supplying products that were lacking in health care. Here the authorities noticed the lack of knowledge about what was conceptualized as business-based resilience (MSB, 2021, p. 16).

The division of business-based resilience into the two types of strategies – production growth and product innovation – did not differ from how companies would generally respond to increased demand. It must be added that companies saw a market opportunity by changing their production and product offering. In other words, the conversion was not only of a kind-hearted nature, but there was an opportunity to do new business. The concept of “value system” captures how organizations together drive innovations that not only solve needs in times of crisis but can also provide competitiveness – value systems for business-based resilience. The concept of value system helps organizations see how the value of their own actions is part of the power of different actors' combined resources in a system of relationships and roles. Value systems for business-based resilience emerge through two behaviours: production growth and product innovation.

4.2 Logistics concept mapping from the pandemic response case

The development of the observational logistics concepts was achieved via a thematic analysis (Braun and Clarke, 2006) of the text material, events and actions carried out during the pandemic. The analysis focused on using the collected material and analysing it on the basis of ascribed meanings and purpose of the text, events and actions within the context of the pandemic. By identifying, ordering and grouping the text, activities and actions by all actors, as realized during the pandemic, we obtain an underlying structure of initiatives (themes) that form the basis of the logistics concepts during the pandemic (Figure 5). The following sections discuss the logistics concepts identified.

4.2.1 Flexibility and adaptability

The concept of value system is essential in the analysis of actors that come together to quickly create resilience with the help of companies' capacities. The value that an organization delivers

is not the result of the individual organization's actions, but part of the power of greater collaboration with regard to resources from several actors. By organizing relationships and roles, resources can be combined between organizations to create resilience from the capabilities of business (MSB, 2021, p. 19). Organizations loaned parts of their workforce that were currently furloughed (because of the pandemic) to companies that needed staff. For example, staff from airlines contributed in health care and staff from the automotive industry worked as drivers or helped at companies manufacturing protective equipment. As such, logistics flexibility and adaptability of organizations, defined as an industry's ability in a crisis to adjust its production and adapt capacity to cater for the immediate needs of its customers or population, is seen as one of the main concepts here.

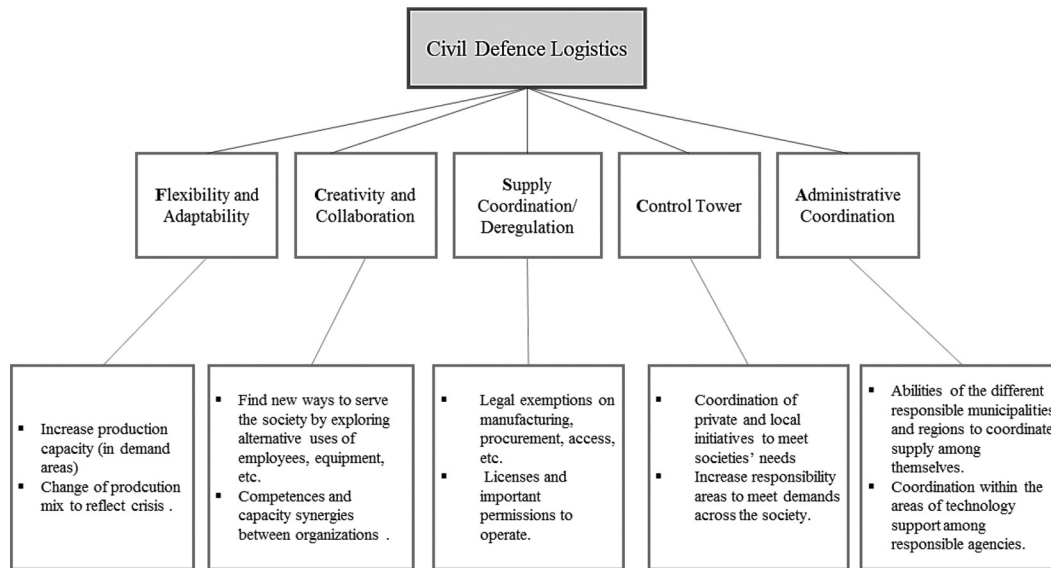
4.2.2 Creativity and collaboration

The establishment of temporary organization for coordination with regard to scarcity and implementation of procurement was quite helpful (MSB, 2021, p. 29). This ensured that value systems functioned efficiently when demand and supply sides could be connected. This created opportunities for new roles and relationships to use the capacity of the business community and thereby achieve resilience. New temporary organizations were established at both regional and national levels. At the regional level, the so-called Command Centre in Stockholm, established at Karolinska Institute with the support of business actors, was noted for its ability to coordinate the supply of protective equipment and disinfectants. As a temporary solution for the region, equivalent structures were set up elsewhere, e.g. Västra Götaland region and Region Skåne.

At the national level, the board of health and welfare was commissioned by the government to coordinate supply issues regarding protective equipment. As that task was not something that the authority was designed to manage with its own resources, the urgent question arose as to how the coordination would take place. According to the authority, the issue of competence and the use of capacities reside within the existing authority structure in Sweden. The National Board of Health and Welfare decided to request direct support from the Swedish Armed Forces and the Swedish Defence Material Administration (FVM) – two authorities with significant experience of complex procurements. Politicians assumed that technically complex products such as medical equipment are mainly FMV's expertise, while consumables such as protective equipment in health care were things the Armed Forces typically handles. Thus, two more temporary organizations were established at the national level, to support the National Board of Health and Welfare with procurement, negotiations, signing agreements and securing deliveries. The focus of the support was to meet the need for scarce goods that could not be handled well enough regionally or locally according to the principle of responsibility (MSB, 2021, p. 32). Based on this, the identified logistics concept here is creativity/collaboration. This is the idea that corporate collaborative creativity can create competences and capacity synergies between and among organizations, which are then subsequently put to use on the behalf of the society.

4.2.3 Supply coordination/deregulation

While access to drugs was not necessarily less challenging, the value system's roles and relationships were already established

Figure 5 Observational logistics concepts within the total defence case

Source: Authors' conceptualization

to swiftly support coordination to increase the availability of medicines. Even though the Swedish pharmaceutical industry is tightly regulated in terms of sales and purchasing, coordination and organization are required even under normal conditions, different from the manufacture of protective equipment, which lies within the open market space. As such, the need for rapid coordination between authorities, regions, municipalities and private actors to use the companies' capacity leads to this logistics concept of supply coordination/deregulation. Authorities also understood the need for temporary changes in regulations to make it possible to produce, for example, drugs in Sweden.

4.2.4 Control tower

The establishment of a so-called control tower, a central technology hub collecting and analysing data for the purpose of increasing coordination and logistics visibility as well as improving decision making (Sheffi, 2015), became a cohesive national coordination structure. This allowed Swedish municipalities and regions, together with the so-called four-county group, Östergötland, Stockholm, the Västra Götaland region and Skåne, build a national coordination structure in partnership with pharmaceutical distributors. The purpose was to continuously assess the supply and need for drugs linked to the intensive care expansion in light of the pandemic (MSB, 2021, pp. 31–32). Between regions, the so-called responsibility principle – a Swedish principle where each entity is individually responsible for the purchase of their need of goods, whether they are scarce or not, was applied. Meanwhile, no principles for coordination was applicable and the lack of situational demand prognosis of scarce items was clear. As such, there was uncertainty as to how regions would handle the demand for large volumes of items. In addition, the regions were also not accustomed to moving in the international market for the current shortages. Regions' difficulties in coordinating with the business community was also reflected in the lack of guidance from the

Swedish authorities, and principles for coordination became, in many cases, a matter for company management to handle.

4.2.5 Administrative coordination

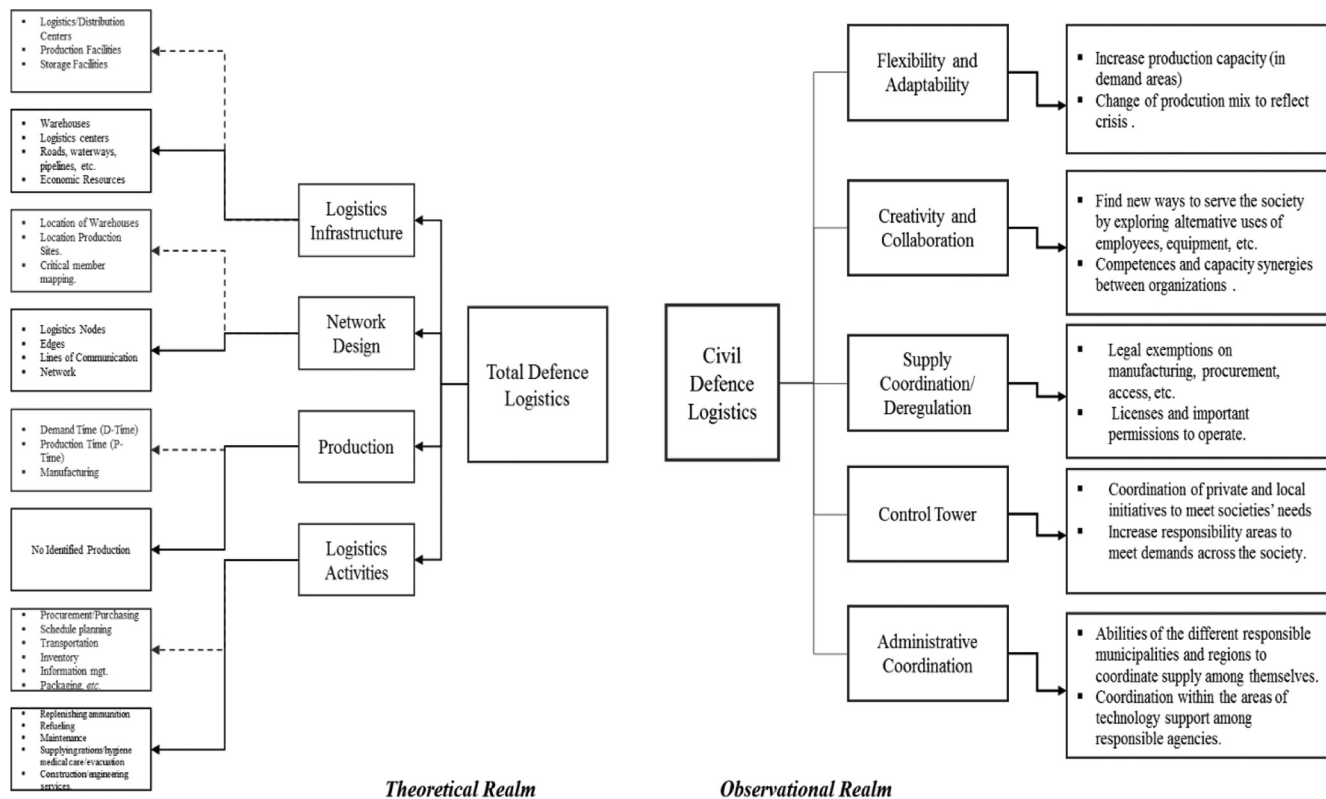
Finally, it was not enough to establish coordination structures, as principles for coordination also needed to be designed and held together, and access to technical support structures was an advantage. Furthermore, coordination across regional borders was required, where cross-border (administrative) principles within the supply of medicines were speedily developed.

However, this became an ongoing challenge when it came to protective equipment and medical technology. Without clear coordination between regions, municipalities and business actors, the public sector could be easily perceived as weakly coordinated. At the same time, resilience was realized in reality as domestic production grew rapidly, as well as the gradual increase in international supply and the partial activation of cut-off supply chains. While coordination eventually took place, it occurred in a different way than what actors had previously experienced (MSB, 2021, p. 34). The case shows the inherent ability that exists in society to find solutions during such emergencies. While companies saw new business opportunities to gain impetus for rapid changes in production and product offerings, authorities needed to understand their coordination responsibilities to manage the flow of goods and services between regions. In the cases where a relaxation of regulations was needed, the authorities called for temporary solutions.

5. Pattern matching of the theoretical and the observational realms

In summary, Figure 6 depicts the top-down and the bottom-up patterns carried out within the theoretical and observational realms within the pattern-matching methodology. It visualizes the interplay between existing theory as identified from literature, reality as reported in documents, memos, etc. and the researcher's

Figure 6 Logical analysis overview of total defence logistics



Source: Authors' conceptualization

internal conceptual models (Sinkovics, 2018). This was done by visualizing the literature for the purpose of identifying and classifying pertinent concepts based on the literature on logistics. Findings show quite distinct foci between the theoretical and observational realms in terms of logistics applications. While the theoretical realm identifies four main conceptual clusters of activities, the observational realm depicts five areas that are important for undertaking on-the-ground response to emergencies, albeit from a logistics perspective. What emerges from the research shows that the rational, planned and practiced logistics structure that we find in the military part of the TD is unmatched on the civilian side. Swedish companies' assistance in crisis management was undertaken largely out of free will (at least in this case), not mandated to by legal requirements. In the observational case, there were no emergency stocks or rehearsed routines for how scarce goods in society were to be handled at governmental levels. Thus, companies took the initiative at the local level, without being directed or prompted by government authorities. This is in line with the Swedish decentralization policy and its trust-based decision-making structure. In the cases where authorization was required for certain activities, the authorities acted relatively quickly and swiftly.

Sweden's strategic pause in the belief of long-term regional peace can be said to have been short-lived. Most of the dismantled structures previously built up for managing a TD capability are currently being redeveloped, rebuilt or relaunched. Responsibilities and mandates (including grants) have had to be disseminated to authorities, organizations and

companies to create authorizations, processes, etc. to put structures in place that will enable the supply of necessary items and manpower to combat units as well as residents. The pandemic response strengthened the need for overhauling TD as a whole in Sweden, not least to ensure access to necessary supplies to inhabitants during a major crisis.

Organizations saw the situation as an opportunity for new business by using their knowledge and production capacities to create products markedly different from their usual line of products, e.g. scarce items in urgent need, including masks, protective clothing, respirators, hand sanitizers, medications, etc. What became clear within the case was the need for an overall strategy to coordinate local production capacities at the time to meet the needs of Swedish society and thus an established need for authorities to enable various forms of temporary purchasing between organizations and governments. This necessity to coordinate the needs and distribution of available goods across county and municipal boundaries required activities akin to the control tower function used within complex product distributions.

Results also showed that in a direct matching of concepts between the two realms, different management and operational levels exist. In Figure 7, the grey surfaces represent where there is a direct link between the theory and the identified activity areas in the case. The theoretical realm shows full operational employment of the three management and operational levels – tactical, operational and strategic; however, these management and operational levels only apply to the military logistics aspect

Figure 7 Status of logistics practice within total defence

		Observational Total Logistics				
		Flexibility and Adaptability	Creativity and Collaboration	Supply Coordination/ Deregulation	Control Tower	Administrative Coordination
Theoretical Total Defence Logistics	Logistics Infrastructure					
	Network Design					
	Production					
	Log Activities					

Source: Authors' conceptualization

of the TD structure. Non-military logistics at this realm is usually managed at two main levels. This means that civil and military defence logistics do not operate at the same management and organizational levels. Figure 7 determines the overlapping of logistics concepts between the two realms, and consequently captures the incoherence within TD logistics. It shows that production and logistics activities at the theoretical realm represent the best opportunities for collaboration and coordination between military and civil defence organizations, as they span flexibility and adaptability, creativity and collaboration, supply coordination and control tower activities. Network design concepts at the theoretical level are issues that are handled within the administrative coordination issues at the observational level. As such, stakeholders across the board within TD will respond differently to different types of situations, given their logistics capabilities as illustrated in Figure 7.

6. Discussion and conclusion

While significant studies have investigated the operations of logistics within humanitarian, military and emergency situations (Heaslip and Barber, 2016; Kress, 2016; Kaneberg, 2018), the status of logistics collaboration between defence actors within the TD framework has received little attention. Logistics collaboration relationships between the state, business and private actors and commercial stakeholders are usually fraught with bureaucratic conflicts and uncertainty, primarily because of lack of coordination between stakeholders. By investigating avenues for logistics fit between military and civil defence, this study contributes to military and humanitarian/emergency logistics literature by identifying the structural differences and similarities between both structures under a TD framework.

The case showed the effects of Sweden's decentralization strategy with respect to emergency response within the TD framework. In Figure 7, the matrix shows that only those activities that were directly controlled by businesses, commercial and private entities at the lowest managerial and operational levels were readily accessible. Because ensuring logistics infrastructure at the national level is necessarily conducted at the highest managerial levels, logistics activities involving network planning and logistics infrastructure are above the reach of businesses and private corporations. Regardless, logistics development and integration are a

constant work-in-progress because multiple complex issues at multiple levels affect them. Second, the matrix highlights the fact that, as it stands, logistics effectiveness within the TD infrastructure is moderated because of the lack of proper integration between these two parts and the peculiarities of both areas of operation within TD. Civil defence is accustomed to working under peaceful and relatively stable conditions while military defence is built to thrive under uncertain, difficult, disruptive and sometimes hostile situations.

6.1 Managerial implications

Given the results from the study, it is pertinent that a clear LOC from the military to the civil structures of TD from a logistics perspective is critical to a proper functioning among TD structures. Logistics planning should be undertaken in such a way that both aspects of TD are able to understand each other. From the study results, these include from the theoretical realm, focus on the production and the logistics activities concepts, as these concepts can be integrated into one or more of the five clusters identified from the observational realm. Control towers could be used to manage coordination, purchasing and local needs management. As market mechanisms are usually non-functional during armed aggression, the role of the state as the ultimate guarantor in crises can be strengthened from a logistics perspective by expanding the role of TD concerning production and manufacturing, as this represents the part of military logistics that is conceptually non-present at the theoretical realm.

6.2 Limitations of the research

Our research involved certain limitations, first being that the study was based on a single, event case and literature reviews, and the findings should be treated as initial assumptions that need further treatment via confirmatory approaches. The study developed two views of logistics of TD; established a link between them via logistics attributes, management and organizational levels of logistics operation and IT infrastructure; and developed a matrix to illustrate this interplay. The matrix may be used as an input for a quantitative survey, which can assess not just the strength of logistics but also the strength of the association between logistics concepts across the TD spectrum. The results of the study could also be strengthened if own empirical data could be gathered, for

example, through interviews with current companies and stakeholders.

6.3 Suggestion for further research

A recent initiative to map all goods and services that are vital for the maintenance of a socially functioning society has been initiated by the Swedish Government. This is a step in the right direction, as results from these investigations would allow authors an insight into how critical goods and services break down along TD structures. This can influence the way we currently view TD logistics, how such goods and services might be made available and the requirements it places on current and future TD logistics solutions. Finland, another TD country, has built up its contingency capacity amassing lessons along the way. A study of the Finnish TD logistics perspective would also act to broaden our scope of logistics concepts and give a different view of logistics management for TD.

6.4 Conclusion

We have argued that given the unique position of the military within national security, the attention accorded to the section of TD handled by the military surpasses that devoted to civil defence. Based on academic literature, memos, documents, etc. and an event case, we investigated the status of logistics within the national TD structure.

Applying a pattern-matching methodology to the study, results of literature review at the theoretical realm revealed that logistics, from a TD perspective, could be discussed at four main conceptual levels, including logistics infrastructure, production, logistics activities and network design. On the other hand, the case of the Swedish response to the pandemic was applied as the case at the observational realm. Results here identified five different logistics conceptual clusters, including flexibility and adaptability, creativity and collaboration, supply coordination/deregulation, control tower and administrative coordination. Concerning the operational and management levels of logistics, the theoretical realm displays a wider range of latitude when it comes to operations; this is because the operations and levels of management that TD logistics handles remain complex and broad.

While the resulting concepts differ widely between military and civil defence, there is a need to ensure that the TD structure is able to integrate its logistics resources when needed. Thus, this study suggests mechanisms through which both parts of the TD spectrum may be aligned logistically, i.e. logistics integration for civil defence should be targeted at the production and logistics activities levels of the theoretical realm.

Our findings have important implications for designing logistics activities within TD that span the spectrum between the theoretical and observational realms by revealing how activities within the different aspects of TD make up the nature of TD.

Based on the study's results, we developed a matrix that illustrates the conceptual overlap between the theoretical and observational realms of TD logistics. The matrix also functions as a means upon which policymakers can align policies that cater to the logistics aspects of TD during crises.

References

- Abdulla, M.F. and Musa, H. (2021), "Prioritizing the logistics management factors affecting company performance: case study of ADNOC", *International Journal of Sustainable Construction Engineering and Technology*, Vol. 12 No. 5, pp. 61-72, doi: [10.30880/ijscet.2021.12.05.007](https://doi.org/10.30880/ijscet.2021.12.05.007).
- Ballantine, D. (1988), *US Naval Logistic in the Second World War*, University Press, New York, NY.
- Bellamy, A.J. and Hunt, C.T. (2015), "Twenty-first century UN peace operations: protection, force and the changing security environment", *International Affairs*, Vol. 91 No. 6, pp. 1277-1298.
- Berzina, I. (2020), "From 'total' to 'comprehensive' national defence: the development of the concept in Europe", *Journal on Baltic Security*, Vol. 6 No. 2, pp. 7-15.
- Black, J. (2010), *The Age of Total War, 1860-1945*, Rowman & Littlefield Publishers, Lanham, MD.
- Braun, V. and Clarke, V. (2006), "Using thematic analysis in psychology", *Qualitative Research in Psychology*, Vol. 3 No. 2, pp. 77-101.
- Departementsserien (2017), "Departementsserien 2017:66, Motståndskraft – Inriktningen av totalförsvaret och utformningen av det civila försvaret 2021-2025", Försvarsdepartementet, Ministry of Defence, Sweden.
- Diderichsen, F. (2021), "How did Sweden fail the pandemic?", *International Journal of Health Services*, Vol. 51 No. 4, pp. 417-422, doi: [10.1177/0020731421994848](https://doi.org/10.1177/0020731421994848).
- Dulić, T. and Kostić, R. (2010), "Yugoslavs in arms: guerrilla tradition, total defence and the ethnic security dilemma", *Europe-Asia Studies*, Vol. 62 No. 7, pp. 1051-1072, doi: [10.1080/09668136.2010.497015](https://doi.org/10.1080/09668136.2010.497015).
- Eccles, H. (1959), *Logistics in the National Defense*, Telegraph Press, Harrisburg.
- Försvarsdepartementet (1995), *Svenskt Totalförsvaret*, Ministry of Defence, Sweden.
- Försvarsdepartementet (2015), "Försvarspolitik inriktning – Sveriges försvar 2016–2020", Proposition 2014/15:109, Ministry of Defence, Sweden.
- Hammond, K.R. (1966), "Probabilistic functionalism: Egon Brunswick's integration of the history, theory, and method of psychology", in Hammond K.R. (Ed.), *The Psychology of Egon Brunswick*, Holt, Rinehart and Winston, New York, NY.
- Harinen, O. and Leskinen, J. (2009), "General conscription in Finland after 2008 – some reasons behind Finland's population's and conscripts' attitudes towards general conscription", in Caforio, G. (Ed.) *Advances in Military Sociology: Essays in Honor of Charles C. Moskos, Part B. Contributions to Conflict Management, Peace Economics and Development*, Emerald Group Publishing, Bingley, Vol. 12.
- Harrison, A., Van Hoek, R. and Skipworth, H. (2019), *Logistics Management and Strategy: Competing through the Supply Chain*, 5th ed., Pearson Education, London.
- Harvey, A.S. (2021), "The levels of war as levels of analysis", *Military Review*, November-December, Army University Press, Fort Leavenworth, KS.
- Heaslip, G.E. and Barber, E. (2016), "Improving civil-military coordination in humanitarian logistics: the challenge", *The Irish Journal of Management*, Vol. 35 No. 2, pp. 143-158.

- Honig, J.W. (2012), “The idea of total war: from clausewitz to ludendorff”, *The Pacific War as Total War: Proceedings of the 2011 International Forum on War History, National Institute for Defence Studies, Tokyo*, pp. 29–41.
- Hubner, A., Kuhn, H. and Wollenburg, J. (2016), “Last mile fulfilment and distribution in omni-channel grocery retailing: a strategic planning framework”, *International Journal of Retail and Distribution Management*, Vol. 44 No. 3, pp. 228–247.
- Jonung, L. and Nergelius, J. (2020), “Grundlagen sätter ramarna för Sveriges Corona strategi”, *Dagens Nyheter – DN Debatt*, p. 5, 2 August.
- Kaneberg, E. (2018), “Managing commercial actors in strategic networks in emergency preparedness: a study of multiple networks from Sweden”, *Journal of Humanitarian Logistics and Supply Chain Management*, Vol. 8 No. 2, pp. 153–183.
- Konow, J.V. (1961), “Svenskt totalförsvär”, *Folkförsvaret*, Stockholm.
- Kovacs, G., Moshtari, M., Kachali, H. and Polska, P. (2019), “Research methods in humanitarian logistics”, *Journal of Humanitarian Logistics and Supply Chain Management*, Vol. 9 No. 3, pp. 325–331.
- Kress, M. (2016), *Operational Logistics – the Art and Science of Sustaining Military Operations*, 2nd ed., Springer, Cham.
- Laage-Thomsen, J. and Frandsen, S.L. (2022), “Pandemic preparedness systems and diverging COVID-19 responses within similar public health regimes: a comparative study of expert perceptions of pandemic response in Denmark, Norway, and Sweden”, *Globalization and Health*, Vol. 18 No. 1.
- Lambert, D.M. (2004), “The eight essential supply chain management processes”, *Supply Chain Management Review*, Vol. 8 No. 6, pp. 18–26.
- Lambert, D.M., Cooper, M.C. and Pagh, J.D. (1998), “Supply chain management: implementation issues and research opportunities”, *International Journal of Logistics Management*, Vol. 9 No. 2, pp. 1–19.
- Larsson, O. (2021a), “The connections between crisis and war preparedness in Sweden”, *Security Dialogue*, Vol. 52 No. 4, pp. 306–324, doi: [10.1177/0967010620936849](https://doi.org/10.1177/0967010620936849).
- Larsson, S. (2021b), “Swedish total defence and the emergence of societal security”, in Larsson, S. and Rhinard, M. (Eds), *Nordic Societal Security: Convergence and Divergence*, Routledge, London, pp. 45–67.
- Le Coze, J. (2008), “Disasters and organisations: from lessons learnt to theorising”, *Safety Science*, Vol. 46 No. 1, pp. 132–149.
- Levy, S. (1988), “Information technology in universities: an institutional case study”, Unpublished doctoral dissertation, Northern Arizona University, Flagstaff, AZ.
- Ludvigsson, J.F. (2020), “The first eight months of Sweden’s COVID-19 strategy and the key actions and actors that were involved”, *Acta Paediatrica*, Vol. 109 No. 12, pp. 2459–2471.
- Marchesini, M.P. and Alcântara, R.L. (2016), “Logistics activities in supply chain business process: a conceptual framework to guide their implementation”, *International Journal of Logistics Management*, Vol. 27 No. 1, pp. 6–30.
- Matthews, R. and Yan, N.Z. (2007), “Small country ‘total defence’: a case study of Singapore”, *Defence Studies*, Vol. 7 No. 3, pp. 376–395.
- Missiroli, A. and Rühle, M. (2020), “The pandemic and the military: towards total defence?”, NATO Defence College, Policy Brief, No. 21.
- Mkansi, M., Eresia-Eke, C., Emmanuel-Ebikake, O. and Liu, S. (2018), “E-grocery challenges and remedies: global market leaders perspective”, *Cogent Business & Management*, Vol. 5 No. 1, doi: [10.1080/23311975.2018.1459338](https://doi.org/10.1080/23311975.2018.1459338).
- Motion till riksdagen (1987), “Motion till riksdagen 1987/88: fö207, om försvarspolitiken”, Sveriges Riksdag.
- MSB (2011), “A functioning society in a changing world: the MSB’s report on a unified national strategy for the protection of vital societal functions”, Myndigheten för samhällsskydd och beredskap.
- MSB (2021), “Näringslivsbaserad motståndskraft: Lärdomar från pandemin för det civila försvaret”, Myndigheten för samhällsskydd och beredskap.
- MSB (2022), “Det civila försvaret. Förmåga och brister – 2022 årsredovisning av regeringsuppdraget att göra en samlad bedömning av förmågan inom det civila försvaret”, Myndigheten för samhällsskydd och beredskap.
- Nicholson, J., Dortmans, P., Black, M., Kepe, M., Clement, S. G., Silfversten, E., Black, J., Ogden, T., Dewaele, L. and Garcia-Bode, P.A. (2021), *Defence Mobilisation Planning Comparative Study: An Examination of Overseas Planning*, RAND Australia, RAND Corporation, Santa Monica, Calif.
- Olofsson, T., Mulinari, S., Hedlund, M., Knaggård, Å. and Vilhelmsson, A. (2022), “The making of a Swedish strategy: how organizational culture shaped the public health agency’s pandemic response”, *SSM – Qualitative Research in Health*, Vol. 2, pp. 2667–3215, doi: [10.1016/j.ssmqr.2022.100082](https://doi.org/10.1016/j.ssmqr.2022.100082).
- Pal, R. and Altay, N. (2019), “Identifying key success factors for social enterprises serving base-of-pyramid markets through analysis of value chain complexities”, *Journal of Business Logistics*, Vol. 40 No. 2, pp. 161–179.
- Peppers, J. (1988), *History of United States Military Logistics 1935–1985: A Brief Review*, Logistics Education Foundation, Huntsville.
- Petridou, E. (2020), “Politics and administration in times of crisis: explaining the Swedish response to the COVID-19 crisis”, *European Policy Analysis*, Vol. 6 No. 2, pp. 147–158.
- Porter, M.E. (1985), *Competitive Advantage: Creating and Sustaining Superior Performance*, Simon and Schuster, New York, NY.
- Prebilić, V. (2006), “Theoretical aspects of military logistics”, *Defense & Security Analysis*, Vol. 22 No. 2, pp. 159–177.
- Putnam, H. (1987), *The Many Faces of Realism*, Open Court, La Salle, IL.
- Reiner, G., Teller, C. and Kotzab, H. (2013), “Analyzing the efficient execution of in-store logistics processes in grocery retailing – the case of dairy products”, *Production and Operations Management*, Vol. 22 No. 4, pp. 924–939.
- Schmidt, G. and Wilhelm, W.E. (2000), “Strategic, tactical and operational decisions in multi-national logistics networks: a review and discussion of modelling issues”, *International Journal of Production Research*, Vol. 38 No. 7, pp. 1501–1523.
- Sheffi, Y. (2015), “Preparing for disruptions through early detection”, *MIT Sloan Management Review*, Vol. 7 No. 1, pp. 31–42.
- Shoemaker, P.J., Tankard, J.W., Jr. and Lasorsa, D.L. (2004), “Theoretical concepts: the building blocks of theory”, *How to Build Social Science Theories*, SAGE Publications, London.
- Simonsen, S. (2022), “Swedish exceptionalism and the Sars-CoV2 pandemic crisis: representations of crisis and national

- identity in the public sphere”, *Risks Hazards Crisis Public Policy*, Vol. 13 No. 3, pp. 1-9.
- Sinkovics, N. (2018), “Pattern matching in qualitative analysis”, in Cassell, C., Cunliffe, A. and Grandy, G. (Eds), *The Sage Handbook of Qualitative Business and Management Research Methods*, Sage publications, Thousand Oaks, CA.
- SOU (2001), SOU 2001:41, “Säkerhet i en ny tid”, Regeringskansliet.
- Sparf, J., Petridou, E., Granberg, M., Becker, P. and Onn, B. (2022), “Pandemic responses at the subnational level: exploring politics, administration, and politicization in Swedish municipalities”, *European Policy Analysis*, Vol. 8 No. 3, pp. 1-18, doi: [10.1002/epa2.1151](https://doi.org/10.1002/epa2.1151).
- Spillman, K.R. (1987), “Beyond soldiers and arms: the swiss model of comprehensive security policy, forschungsstelle für sicherheitspolitik und konfliktanalyse”, available at: www.css.ethz.ch/content/dam/ethz/special-interest/gess/cis/center-for-securities-studies/pdfs/zb_2.pdf (accessed 23 June 2022).
- Swedish Defence Research Agency (FOI) Memo 7900 (2022), “Kommuners ansvar och roller i totalförsvarsutvecklingen”, Totalförsvarets forskningsinstitut.
- Tatham, P. and Pettit, S. (2009), “Special issue on developments in humanitarian logistics”, *International Journal of Physical Distribution & Logistics Management*, Vol. 40 Nos 8/9, pp. 609-622, doi: [10.1108/09600031011079283](https://doi.org/10.1108/09600031011079283).
- Tolis, C. (2018), “Strategic resilience: a case of collaborative exploration of land-use planning and total defence”, *Australasian Conference on Information Systems Proceedings*.

- Trochim, W.M.K. (1989), “An introduction to concept mapping for planning and evaluation”, *Evaluation and Program Planning*, Vol. 12 No. 1, pp. 1-16, doi: [10.1016/0149-7189\(89\)90016-5](https://doi.org/10.1016/0149-7189(89)90016-5).
- Turban, E., King, D., Lee, J.K., Liang, T. and Turban, D. (2015), *Electronic Commerce: A Managerial and Social Network Perspective*, 8th ed., Springer International Publishing, Cham.
- U.S. Joint Staff, Joint Publication 1 (2013), *Doctrine for the Armed Forces of the United States, Joint Publication 1*, CreateSpace Independent Publishing Platform, Scotts Valley, CA.
- United Nations (1977), “Protocol additional to the Geneva conventions of 12 August 1949, and relating to the protection of victims of international armed conflicts (protocol I), I-17512”, *UN Treaty Series*, Vol 1115, Secretariat of the United Nations, New York, NY.
- Valtonen, V. and Branders, M. (2021), “Tracing the finnish comprehensive security model”, in Larsson, S. and Rhinard, M. (Eds), *Nordic Societal Security: Convergence and Divergence*, Routledge, London, pp. 91-108.
- Wither, J.K. (2020), “Back to the future? Nordic total defence concepts”, *Defence Studies*, Vol. 20 No. 1, pp. 61-81.
- Yin, R.K. (2003), *Applications of Case Study Research*, Sage Publications, Thousand Oaks, CA.

Corresponding author

Imoh Antai can be contacted at: imoh.antai@fhs.se