“STRATEGIC PRESENCE, LOCAL IMPACT”

A multi-case study of a NATO command centre’s impact on regional entrepreneurial ecosystem in two European cities

Lappeenranta–Lahti University of Technology LUT

Master’s Programme in International Business and Entrepreneurship, Master’s Thesis

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ABSTRACT

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"Strategic presence, local impact" A multi-case study of a NATO command centre's impact on entrepreneurial ecosystem in two European cities

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Keywords: entrepreneurial ecosystem, regional development, military centres, NATO

This thesis investigates how the presence of a NATO command centre affects the regional entrepreneurial ecosystem. It examines the mechanisms of this impact, and how local actors can support the benefit realisation. The background of the thesis includes NATO expansion, rapid growth of the defence industry due to geopolitical tensions, and the local effects of these trends.

Research method is a qualitative multi-case study. Researched cities are Stavanger, Norway and Szczecin, Poland. Data was collected through interviews and written sources. The theoretical framework used is the Entrepreneurial Ecosystem theory. The study analyses the centre's impacts via six dimensions: markets, finance, entrepreneurial culture, policy, human capital and support structures.

No impacts were found on the ecosystem's finance or policy dimensions. Market and support structure effects materialised mainly via increased consumption and demand for services. Impacts on entrepreneurial culture and human capital realised through the centre's seconded personnel, contributing to networks, skilled labour and local activity to the region. Furthermore, strategic potential in utilising the value of the centre's presence was observed, although it had not been leveraged in target cities.

Key finding is that full realisation of potential benefits requires smooth integration of international residents and accompanying families into the region. When this succeeds, it enables ecosystem dimensions to reach their potential. This finding also extends the theoretical framework. Furthermore, to leverage the strategic potential of the centre requires the objective be included in regional development and innovation strategies.

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Tämä tutkimus selvittää, miten NATO-keskuksen läsnäolo vaikuttaa alueelliseen yrittäjyysekosysteemiin, millä mekanismeilla vaikutus tapahtuu, ja miten paikalliset toimijat voivat edistää hyötyjen realisoitumista. Tutkimuksen taustana on NATOn laajentuminen, geopoliittisten jännitteiden myötä voimakkaasti kasvava puolustusteollisuus, ja näiden trendien paikalliset vaikutukset. Kyseessä on laadullinen monitapaustutkimus, ja tutkimuskohteina Stavanger, Norja ja Szczecin, Puola. Aineisto on kerätty haastatteluilla sekä kirjallisista lähteistä. Teoreettisena viitekehyksenä käytetään yrittäjyysekosysteemiä (Entrepreneurial Ecosystem). Tutkimus tarkastelee keskuksen vaikutuksia kuuden ulottuvuuden kautta: markkinat, talous, yrittäjyyskulttuuri, politiikka ja sääntely, inhimillinen pääoma ja tukirakenteet.

Tutkituissa kaupungeissa ei havaittu vaikutuksia ekosysteemin talous- tai politiikka- ja sääntelyulottuvuuksissa. Markkina- ja tukirakennevaikutukset realisoituivat pääosin lisääntyneenä kulutuksena sekä julkisten ja yksityisten palveluiden kysyntänä. Yrittäjyyskulttuuriin ja inhimillisen pääoman ulottuvuuksiin vaikutukset syntyivät keskukseen lähetetyn henkilöstön myötä. Tämä lisäsi alueelle verkostoja, osaavaa työvoimaa sekä paikallista aktiivisuutta. Lisäksi keskuksen läsnäolossa nähtiin strategista potentiaalia, joskaan sitä ei kohdekaupungeissa ollut hyödynnetty.

Keskeinen havainto on, että potentiaalisten hyötyjen täysimääräinen toteutuminen edellyttää kansainvälisten asukkaiden ja perheiden sujuvaa integroitumista alueelle. Sen onnistuessa myös ekosysteemin ulottuvuudet voivat realisoitua laajamittaisiesti. Tämä havainto laajentaa myös teoreettista viitekehystä. Strategisen edun hyödyntäminen puolestaan vaatii, että se tunnistetaan ja sisällytetään alueellisiin kehitys- ja innovaatiostrategioihin.

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Abbreviations

DSR: Défense, Security and Resilience sector

DEFINE: Defence Innovation Network Finland

DIANA: Defence Innovation Accelerator for the North Atlantic

EE: Entrepreneurial Ecosystem

JWC: Joint Warfare Centre

NATO: North Atlantic Treaty Organisation

NSPA: NATO Support and Procurement Agency

MCLCC-NW: Multi-Corps Land Component Command Northwest

MNCNE: Multi-National Corps Northeast

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DECLARATIONS

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The originality of this thesis has been reviewed with the Turnitin similarity checking service.

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2. Google AI: LM Notebook and Gemini
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    b. Explanation of the use of the tool: to gain insight and answers about source materials published in local language, and grammar and language check of the thesis final text.
3. Microsoft Copilot (web browser embedded translation)
    a. Purpose of use: translation
    b. Explanation of the use of the tool: to translate web articles published on local language (Polish, Norwegian)

Responsibility

The author, Virpi Tuukkanen, takes full responsibility for the content of this thesis and has reviewed and edited the content generated by the possible use of AI tools.

1 Introduction

1.1 Current situation and background

This thesis investigates the regional impacts that the establishment of a NATO centre might have on entrepreneurial ecosystems. The context of the research is the city of Mikkeli, which has hosted NATO's Multi-Corps Land Component Command Northwest (MCLCC-NW) since October 2025. (Puolustusvoimat 2025) The topic is both relevant and timely, as significant geopolitical shifts are happening across Europe. The changes have reshaped national security strategies, accelerated the growth of defence and security industries, and created a rip current of effects reaching businesses and regional economies. Understanding these dynamics is essential for regional actors and businesses seeking to harness emerging opportunities.

Finland became a member of NATO on 4th April 2023. Precedingly, Finland applied for NATO membership on 17th May 2022. The NATO member countries signed the Accession Protocol regarding Finland's membership on 5th July. Finland became an invitee, and following all NATO members ratification and Finland accepting the accession the membership was confirmed. In the changed security environment, the membership strengthens the country's stability and security. The deterrent effect will be considerably stronger than before. (Ministry for Foreign Affairs, no date) In practice, the NATO membership also means physical presence of Alliance's organisation in Finland. Besides MCLCC-NW, NATO's Forward Land Forces will be stationed in Rovaniemi and Sodankylä. (Yle 2024)

Simultaneously, the defence and security sector in Europe has been on the rise. As of 2023, European Union member states have spent over 270 billion euros on military defence. The amount has doubled since 2012, being accelerated due to 2014 Russian illegal annexation of Crimea. (European Defence Agency 2024) Defence expenditure is estimated to rise further, especially in the EU member states closer to Russian border. (European Commission 2025) EU has set a program called ReArm for 800 billion euros to boost defence spending by allowing increased in defence spending for member nations, as well as launching a loan instrument for 150 billion. Additionally, NATO member states committed to invest 5% of their GDP annually on core defence requirements by 2035. (NATO 2025e)

Besides strategic, military and security aspects Finland joining NATO brought along, the membership opened major business opportunities. Membership opens defence and security industry markets allowing Finnish companies to participate in Nato procurement, joined procurement activities and to different innovation cooperation. Before membership participation was restricted and involvement required special procedures. (Valli 2024) Few industry operators comment on the high rise in demand, mechanisms being about partnerships and mutual dependencies. Added requirements and standards improve quality and product fit for customer needs. Also, Finland's and Finnish companies' credibility have been increased due to membership via increased stability and security environment. Simultaneously, there are companies who comment that they have been selling to NATO countries even before membership and thus have not seen any change in demand. Some companies expect the benefits to be realized in the longer term, as the procurement procedures and programs in the industry typically last for years. (Pulliainen & Saarinen 2024)

In Europe, during 2024 Venture Capital funding in the Defence, Security and Resilience (DSR) sector has been its all-time high numbers, ca. 4,41 billion EUR. Overall, investments have almost quintupled during last six years. Growth in investments in DSR sector has been strongest amongst all deep technology segments. (Businesswire 2025) In Finland, Yle reports about research in which 368 defence and security companies were identified, out of which 144 categorize as to high growth companies. Revenues grew ca 84 million EUR between years 2021-2022. (Tikkala 2025) In the same article, Danske Banks' business director, states that most of Finnish defence and security industry companies have already sold their production for upcoming four to five years, which is unusual compared to Finnish companies in other industries. High demand is predicted to continue global growth for at least five to ten years, and companies predict growth in production. Naturally, the competition is intense, and new companies will emerge in the market. National interests in security of supply and delivery might lead to favouring domestic production and companies. (Tikkala 2025) The defence industry has changed its perception in the eyes of wider audiences, too. "Interest towards security industry has increased, and somehow the industry has become more accepted." (Parviala 2024)

Besides businesses, there are other indicators referring to increased interest towards NATO membership and the assumed growth opportunities it might bring along. Regional networks

around defence and security industry have been established throughout Finland. For example, Jyväskylä has investigated its regional strengths in terms of business opportunities brought by NATO membership and are aiming to “bring together companies and defence industry operators to find new business and growth opportunities”. (Jyväskylä Business Development Services, 2024) The City of Riihimäki was eager to have the Nato command centre located there. (Riihimäki 2023) Riihimäki has later established a Defence Innovation Network Finland (DEFINE) innovation ecosystem, aiming to build internationally competent defence and security sector network. (Define no date) In South Savo region, a business-driven network called Savo Defence brings together dozens of companies to create partnership and providing integration points towards Finnish Defence Forces. (Savo Defence no date)

Regional opportunities created by the described global and European geopolitical trends are the core interest of this research, reflecting the situation of City of Mikkeli. Mikkeli has been designated a location for a new NATOs operations centre MCLCC-NW, first in in Finland. (Reuters 2024) First officers are due to arrive during autumn of 2025. Final number of seconded officers will be somewhere between 40 and 50. The city’s expectation and wish are that many would arrive with family. (Yle News 2025) Preparations are ongoing, for example information packages are being prepared, conversation between the city and arriving officers are ongoing, and international schooling is being organized. (Lepistö 2025)

Local businesses have high expectations and City of Mikkeli representatives predict significant regional economic effects via companies offering services to NATO personnel. ”Mikkeli will become more international and viable city”. “The decision will be a remarkable benefit for the city, infrastructure and economic life and have a positive impact on regional development”. (City of Mikkeli 2024) “The city hopes Nato centre to have positive impact on internationalization of regional businesses, and also to attract foreign talent and investments” (Lepistö 2025). However, some experts are also cautious about the direct influx from the military, whilst some new jobs may arise. (Daily Northern 2024)

These recent timely events and national and regional trends and signal, reflected to larger megatrend of rising defence and security industry responding to increasing geopolitical instability pose the background for the research. The transition and movement being regrettable for humanity, as a phenomenon there is yet lots to research and understand, as in any major transition. Furthermore, already in the early phases of the research it became

evident that there's only limited amount of similar research available. Personally, South-Eastern Finland is beloved area, and opportunity to contribute to local regional development via this thesis has added on the interest on the research themes. These factors set up the context for this research and justify the selection of research topic. Aim is to understand better whether the expansion of NATO's presence would have an impact to regional entrepreneurial ecosystems, which in turn, according to multiple studies, are a key driver to enhance socio-economic development and prosperity within a given area.

1.1 Focus and target of the research

Existing academic literature (e.g. Poppert 2001; Poppert & Herzog 2003; Andersson et al. 2007; Droff & Paloyo 2015; Zou 2018; Lee 2018; Piotrowska-Trybull &Ignasiak-Szulc 2019) examining regional impacts of military establishments have dominantly concentrated on base closures and realignments. Most empirical evidence is concentrated on North American research, both US and Canada. These studies typically address large military bases hosting several troops. Findings remain mixed; some studies identify measurable positive effects on regional economies, whereas others report limited or statistically insignificant outcomes.

Research investigating especially the influence of defence or military installations on the dynamics or regional entrepreneurial ecosystems is, however, almost entirely non-existing. This represents a notable research gap in current academic literature, especially when considering the tightened geopolitical landscape in Europe. The recent NATO memberships of Finland and Sweden, alongside the Alliance's increased strategic presence along its northeastern flank creates new environment and increasing interest from authorities, businesses and local governments to understand potential regional impacts and opportunities. At the same time, many eastern Finnish regions are facing socio-economic challenges following the war in Ukraine, the energy crisis and the closure of the Russian border. These regions are actively seeking for new sources of vitality and economic resilience. The findings of this study aim to provide insights and practical guidance for these stakeholders, in addition to contributing on academic research on entrepreneurial ecosystems and the regional impacts of a military installation.

Aim of the research is to understand better the regional socio-economic impact which a military centre brings to its host city, and especially the business environment. The impact will be analysed using Isenberg's (2011) entrepreneurship ecosystem model, which covers six main dimensions: Market, Finance, Policy, Culture, Human Capital and Supporting industries. Both primary and secondary data, as well as interviewees were searched, selected and analysed according to this framework. Additionally, the Nato centre employees, officers, are included into research scope to increase insight perspectives on the research question.

The study focuses on two European cities, Stavanger in Norway and Szczecin in Poland, The Multinational Corps Northeast (MNCNE) in Szczecin has a comparable profile to the MCLCC-NW being established in Mikkeli, while Stavanger hosts a different type of NATO centre, its inclusion brings a Nordic perspective to the analysis.

The research is contextualised and inspired by the imminent establishment of a NATO centre establishment to Mikkeli, Finland. While this development provides the wider contemporary context for the study. However, the specific analysis or direct assessment of Mikkeli's local entrepreneurial ecosystem conditions is not within the research scope. The results can be utilized in Mikkeli region but are not limited to that geographical area. Timewise, the research looks mainly into historical and recent development. The findings and conclusions provide future-oriented suggestions for the regions, alongside a proposed contribution to the theoretical framework.

1.2 Research questions

This thesis will investigate the impact the establishment of a NATO command centre has on the socio-economic development and entrepreneurial ecosystem dynamics of two medium-sized European cities. The objective of the research is two-fold. First, it intends to provide information about historical economic development in the regions, and second, out of identified development and expert insights to conclude actionable insights for regional policymakers, entrepreneurs and businesses based on these developments and expert insights. The research questions and sub questions along with the planned theoretical context are presented in the Table 1 below.

Table 1 Research questions

Research question	**Subquestions**	**Theoretical framework**
How does the establishment of a NATO command centre impact the socio-economic development of entrepreneurial ecosystem of a medium-sized city in Europe?	What kind of impacts does NATO command centre have on local/regional entrepreneurship?	Entrepreneurial ecosystem theory
	What are the underlying mechanisms and dynamics?	Entrepreneurial ecosystem theory
	What regional entrepreneurship ecosystem could do to support the centre and to gain benefits?	Entrepreneurial ecosystem theory

The research questions are formed to identify the specific impacts, to comprehend the underlying mechanisms though which potential effects are realised and provide actionable insights to policymakers and businesses to maximise the regional benefits. Academically, the research applies and extends Entrepreneurial Ecosystem theory to a novel context of a military establishment and regional development.

1.3 Structure of the thesis

The second chapter of the thesis presents the theoretical background reasoning. It explains the entrepreneurial ecosystem theory, regional development theories and the role of businesses and entrepreneurs in it. Also, the chapter covers some earlier research about military centres and socio-economic development.

Third chapter explains background on the case setting via two main themes. First, the chapter covers the basics of NATO as an organisation, it's mission and organisational structures as context for the case centres investigated, as well as NATO's role in industry cooperation. Also, the chapter gives brief background about the case cities in question.

Fourth chapter describes the research, by explaining the research setting, description and justification of case study as research method, and covers description of both primary and secondary data collection and analysis processes.

In the fifth chapter the Findings are gathered according to themes of the entrepreneurial ecosystem dimensions. Also identified emerging themes are presented, the chapter ending to a summary of the findings.

Finally, the Discussion and conclusion chapter cover answers to research questions based on findings, and interaction of the results with the theoretical framework used and some other literature. Also, the validity as well as limitations of the research are discussed, as well as future research visioned.

2 Regional development and entrepreneurial ecosystems

This chapter includes a short review about existing research concerning the connection between military centre and regional economic and socio-economic development. Later, the theoretical framework of Entrepreneurial Ecosystem as a concept and research topic is presented, followed by details of the framework used in this research.

2.1 Research on military centres and regional development

This chapter discusses research done about regional impact of an established military centre, or military base and it's impacts on regional development, especially from socio-economical perspective. Interest between military installation and regional development stems from the fact that defence activities in certain region may impact regions economic performance, and thus assessment of impacts is relevant for regional planners (Droff & Paloyo 2015; Asteris et al. 2018). Local economic activities are interconnected, and demand shocks spill over to other sector, generating multiplying effects in the local economy. (Zou 2018) The impacts of such activities are especially of high interest in rural areas, where sources of economic prosperity are more scarce compared to urban areas.

Economic value of military installations is described e.g. by NADO (2023) planning report as following; *Direct payments and payroll*, circulating in local economies creating induced economic activities. Secondly, *government purchasing* of different goods and services, providing orders and sales for local suppliers and providers. Thirdly, capital *infrastructure investments* improve and expand the operational and personnel capacities of the bases. Fourthly, mitigation and *management of harmful environmental conditions* in or on surroundings of the bases might have positive effects on regional communities.

However, until recently the general western trend has been to close installations. Especially in Europe, in Finland as well as in US, before 2022 and Russian attacking Ukraine, the trend has been more to limit, centralise and close military installations, instead of building new ones. For example, according to Statista (2017), at the end of Cold War in 1987, US had 80 military bases across Europe, whereas in 2017 the number was 37. Biggest decrease has been in Germany, whereas some new bases have been opened e.g. in Italy, Greece, Norway and

Romania. (McCarthy 2017) Other NATO countries have reduced their troops, Germany and Italy being on top of the reduction list by 65% compared to 1990. Since Russia's war of aggression with Ukraine, NATO countries are increasing their troops again. (Armstrong 2022) Asteris et al. (2018) state that one of the drivers behind military centre closings is the financial turmoil and caused insecurity in 2008. In US context, according to e.g. Zou (2018 p.590) the reduction taking place between 1988-2000 were motivated by "fiscal and geopolitical considerations". A separate government program called BRAC has been in place to facilitate the reductions as well as govern and manage the implications. (Tilgham 2025)

Accordingly, published research regarding establishment of *new* military bases or centres and their measured impact on nearby region of such nature is scarce. Significant amount of the existing research concentrates on the regional impact of a military centre closing, instead of establishment as identified also by Droff & Paloyo. (2015) For example, Paloyo and Vorell (2010) found out that during period 2003-2007 base realignments and closures in Germany had only marginal impact on local community, when it comes to household income, output and unemployment indicators. Poppert (2001; Poppert, P.E. and Herzog Jr., H.W. 2003) has studied general effects of US military installations on local employment. The results showed "asymmetrical relationship between the military personnel level changes and the local region's employment" (Poppert 2001, p.119). Results also indicate that regional specialisation of industry and certain composition of workforce of local defence workforce only have a minimal impact to local overall employment.

Zou (2018) evaluated local economic impacts of US military personnel reductions and found out that reductions in military personnel considerably decreased local civilian employment, yet the local populations were quick to adjust through decreased in-migration, small changes in wages and declined rent prices. Lee's (2018) study on US military base realignments and closures in 2005 found out that economically and statistically significant impacts on local employment were generated by contractor type of base employment. In addition, strong evidence was found about "asymmetric effects between military buildups and drawdowns". (Lee 2018, p.294) Andersson et al. (2007) investigated "Swedish regional effects on military base closures over few decades, using a regional growth model including average income growth rates and net migration rates". (Andersson et al. 2007, p. 96) They found out that the

closure of a military base did not have substantial impact on the affected municipalities. The research being quantitative of nature, the explaining factors were not identified.

Entrepreneurship and innovation ecosystems on the other hand have been addressed in literature and is of interest in military context, but more as a national concept besides region. For example, US Department of Defense has been looking for novel ways to foster entrepreneurship and innovation amid its stakeholders. As a result of the program researchers recommend creating a government-led platform to enable an ecosystem-based initiative developing networks to create high-tech "ventures" to train, support and build networks, consisting of innovators and entrepreneurs positioned both in- and outside of the government officials to enable continuous development and commercialisation of technologies relevant to military needs. Further findings also include e.g. the uniqueness of different commercial technology pipelines, and the requirement of multiple stakeholders within the system. (Kotila et al. 2023; Harrison et al. 2017)

Reflecting on the historical development described the absence of earlier research on this topic is not evidence on irrelevance, but more a consequence of trends in time. During last decades few new bases and installations was established and defence activities being reduced rather than expanded. Recently, for the first time in decades, new command centres and deployments are being established in Northern and Eastern Europe. Context and environment changing radically makes previous research settings and findings only partially applicable. This structural change creates a research gap. Regional impacts of new military installations have not been systematically analysed, especially from the perspective of entrepreneurial ecosystem dynamics. Previous studies have strong focus on traditional socio-economic indicators, such as employment, income and migration, while the mechanisms through which the military-related presence might stimulate entrepreneurship are largely lacking. Yet, entrepreneurship and entrepreneur's role in interacting with local networks and institutions is increasingly highlighted as a key driver of socio-economic development fostering innovations and growth-oriented entrepreneurship. (Stam & Spigel 2016; O'Connor et al. 2018)

Understanding how defence-related installations and establishments interact with regional entrepreneurial ecosystems is both academically and practically significant. Therefore, this study aims to contribute by analysing how newly established NATO centre might influence regional entrepreneurship and ecosystem development. Integrating entrepreneurial

ecosystem framework to regional development this research aims to identify the impact areas and possible interaction mechanisms such establishment may have on local entrepreneurial ecosystem, and thus maybe create long-term regional value.

2.2 Entrepreneurial Ecosystems

This chapter explains the concept of entrepreneurial ecosystem (EE), the term and concept that has gained wide popularity in business research recently but can at the same time have multiple interpretations. A widely applicable definition for entrepreneurial ecosystem framework is "a set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship", Entrepreneurial activity is considered "the process by which individuals create opportunities for innovation, which, in turn, will eventually lead to new value in society" (Stam 2015, p.1765). Later, Spigel et al. (2020) build on this definition and redefine entrepreneurial ecosystems as "regional collection of actors (such as entrepreneurs, advisors, workers, mentors, and workers) and factors (cultural outlooks, policies, R&D systems, and networks) that all contribute to the creation and survival of high-growth ventures" (Spigel et al. 2020). As the term ecosystem indicates, there are multiple actors and agents within the equation, and the dynamics of the ecosystem take place between the different agents and entrepreneurs within multiple dimensions and domains.

Both policy makers and scholars have started to see entrepreneurs and entrepreneurship as a mean to "transform economic trajectory of economically lagging regions". (Stam & Spigel 2016) The more active and vibrant entrepreneurship activities are in the region, the better the economic performance. This obviously provides the motivation for public decisionmakers to increase entrepreneurial potential within the area. Furthermore, entrepreneurial research has grown close to economic geography and urban economics studies, identifying that certain types of entrepreneurships is more important for regional economic growth. (Spigel et al. 2020; O'Connor et al. 2018, p.v)

Thus, the relevance of this theory to this research lies in its ability to explain how regional environment influence entrepreneurial activity, and likewise, how entrepreneurship can contribute to regional vitality. As this research aims to investigate the regional impact of a newly establishes NATO centre with specific interest in local ecosystem impacts and dynamics, the Entrepreneurial Ecosystem framework provides an applicable tool to analyse

multi-actor, place-related interactions. Wording for this theory selection is well defined in the book Entrepreneurial Ecosystems - Place-Based Transformations and Transitions, highlighting that "The emergence of entrepreneurial ecosystems as an important construct for policymakers and scholars comes not just from the recognition that place matters for entrepreneurs. The reverse holds as well – entrepreneurs' matter for the place." (O'Connor et al., 2018, p.v). In addition to O'Connor et al.'s book, another core source for this chapter is Stam and Spigel's (2016) discussion paper Entrepreneurial Ecosystem, which collects and critically analyses the literature on entrepreneurial ecosystems. Their grounding work, together with additional sources are used to describe the concept, it's development over time and perspectives in academic literature.

History

Different thinking about collection of similar, supportive and complementing business activities centralised on certain area has been researched in business studies over time. Marshall wrote already in 1920's about industrial districts as geographical clusters of specialised firms which benefitted of each other, and relate to accumulation of capital, investments, social capital and increasing returns, which, in turn were closely linked to demography, local government and social institutions. (Zaratiegui 2004) Perroux (1950) introduced an observation that growth does not take place evenly across an entire country but is frequently clustered in "growth poles". These poles typically form around particular industries, companies, businesses, locations or areas with specific economic potential or opportunities, such as natural resources or active and dynamic cities. (Frick & Rodríguez-Pose 2025) Decades later, Porter (1998) introduced cluster theory, according to which groups of interconnected companies, such as suppliers, customer and supporting institutional elements can be called clusters. Those clusters drive economic prosperity by enhancing productivity, fostering innovations and stimulating new business ventures via knowledge exchange, strong networks and proximity. These clusters may be a significant source of competitive advantage. The competitiveness may arise from different mechanics, such as "economies of scope, economies of scale and generation of a pool of appropriately skilled labour". (Bryson 1996)

There is a growing interest in entrepreneurial ecosystem research during last couple of decades. According to Stam and Spigel (2016) it can be seen also as a reflection of wider trend, where entrepreneurship studies have shifted from somewhat individualistic research

interest towards broader approach consisting roles of social, cultural and economic dimensions within the process of entrepreneurship. Another explanation about the popularity of entrepreneurial ecosystems as a concept and research topic is provided by Spigel et al. (2020) They see that the interest "emerged at the time of economic stagnation and widening geographical disparities in development within several economies". (Spigel et al 2020 p.483) Changing the economic trajectory of economically struggling regions by leveraging the local entrepreneurs and the potential they have is seen as one potential method to alter the declining trend. At best, small investments and relatively limited support by public officers and business communities could initiate and further develop a positive and self-sufficient cycle of entrepreneurial growth, innovation and further reinvestments. Furthermore, often major investments for physical infrastructure are not needed. Thus, the potential which entrepreneurial ecosystems provide is attractive for policymakers as well as researchers. (Spigel et al. 2020)

Definition

As the research of entrepreneurial ecosystems has evolved until recent years, the usage of the term is sometimes somewhat vague, there isn't exact definition to describe it. (Connor et al. 2018) Yet, commonly respected author on the theme, Stam and Spigel (2015, p.1765) state: "We define entrepreneurial ecosystems as a set of interdependent actors and factors coordinated in such a way that they enable productive entrepreneurship within a particular territory" A year later, Spigel defines entrepreneurial ecosystems as "union of localised cultural outlook, social networks, investment capital, universities and active economic policies" which foster environments supportive of innovative ventures. They are seen in both academic and business literature as a tool for developing "resilient economies based on entrepreneurial innovation". (Spigel 2017, p.1042)

One approach for defining a concept, is to describe similar yet separate concepts and identify differences. Innovation systems, innovation ecosystems, business ecosystems, earlier mentioned clusters, all are ideas in which the focus is beyond a single organisation and aim to describe some form of collective dynamics within the collection of agents. Spigel et al (2020) mention the "older ideas of clusters and innovation systems". Stam & Spigel (2016) have combined the concepts of industrial district, innovation system and cluster, seeing them as predecessors of entrepreneurial ecosystem as concept, and comparing those against entrepreneurial ecosystem. The main differences identified are the first-mentioned to focus

on economic and social structures of a place influencing innovation and firm competitiveness, whereas entrepreneurial ecosystems see startups explicitly at the centre of ecosystem. In entrepreneurial ecosystems the locus of action is the entrepreneur who is building and sustaining the ecosystem. Other sources are more in supporting role, e.g. via investments. Entrepreneurial knowledge in addition to market related and technical knowledge is crucial and is being shared with and between entrepreneurs via different informal networks, training courses and specific organisations. (Stam & Spigel 2016, p.5)

Hakala et al. (2020) have taken a narrative research approach to scholars constructing stories of business ecosystem, innovation ecosystem and entrepreneurial ecosystem, to understand also the different types of interactions, dynamics, relations and collaboration methods. They don't see the concepts as successors or predecessors of each other, but parallelly existing and sometimes simultaneously used terms. Their key findings relate back to earlier mentioned entrepreneurial ecosystems' regionality and relation to a 'place'. They found out that the key themes in entrepreneurial ecosystem narratives include wealth and job creation, locality, clusters, governance and system components, the key puzzle to be solved is how to generate wealth and employment to certain geographical area, and what are the elements which can be influenced via public policies. (Hakala et al. 2020)

Economic relevance

Spigel & Stam (2016) have reviewed of set of publications which indicate empirically that vibrant entrepreneurial ecosystem, enables entrepreneurship and thus added value creation within an area or region. The studies they mention include for example exploration in Phoenix, Arizona, where success stories, strong cultural aspects supporting entrepreneurship as well as supportive public policies have contributed to fostering entrepreneurial ecosystem. Also work on Waterloo and Calgary in Canada by Spigel (2015) indicates that even though ecosystems have unique structures and origins, the success stems from ability to create an interconnected social and economic system supporting birth and growth of new ventures. Reflecting the earlier mentioned challenge about ambiguity in used terminology, Spigel & Stam (2016) refer to works made by several researchers on regions such as Silicon Valley and Kyoto, in which different historically created, place-related elements have provided fruitful conditions for long-term entrepreneurial success, even though the exact term of 'entrepreneurial ecosystem' has not been used.

Furthermore, Isenberg (2010) states how economic studies globally indicate that entrepreneurship relates to rapid job creation, growth in GDP and long-term productivity. World Economic Forum's report (2013) states that "entrepreneurs are key drivers of economic and social progress". (World Economic Forum 2013, p.5) Especially fast-growing entrepreneurial enterprises are acknowledged as core sources of productivity growth as well as employment, therefore motivating governments and officials to stimulate and support entrepreneurship via different means. Likewise, later Mago and van der Merwe (2023) highlight in their bibliographic that despite the nationality, scholars throughout the world agree that entrepreneurship is "a globally important phenomenon for economic development and addressing to socio-economic challenges such as unemployment, inequality and poverty." (Mago & van der Merwe 2023) Thus, entrepreneurial ecosystems are of value in existence and should be nurtured in all regions to promote economic development. (Mago & van der Merwe 2023) It is evident that the entrepreneurship has a key role in innovating the renewal of a place, and "the value creation of entrepreneurs takes precedence". (O'Connor et al. 2018 p.1) Therefore, it can be stated that entrepreneurial ecosystems and their performance in the sense of successful enterprises contributes to socio-economic wellbeing of the region.

2.2.1 Entrepreneurial ecosystem domains

This chapter presents different approaches on key ecosystem attribute or domains of an entrepreneurial ecosystem and justifies the selection of the six domains proposed by Isenberg (2011) as the foundational framework for this thesis.

In early works related what would later be entrepreneurial ecosystems, Van De Ven (1993) presented three main infrastructural elements which constrain entrepreneurship. First, "institutional arrangements to legitimate, regulate and standardize a new technology; second, public resource donations of basic scientific knowledge, financing mechanisms and competent labour, and third, sufficient R&D, manufacturing, marketing and distribution functions to commercialise the innovation for profit." (Van de Ven 1993) Later, there have been additional approaches on expressing the core dimensions of which the ecosystem consists of. For example, Feld (2012, p.162.163) presented nine attributes for a successful entrepreneurial ecosystem which include: a wide and deep *talent pool* covering all sectors

and areas of expertise, such as technical and business skills. *Financial capital* in different forms (such as Venture Capitals, business angels, seed investors), committed *leadership*, (visible and accessible entrepreneurs being committed to promote the region), *mentors and advisors*; *professional services* (such as legal and accounting), s*upportive large established organisations*,(‘anchor firms) *strong government support* and *supportive policies*, and finally, a *well-connected community* of startups and entrepreneurs together with different *events* and such opportunities for entrepreneurs and community to interact and engage with different, high profile or publicly visible participants, optimally people cutting across sectors and demographics are prerequisites for ecosystem. (Stam & Spigel 2016)

In their relatively recent book O’Connor et al. (2018) have gone through lots of research on the different categorisations of the entrepreneurial ecosystem dimensions and their mutual dynamics. They summarise the findings by presenting a thought where *capital*, *labour*, *resources* and *infrastructure* are often stated as important dimensions, those elements are mobilised via l*eadership*, *governance* and *institutions*, making them equally, if not more important in the equation. (Connor et al. 2018) Contextually, it is relevant to note that the research of entrepreneurial ecosystems reaches beyond recognizing the different domains to analysing their mutual relationship and dynamics. However, the scope of this research does not cover thorough analysis of the regional entrepreneurial ecosystem performance nor the inner dynamics of it, nor it does not aim to assess efficiency of the ecosystem or compare the value of different domains. As per research questions, the first and foremost target of the research is to identify whether the different domains are impacted by the NATO centre presence, and if so, what are the impact mechanisms.

Isenberg (2010) is one of the grounding researchers and a key figure popularizing the concept on entrepreneurial ecosystems alongside with Feld (2012) (Stephens et al. 2022) (O’Connor et al. 2018 p.1). In his research Isenberg (2011) presents six domains and subdomains of entrepreneurial ecosystems, as presented in Figure 1. The six domains identified by Isenberg (2011) are *Policy*, *Finance*, *Culture*, *Supports*, *Human capital* and *Markets*, thus indicating overlap and similarities with both earlier and later researchers.

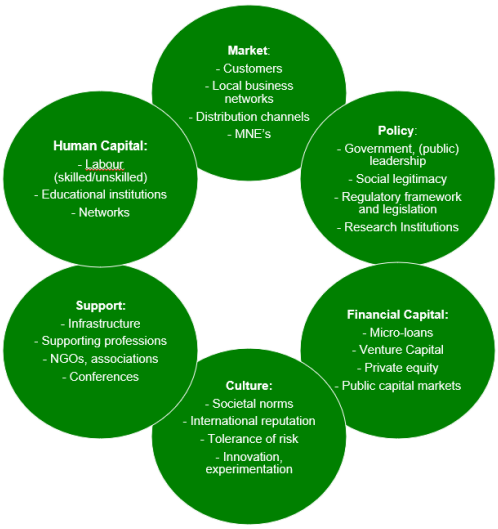

Figure 1. Entrepreneurial Ecosystem dimensions (Isenberg 2011)

This research adopts Isenberg's (2011) six-domain framework. It has comprehensive scope, and it is used widely as foundational model in empirical and theoretical research on entrepreneurial ecosystems, see e.g. Stam 2015; Spigel 2017. For example, Stephens et al. (2022) have reviewed other entrepreneurial ecosystem studies and found out that at least five other research teams have also used Isenberg's study as a foundational framework. This further justifies academically the applicability of Isenberg's model as a theoretical framework for this research. Besides its popularity, the model in comprehensive in scope, covering both tangible (e.g. finance) as well as intangible (e.g. culture) as critical elements for a successful entrepreneurial ecosystem. Attributes proposed earlier by Van de Ven (1993) are foundational and Feld (2012) provides a more detailed, practitioner-focused list. Isenberg's model is balanced in between. It provides six separate, yet interconnected domains, offering a robust analytical structure for examining diverse ecosystem elements. Table 2 demonstrates overlap between frameworks and entrepreneurial ecosystem dimensions by different scholars.

Table 2: Comparison of Key Entrepreneurial Ecosystem Attributes |

EE Domain	**Ven de Ven (1993)**	**Feld (2012)**	**Isenberg (2011)**
Finance and Capital	Public resources, donations, financing mechanisms	Financial capital	Finance
Talent and labour	Competent labour, R&D	Wide and deep talent pool	Human Capital
Governance	Institutional arrangements	Strong government support, professional services, anchor firms	Policy
Networks	R&D, manufacturing, marketing	Well-connected community, events, mentor	Supports, Culture
Market Access	Commercialise innovation for profit	N/A	Markets

Next paragraphs explain the six entrepreneurial ecosystem domains in more details.

Financial Capital: Presence, availability and accessibility of capital and suitable financing tools is one of the core elements of ecosystem. Different methods of finance cover agents such as *angel investors*, functioning *public capital markets*, *private venture capitals* and *equity*. Markets can cover instruments such as *micro loans*, *direct funding* and grants. Stam (2015) refers in his core article finance being one the most important pillars for growth of entrepreneurial company, following the findings of World Economic Forum (2013) on highlighting the criticality of funding and finance.

Market: according to Stam (2015) and world Economic Forum (2013) market represents another of the most important entrepreneurial ecosystem pillars, referring to Access to customers, potential partners and suppliers. Market refers to customer related elements, such as reference *customers*, *early adopters*, *productizing expertise* and *distribution channels*. Stam (2011) lists networks are one sub element of market domain, including for example *local business networks*, *diaspora networks*, and *multinational corporations* present and actively operating and accessible at the region.

Human capital: third most crucial ecosystem domain is human capital. (Stam 2015; World Economic Forum 2013) It refers to presence of *skilled* and /or *unskilled labour*, *serial entrepreneurs* and possible "*later generation family*". Also, *educational institutes* providing

professional and/or academic degreed, as well as *specific entrepreneurship training*, producing students and graduates equipped with necessary skills for startups and entrepreneurs are features under human capital domain.

Culture: this domain includes softer and less tangible elements. *Visible success stories* are relevant creators of entrepreneurially favourable culture, which fosters *innovation*, *creativity* and *experimentation*, and is *tolerant of risks*, *mistakes* and *failures*. Also, such culture further feeds on *ambition*, *drive* and *hunger* of entrepreneurs. Entrepreneurially supportive culture also sees on *wealth generation for founders* positively, respects *entrepreneurship as social status*, and has i*nternationally* a good *reputation*. (Stam 2011)

Policy: This dimension refers to governmental and regulatory environment. Policies fostering entrepreneurship include for example *venture-friendly legislation* regarding bankruptcy, contract enforcement and property rights or labour. Also, *incentives* or *financial support*, such as *tax benefits* or specific *grants* for R&D, along with *research institutes* can be of entrepreneurially supportive nature. *Local entrepreneurship strategies*, *unequivocal support*, *social legitimacy* and *public advocates* are elements which local or national government can promote. (Stam 2011) The nature and ultimate implication of a policy is yet not necessarily straightforward. According to World Economic Forum (2013), the government and regulatory policies are seen both potentially encouraging or inhibiting growth. In some cases, even the policies which are aimed at promoting growth, can act as counterproductive towards an early-stage company.

Support: This dimension includes elements such as *basic infrastructure*, *networks*, *energy* and *transportation*, and *clusters* or *incubation centres*. Support profession accessibility refers to expertise areas such as *legal, accounting, banking* and *technical advisory*. Entrepreneurial support can be featured in different *non-governmental institutions*, *business plan contests*, *local conferences*, and *non-profits*. (Stam 2011)

3 Case background: Basics of NATO and the case cities

This chapter explains the basics of NATO and its purpose, role and organisation relevant in the context of this research. It is to be noted, that the chapter does not aim to provide full disclosure and summary about Nato's strategy, locations, structures, policies and offices. First, a brief overview of the organisation is described. The organisation is described especially from military structure perspective, as the centres in question fall under that organisational branch. Thus, the chapter takes with more in-depth look into structures under which the centres in the scope of this research are operating. Later, a deeper focus is taken on the role of both NATO as well as member nations' defence forces in military capability development. Finally, this chapter presents the case cities and their key characteristics.

What is Nato?

NATO (North Atlantic Treaty Organisation) is an alliance of countries from Europe and North America. Nato is a political-military alliance by nature, and an organization for collective defence. It is also fundamentally a transatlantic organisation: its' members include countries on both sides of the ocean. (MPK 2023) The purpose of NATO's existence is guaranteeing freedom and security of its members through political and military means. Politically, NATO advances democratic values, enabling members to consult and collaborate on defence and security-related issues to solve problems, build trust and prevent conflict. Military wise, NATO commits to peaceful dispute resolution. If diplomatic efforts should fail, NATO has military power to commence crisis management procedures and operations. Such operations are executed according to collective defence clause "Article 5" or under United Nations mandate. (NATO no date a; NATO 2024a)

The core of NATO's security policy is in Washington agreement articles, as summarised below:

- Article 3: The Allies commit to maintain and develop their capacity to resist armed attack
- Article 4: The Allies agree to consult with one another whenever their security is threatened.

- Article 5: The Allies declare that an attack against one Ally is considered an attack against all Allies. They will respond to such attack by any necessary means, the use of armed forces included. (MPK 2023)

3.1 NATO's organisation

NATO's global headquarters is in Brussels, from where activities are directed. International Staff and International Military staff operate there, together with permanent representations of all Allies and special missions from partner countries. (MPK 2023) NATO's organisation is two-fold; it consists of military organisation and civil organisation.

NATO's Military Command Structure

NATO's military command structure consists of permanent multinational headquarters and staffs at the strategic, operational, and tactical levels. At the strategic level, the command structure has two headquarters (Allied Command Transformation and Allied Command Operations). Under the operational command level, there are Joint Force Commands (JFC) at the operational level and service-specific component commands at the tactical level. (MPK 2023) "Military organisation and structures comprise all military actors and formations that are involved in and used to implement political decisions that have military implications" (NATO 2021). High level illustration of NATO's organisational structure is reflected in the Figure 2.

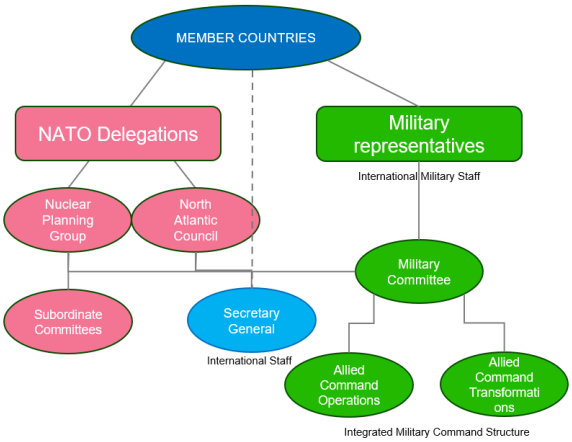

Figure 2. NATO Working Structures (According to NATO no date a)

The Figure 2. illustrates how the NATO Organisation is divided into different branches, civil and military structures.

3.1.1 Allied Command Transformation and Allied Command Operations

NATO's two strategic commands, Allied Command Transformation (ACT) and Allied Command Operations (ACO) are both permanent multinational headquarters situated across Allied territory. They form the foundation of NATO's command structure. ACT and ACO complement each other by jointly shaping both current and future operating environments. (NATO no date e)

Allied Command Transformation (ACT) is NATO's strategic command dedicated to warfare development. ACT leads innovation, capability development, and transformation for future readiness It ensures the Alliance stays relevant and capable in a fast-changing security environment. ACT leads on strategic thinking, capability development, education, training, and cooperation, focusing on transforming military structures, forces, and doctrines. Since 2003, ACT has driven continuous innovation to adapt NATO for future challenges through activities such as concept development, experimentation, and fostering interoperability.

In contrast, Allied Command Operations (ACO) is NATO's strategic warfighting command, accountable for military operations and defending the Alliance's territory and interests. ACO manages operational planning and the conduct of military missions. ACO executes operational planning, maintains the security of member states. Together, ACT prepares NATO for future threats, while ACO manages current operations and defence. (NATO no date e) (NATO no date b)

The organisational positioning of the case centre's is directly relevant context to enable the understanding their regional roles and missions, and thus potential impacts. One of the case centres, Multinational Corps Northeast (MNCNE) in Szczecin, Poland, operates under ACO, commanding the NATO Enhanced Forward Presence Battlegroups stationed in Estonia, Latvia, Lithuania and Poland. The second case centre, Joint Warfare Center (JWC) in Stavanger serves as NATO's primary training and exercise hub for joint and combined operations. The basics of the case cities and their NATO centre's profile is explained in more detail in chapter 3.1

3.2 NATO's capability development and industry cooperation

The chapter discusses NATO's strategic targets and methods when it comes to procuring, developing and maintaining its capabilities. It also describes the means how NATO cooperates with defence and security industry.

NATO's core purpose is both to deter aggression and defend against threats if diplomacy fails. In order achieve this, the Alliance requires capabilities across all domains: land, maritime, air, space, and cyberspace. NATO has only limited amount of collectively owned and maintained platforms. Vast majority of the capabilities in abovementioned domains are nationally owned, procured and operated by the Allies individually. Capability development and procurement processes are carried out through multinational cooperation for collectively owned platforms. (NATO,2025d)

Nato has basically three different roles as a partner and stakeholder when it comes to defence and security industry: *buyer*, *consultative partner* and *incubator*. These roles are presented in the following chapters.

Buyer

Nato is a significant purchaser of goods and services via different procurement bodies and instances, the main ones being NATO's Support and Procurement Agency NSPA. These entities are dependents on the private sector filling the diverse needs and requirements of member states and partner nations. NSPA's portal holds requests for proposals to vast range of different items. Value of purchases is 4 billion EUR worth of goods, products and services annually on behalf of NATO nations. (Policy Insights, 2023; NSPA Annual report 2021) There are over 60 000 companies registered to NSPA source file, and over 10 000 companies doing businesses actively. In 2025, after Finland and Sweden joining Nato, it can only be assumed that the number has gone up.

Nato purchases are done mainly via two joint procurement organisations, called NATO Support and Procurement Agency (NSPA) and NATO Communications and Information (NCIA). NSPA is the primary logistics support management agency available for member nations to use in their purchases. NSPA holds requests for proposals for all possible requirements military troops might need from armaments to engineering and food and from

personal items such as sunglasses and socks up until aircrafts. (Policy Insights, 2023); NSPA Annual report 2021; NATO 2022)

Especially this research being of regional approach, it is relevant to distinguish Nato's military- and civil organisation. Military organisation is responsible for planning of operations and location of the troops. Capability development, industry cooperation and decision-making regarding purchases is done mainly in Nato's civil structures. (Valli 2024) This means that the case centres, being positioned under military organization, are not responsible for the capability development activities, and therefore do not have immediate interest in facilitating regional industry cooperation.

Consultative partner

According to 'Framework for NATO Industry Engagement' publication "Industry should be seen as a partner in innovation and strategic thinking and, if required by nations, as a possible source of advice on business models and potential solutions during pre-procurement activities in respect of principles of transparency and equality of opportunity" (NATO 2013). This is indicative of private sector cooperation and consultation being a recommended mode of operations. The Framework documentation lists at least five committees in which industry participates. In addition to the mentioned bodies, there are other means of interaction, such as different alliance-sponsored events. (Policy Insights 2023)

Incubator

Nato supports the private sector to incubate ideas and innovation. Especially advanced technologies such as artificial intelligence, quantum and different autonomous technologies amongst others are of NATO's interest as they present both risks and opportunities. Nato works with public and private sector, academia as well as civil society for developing, adopting, establishing principles of use and maintaining technological edge through innovation. (NATO 2025a)

One of the most notable initiatives is "Defence Innovation Accelerator for the North Atlantic" – DIANA. DIANA, established in 2022 works to solve critical defence and security challenges through dual-use technologies. Partners in that work are leading researchers, academia, entrepreneurs from early-stage start-ups to matured companies. DIANA's main way of operating is facilitating competitive industry challenges, which are based on current and future critical defence and security problems. Innovators are asked to develop deep

technology and dual-use technologies to help to solve the problems and challenges. Selected innovators receive funding in form of grants and gain accesses to different accelerator sites (20) and test centres (180) in countries around Ally nations. The innovators also get access to network of different mentors, such as scientists, industry experts, end-users and government procurement experts and trusted investors is available for selected innovators. Furthermore, pathway to market within NATO organisation and NATO allies is offered. (NATO 2025a)

Another mentionable tool is a NATO Innovation Fund, established in 2021 and size of 1 billion EUR venture capital fund. It provides strategic investments in startups which develop emerging dual use technologies. Objectives of the Fund are to "seek out cutting-edge technological solutions, bolster deep-tech innovation ecosystems across, and support the commercial success of its deep-tech start-up portfolio" (NATO 2025a).

All these mentioned roles follow strict procedures which govern the industry involvement and cooperation. As a result, there isn't specific niches where NATO as an organisation would or even could actively seek any local or regional benefits directly linked to the presence of its military bases or centres. Any potential impacts are therefore more likely to emerge indirectly, mechanisms being through activities of personnel, or national-level procurement decisions.

3.1 Case cities

The case cities Stavanger, Norway and Szczecin, Poland for the research were selected in joint decision with the examiners. The criteria for selection were for the cities to be European, preferably Nordic or Baltic city. There needs to be a historical, long-lasting presence of a NATO centre. At least one of the cities should have a centre with similar profile than the one to be established in Mikkeli. Also, there should be data available in English about the cities or the region. Following these criteria, Stavanger in Norway and Szczecin in Poland were selected.

Both cities also have vibrant entrepreneurial environments. Stavanger is ranked as second leading city for startups in Norway, 103rd on Western Europe and 349th globally (StartupBlink 2023). Szczecin positions as 10th in Poland, 54th in Eastern Europe and 810th

globally. (StartupBlink 2025). The scoring includes metrics such as number of startups, number of coworking spaces and number of accelerators. Additionally, quality wise the indicators analyse the traction of ecosystem's top startups and reviewing unicorns and exits produced by ecosystem, Business Score adds on business and economic indicators on national level. (StartupBlink 2023) This data indicates that there are identifiable entrepreneurial ecosystems in place in both cities for investigation.

3.1.1 Stavanger and Joint Warfare Center

Norway is a founding member of NATO, thus having been a member and active participant of the treaty since 1949. At the time, Norway was the only NATO country to share a border with Soviet Union. Strategically, defending the vast and scarcely populated Northern Flank was one of the overall responsibilities of for the defence of Denmark, Norway, Northern Germany and the strategically crucial Baltic Approaches. Historically, Norway had a massive merchant fleet and remains a major fishing and shipping country. (NATO 2025b)

Stavanger is located in southwestern Norway in Rogaland County, by the Stavanger fjord. It hosts ca 150 000 inhabitants, being the 4th largest city in Norway. Stavanger's main industries nowadays are energy by 70%, in addition to machinery and food industry. (Stavanger Kommune 2025)

Stavanger hosts JWC, Joint Warfare Center, which is basically a training centre. JWC currently employs approximately 260 people, both civilian and military, representing seventeen nationalities. JWCs core mission is to enhance collective training and warfare development across both operational and strategic levels. It facilitates exercises and transformational activities. Key outputs of the centre are two-fold. First, it delivers complex computer-assisted command post exercises supporting both collective defence and crisis response operations. Second, being a hub for Warfare Development, the Centre ensures adherence to joint operational doctrine and standards, fosters experiments and supports lessons learned process. Training processes are continuous, and include academic seminars, crisis response planning, exercise execution and post-exercise analysis. (Nato 2024b)

JWC has a key role in preparing NATO forces for future operational challenges, testing interoperability, and supporting the transformation of warfare concepts. JWC sits under

ACT. Whereas ACO structures, such as MNCNE are connected to security and deterrence mission, the ACT structure like JWC is oriented more into innovation, training and transformation. This shapes the profile of the centre's mission and purpose in the region, the personnel profile, as well as the local interaction.

3.1.2 Szczecin and Multinational Corps Northeast

Szczecin is located in Northwestern Poland, by the river Oder in West Pomeranian region. It has 410 000 inhabitants, being the 7th biggest city in Poland. Szczecin was part of Germany until 1945. The main industries include shipbuilding, transport and logistics. (Szczecin n.d.)

Poland joined NATO in 1999, one decade after separating from Soviet Union regime. Poland was the first country to end Communist Rule in Eastern Bloc. (NATO 2025c) Since the NATO Warsaw Summit in 2016, four multinational battlegroups have been deployed starting from 2017 in the mentioned countries as part of the Alliance's enhanced deterrence posture in the Baltic Sea region. These battalion-size units are integrated into host nations' brigades and led by framework nations: the UK in Estonia, Canada in Latvia, Germany in Lithuania, and the US in Poland. They operate under the command-and-control of the NATO Multinational Corps Northeast Headquarters (MNCNE) in Szczecin, Poland (NATO no date c). The Multinational Corps Northeast headquarters has been established in 1999, with current headcount of ca 400, from almost all NATO Member States, being the highest command in NATOs northeastern flank.

The forward presence forms a core element of NATO's defence strategy, strengthened in response to Russia's annexation of Crimea in 2014 and the full-scale invasion of Ukraine in 2022. Nowadays eight Forward Land Forces (FLF) multinational battlegroups, modified for local conditions in size and composition, operate continuously alongside national forces. Troops are rotated regularly from contributing nations, maintaining a permanent Allied presence with rapid reinforcement capability. (NATO no date c). The command centre's role is to plan defence and interoperability.

4 Description of the research

This chapter explains the research methodology used in this study. The chapter looks on methods on both the impacts of defence activities on specific region as well as entrepreneurial ecosystems are researched with. The selection of qualitative case study with focus on interviews as research method is justified based on earlier research. They are both then further presented based on theory and in the context of this research. The chapter also covers description of data collection approaches and procedures.

4.1 Research philosophy

Research philosophy supports the specification of overall research design and strategy. They, in turn further set the direction and flow of the research from research questions until conclusion, guiding the decisions about data types to be collected, analysis and interpretation approaches and the presentation and illustration of conclusions. (Eriksson and Kovalainen 2008)

“Ontology concerns ideas about the existence of and relationship between people, society and the world in general” (Eriksson & Kovalainen 2008). Ontologically, this research and methods used are subjective, meaning that perceptions and experiences are person-dependent, subject to context and may alter over time. Sometimes the term constructionism is used to describe the social nature of reality. (Eriksson & Kovalainen 2008)

This research is pragmatic by nature. Pragmatics “recognise that there are many different ways of interpreting the world and undertaking research, that no single point of view can ever give the entire picture and that there may be multiple realities”, and pragmatism as research philosophy can adapt several research strategies. (Saunders et al. 2012 p.153) The investigated phenomenon is complex and multidimensional and multidisciplinary. Therefore, the research approach needs to be adapting, providing the researcher opportunity to be creative and apply relevant methodologies and research strategies to overcome any research obstacles one might run into during the study. This research is also fact-based, meaning that the reality is assumed to be objective. Further interpretations or

conceptualisations will not take place. Pragmatism is reflected in the selection of case study as methodology and using multi-method approach to gather data.

Epistemologically, this study uses both inductive and deductive logic. According to Eriksson & Kovalainen (2008), "inductive research proceeds from empirical research to theoretical results, whereas deduction rests on the theory being the first source of knowledge. What is known about a phenomenon theoretically, the researcher can deduce hypotheses, which are then subject to an empirical study" (Eriksson & Kovalainen 2008). Strict deductive model of research is not considered suitable for qualitative business research. Most business study researchers use inductive logic. However, these concepts are rarely found solely presented, nearly all qualitative research uses both reasoning processes and logics during the project. (Eriksson & Kovalainen 2008) In this research, the existing theoretical framework provided the framework via which the phenomena were investigated, as in deductive logic. Findings based on data gathered then formed some new insights, being inductive by nature. The hypotheses and assumptions related to this research design are described in chapter 4.3, Figure 3.

Key limitations of the research included the limited availability of data, caused by sensitivity of the military topic, challenges in accessing certain stakeholders, such as recruiting the interviewees, and possible language limitations. These challenges are further discussed later in chapter 6.3. These limitations were mitigated by using reflexivity. Reflexivity in scientific thinking means "careful consideration of knowledge; how it's produced, described and justified" (Eriksson & Kovalainen 2008). In the context of this research, it means that regular reflecting of what is being done known and assumed and based on that what should be done and on which justification. These reflections and directions taken during the research, for example relying heavily on interview data, have impact on findings.

4.2 Method selection

The research object, relationship between a military centre's presence and entrepreneurial ecosystem, is a multidimensional socioeconomical phenomena and system operating within a certain region. Chapter 2.2.1 about entrepreneurial ecosystem domains described the ecosystems consisting of several dimensions which, depending on the scholar, may even contain certain subdomains. These multiple aspects make the entrepreneurial ecosystem

concept alone complex by nature. If considering also the development of the ecosystem, the phenomena has been described even as ‘chaotic.’ (Wurth, Stam & Spigel 2023) Also, each there are major differences between ecosystems. (World Economic forum 2013) Thus, the used method was required to be flexible and iterative, to be able to adapt and adjust the approach when proceeding within the research and being more familiar about the research objects. Challenges identified in existing literature are often related to limitations in data availability, and therefore the selected research method needed to adhere multiple and complementary data sources and approaches to data collection. Based on these requirements, this research will employ qualitative method approach.

Droff & Paloyo (2015) have collected, analysed and compared different methods used when assessing regional economic impacts of defence activities. They state that “To date, there is no current standard method for analysing the impact of defence activities on regional economies” (Droff & Paloyo 2015). As discussed earlier in the chapter two, there is not earlier research found which would combine the investigation of entrepreneurial ecosystems and the impacts of a military centre. Also, there are not any single best practise to analyse ecosystems. (O’Connor et al. 2018 p.1) Therefore, historical research alone does not provide an explicit recommendation either for or against any specific method to be used.

Defence activities have an impact on the region, such as “spending on personnel and bases, or equipment supplied by both public and private industries”, as described by Droff & Paloyo. (2015) Furthermore, from regional perspective the defence activities are an exogenous expenditure for the region. That’s why they as scholars emphasize the approach for a practical model, including cost and benefits, via which the regional planner can estimate the regional impacts, whether they are of disruption or development. They identify case studies as one of the five most applied methods in examining the regional effects of defence activities, especially when such activities influence local income structures and skills development. The earlier studies they present, such as those by Markusen et al. (1991) in the United States and Law (1983) and Boddy (1988) in the United Kingdom, have demonstrated that defence-related activities often concentrate spatially contributing to regional economic patterns. Later case studies from Quebec (Bélanger, 1990; 1993) and the UK (Todd, 1980) illustrate that the military’s financial inputs can act as a catalyst for regional growth, beyond quantitative dimensions of defence expenditure, highlighting the qualitative features. (Droff & Paloyo 2015) For example, in longitudinal comparative research, Law (1983) found

impacts on the military spending being powerful accelerant on the regional development, impacting on educational and income level of inhabitants. (Hicks and Raney 2003, p. 368) Also, Piotrowska-Trybull and Ignasiak-Szulc (2019) note that the local effects of base closures or realignments are often difficult to estimate statistically and often understood through case-based inquiry.

Wurth, Stam & Spigel (2023) have collected 181 academic publications of entrepreneurial ecosystems for a systematic literature review. Out of the set which investigates the interdependence of entrepreneurial ecosystems' elements, 43 out of 59 was done using qualitative research approach. 20 Out of these 43, 40 consisted of either only interviews (individual or small groups), and most often the interviews are mentioned to have been semi-structured. 20 studies out of 43 were case studies. One of studies is a case study based only on archival data. Many of the 16 not included into qualitative studies are mixed method studies, using surveys, Fuzzy-Set Qualitative comparative analysis (fsCQA), and in some cases also interviews as addition. The result of this fundamental research shows how majority of the research for entrepreneurial ecosystems it's elements in focus, are done using case study and incorporating interviews as either only data source, or at least one of the data sourcing methods.

To summarise the above, case study methodology is justified in earlier literature having been used both for analysing regional impacts of the military centres, as well as the entrepreneurial ecosystems, especially when the interest is to understand the qualitative dimensions and socio-economic dynamics and mechanisms, as in this research. Therefore, it is justified for this research to adopt case study methodology, too. In the next chapter, the case study as a methodology in explained in more details.

4.2.1 Case study as a research method

Case studies can establish certain qualitative elements, which a more standardised model cannot reveal. Case study investigates "a contemporary phenomenon in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clear" (Yin 2018 p. 15). They reveal details and qualitative elements which structured and standardized models cannot uncover. Being closer to ethnographic methods, they have ability to describe local consequences. Also, case studies can produce useful information on

the regional economies' dynamics. As they are typically emphasised on qualitative analysis, case studies provide insights related to the relationships between regional actors. (Droff&Paloyo 2015, p.388) These relationships and dynamics, present and functioning in the structure of an ecosystem are the ones in the core of this research.

A core feature of all case study research is the exact construction of the case or several cases. Research questions are connected to comprehending and 'solving' the case; what can be learned by studying the case investigating it in relation to its historical, social, technological, economic and cultural context. (Eriksson and Kovalainen 2008) Yin (2018) states that "Case studies allow focusing in-depth on a case and to retain a holistic and real-world perspective. They are preferred when there is a desire to study some recent past and present set of events." (Yin 2018 p.5-12)

According to Yin (2018) the research question "How" is more explanatory and likely lead to using case study as the preferred research method. Question of "how" as well as "why" are dealing with trace of operational processes over time. (Yin 2018 p.10) Research question definition is usually done in dialogue with empirical data. There might be preliminary ideas and research problems in mind at the beginning of the study, but they might need to be revisited and modified during the process. It becomes easier once the researched becomes familiar with the unique case and phenomena in question. (Eriksson and Kovalainen 2008)

The case study relies on many of the same techniques as in history, such as primary and secondary documents, but also to direct observation of the events being studied, and interviews of the people who have been or still are involved in the events. (Yin 2018) "Case study's strength is on its ability to deal with wide variety of evidence, documents, artifacts, interviews and observations" (Yin 2018 p. 15).

In business studies there's a long tradition for case studies, as they have been integral part of teaching in both academia as well as in companies addressing both business problems and successes and failures. Case studies also have capability to present complex business issues in accessible and pragmatic format. Yet, the real-life dimension has also been criticized, and case studies have been accused of lack of scientific rigor. Also, the generalisation of the results of a case study is one limitation the case study has. Regarding that, it is relevant to note that the main target of case studies is not provide results to other contexts. (Eriksson

and Kovalainen 2008) Furthermore, case studies are difficult to repeat, for example for comparison. Also, the case study is subject to researcher's views.

"No two cases are identical. Therefore, helpful if not essential is discussion of how the individual cases were sufficiently comparable along important dimensions to warrant a presumed common finding between them." (Yin 2018, p. 198) Extensive case study relies on "positivist research, focusing on mapping common patterns, mechanisms and properties in certain context" (Eriksson & Kovalainen). Detailed description of the real-life case is not the focus as such, but more of an instrument used in investigating a specific business-related phenomenon and developing theoretical suggestions that could be verified and generalised to other contexts or theories. (Eriksson & Kovalainen 2008)

As an example of entrepreneurial ecosystems research based on case study and its successful application a study by Spigel. (2017) He aimed to identify different elements of an entrepreneurial ecosystem, using illustrative cases of Waterloo and Calgary in Canada. The use of cases demonstrated "the variety of different configurations that ecosystems can take and the implications this has for the entrepreneurship process within them" (Spigel 2017). This research is an example highlighting the usability of case study when a phenomenon known to be unique can be investigated and further understanding about its dynamics identified by researching two different cases combined in one study.

This research follows the lines of these theoretical statements and definitions and applies them through qualitative, multi-case study approach. This thesis is especially interested in understanding the historical, recent past developments and present dynamics, in real-world context, and covering multiple dimensions. The objective is to find out whether certain socio-economic and entrepreneurial dynamics can be identified, and how they appear in the regions hosting a NATO centre. Aim is to gather possible learnings and practical insights from the history and present for the cities which currently are preparing and adjusting for the establishment of a new centre in the area. Primary aim is to provide a wide and versatile array of findings to investigate the phenomenon. Detailed description of the cases or reasons why the findings have occurred in that exact region are more of secondary findings and are analysed only to the extent relevant to understand the phenomena better. Ecosystems are always unique, reflecting the history and culture of the region. The circumstances cannot be copied. This case study does not primarily aim to develop and propose a generalised theoretical take on the phenomena but aims more for practical benefits. However, as the

phenomena is less researched in the current literature, the finding will contribute also to theoretical research of entrepreneurial ecosystems and using the framework as a method.

4.3 Research design

This chapter describes on how this multi-case research has been designed methodologically, gives an overview of the data sources and the analysis process leading into findings. Also, the final research setting which illustrates the combination of theoretical framework to methodology and research design. Later, the data sourcing processes are described in more details in their respective chapters.

When the supporting theory framework (entrepreneurial ecosystems), research methodology (case study), research questions (how does a centre impact regional entrepreneurial ecosystem) and research philosophy (pragmatic) are combined, the final research setting can be illustrated as in Figure 3.

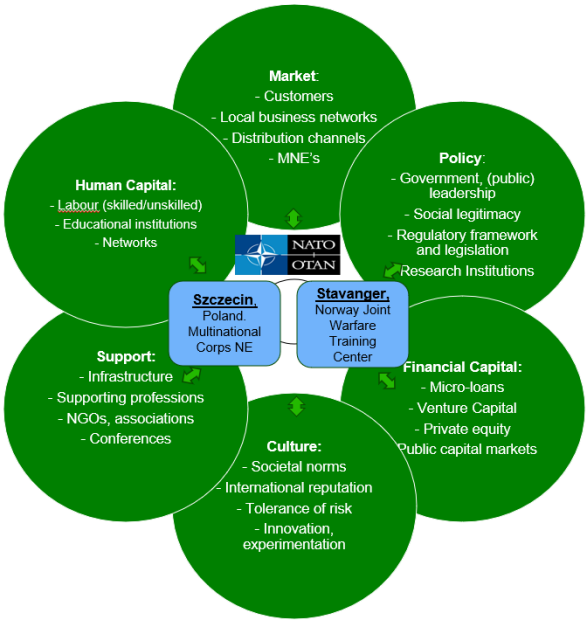

Figure 3. Research setting

Figure 3 concludes the research setting, and reflects the basic assumptions made to ground the study. The case cities are assumed to have functioning entrepreneurial ecosystem in place, as earlier discussed in theory chapter 2.2. The ecosystem is assumed to contain the six main domains. The interview structure and question set were designed to analyse and gather

insights considering each of those domains, to guarantee that all aspects of the entrepreneurial ecosystems are covered. This ensures answering to research questions set in chapter 1.3. Furthermore, the assumption is that the presence of a Nato centre, including the personnel, accompanying family and organisational existence in the area has an impact on the entrepreneurial ecosystem and its dimensions. Similarly, it is assumed that that there might be dynamics how the ecosystem could interact between the centre. Additionally, the figure reflects the two different case cities having a Nato centre present, under organisational structure as described in chapter 3.1 and later described in more details in chapter 5.2 and 5.3. In the research they are treated with equal emphasis. To summarise, the illustration describes on how to research case design has been defined, and how the theory, case and research methodology are synchronised.

The illustration in Figure 3 summarises the study has been comprised methodologically, and how the analysis and conclusions are developed. Interviews are had with informants from both case cities, and from the roles representing both the ecosystem dimensions as well as the perspective of the centre's employees. The interview data has been complemented with secondary data. Main document sources are such as reports and publications regarding the city and in some cases the region, websites, news articles, regional development strategies, and other publications. Also, a look into relevant social media sources is included in study.

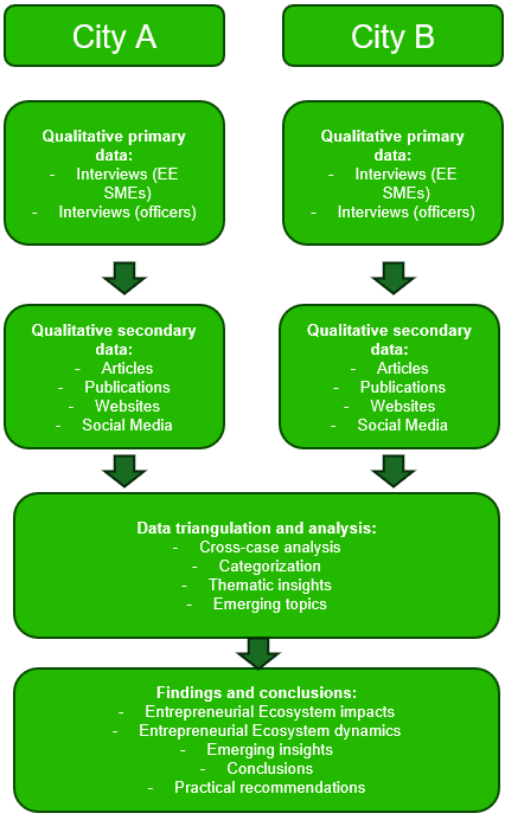

Figure 4. Methodological approach and flow of the research

In this research, after data collection, data was compiled and analysed per theme, the key structure of the analysis being the entrepreneurial ecosystem dimensions as presented in chapter 2.2.1. Multiple data sources, including interviews and documentary sources are used and data combined as comprehensive evidence to better ensure validity and reliability. The research integrates the evidence from both case cities and source materials, identifying the themes based on entrepreneurial ecosystem dimensions amongst them. These findings are then used to draw generalised conclusions about impact mechanisms per entrepreneurial ecosystem theme. Out of these mechanisms, further conclusions are drawn to give ideas how a region could further act upon utilizing the impact mechanisms and draw benefits and means for growth and support within the area, as per research questions. The findings include the identified impacts per theme and mechanisms via which the impacts realise, as well as a set of emerging themes identified within the interviews. The findings also include some practical recommendations. Findings are described in chapter 5. Before that, the data sourcing and analysis processes are discussed in detail in following chapters.

4.4 Interviews

“Qualitative interviews are often unstructured, informal, open, and narrative in nature. This type of interviewing is particularly useful for exploring a topic intensively and broadly and from the participant's point of view” (Kovalainen and Eriksson 2008). In unstructured interview there often are some guiding questions, themes or core concepts to discuss about. A formal structured interview protocol is not used. Also, there is freedom to direct the conversation to any direction according to situation that might occur. (Kovalainen and Eriksson 2008) Semi-structured interviews include a draft of what will be asked, but not necessarily an exact plan on how it will be asked. Interviewing is ultimately asking questions and receiving answers. It is important to have the balance between two aspects. First, the themes and questions should be planned to secure the gain of sufficient information. On the other hand, there needs to be enough flexibility for the interviewee to modify the course of the interview based on each individual discussion and situation. (Hirsjärvi & Hurme 2001 p.103)

Semi-structured interview method was selected for few reasons. First, the research setting was based on several assumptions (see chapter 4.4), and even though the assumptions were strongly justified, there wasn’t exact certainty that the phenomena would have been known by the informants. Thus, there was requirement to have flexibility in guiding the discussion to any direction needed. Secondly, the atmosphere of the interview was meant to be informal and discussive. In addition to the flexibly structured approach of the interview, the narrative nature and open atmosphere was seen important to have the interviewee to share their views, insights and consideration of the theme, even if they wouldn’t have exact answer, or their answers would be opposite to the preliminary assumptions. Having the draft of question set planned as a structure but yet being able to adjust the discussion to where it naturally flows was beneficial to be able to get as broad views on the topic as possible.

The key structure for interviews was the entrepreneurial ecosystem’s dimensions: *market, policy, finance, culture, support,* and *human capital*. Under these main topics few sub questions were added. Also, the informants were asked about generic perceptions of the region and the Nato centre’s presence at the beginning, and at last open question about thoughts or forward-looking ideas and considerations was asked. The interview protocols are listed in the Appendix 1 of this thesis. The question sets were slightly altered both during

the interviews as per the flow of discussion. Also, during the process of interviews, the structure of the questions shared with interviewee beforehand was simplified. The discussions had with the first interviewees proved that extensive and detailed background material was not necessary, as the interviewees were able to discuss on needed topics widely and in depth without all questions being detailly listed and asked. Also, a simpler structure was more approachable to interviewee.

Interviews were seen as the main data source for information. Documented sources are always the secondary data and would not necessarily cover all the aspects that answering research questions would require. Also, in some cases document analysis lacked evidence to some extent. Especially for that purpose, semi-structured interviews were also a method to validate whether the lack of documented information was a valid research result itself. Alternatively, the reason could have been because of gaps in research approach, limitations in searches, or information availability either in English, or its existence altogether. Additionally, interviews were expected to provide insights especially into any potential underlying and not evident or documented impact mechanisms and dynamics. In interviews it is possible to gain information that wasn't planned to be searched for or looked for.

There are three different interview research approaches. *Positivist* (or naturalist or realist) interview research approach is interested in facts. *Emotionalist* (also called subjectivist) research approach considers interviews to be paths to interviewee's experiences. The questions would not focus on information, but rather on perceptions, interpretations, understandings, viewpoints and emotions. These two research approaches aim to answer to questions "what". "*Constructionist* interview research approach focuses on how meanings are produced through the interaction taking place between the interviewer and interviewee" (Kovalainen & Eriksson, 2008). In this research, the interview approach was positivist. That approach enables fact-based and comparable data gathering. The research setting was planned to reach exactly for interviewees knowledge and insights, which they would have gained by experience. Emotional aspects or conceptualizations were not of interest. Yet, the possible weakness of that approach is that subjective meanings are neglected, or socially constructed experiences are taken as facts. It also assumes that interviewees can provide objective insights, which might not always be the case.

4.4.1 Interviewees

The criteria for selecting the interviewees were the presence or experience in the given region, assumed expertise and knowledge of the regional development, also historically, based on job role and/or organizational position, and assumption that the interviewee has experience at least on some dimensions of the entrepreneurial ecosystem within the region. The other, alternative criteria to entrepreneurial ecosystem knowledge was experience of the Nato centre in the region.

Recruiting the interviewees was a relatively intense process. Circa 60 people and/or organizations in the cities were contacted via email with few reminders, out of which very few responded at all. Yet, once there were successfully recruited interviewees, they were willing to further share their personal contacts and recommended participating. Thus, the number of interviewees was ultimately very satisfactory, providing in-depth insights and wide coverage of different roles, perspectives and personal situations as well as nationalities.

Interviewees consist of two different groups or cohorts. One set of interviewees represent different actors and agents within the entrepreneurial ecosystem, and have experience, knowledge and insights into local entrepreneurial environment as per the criteria. Second set of interviewees are seconded officers, either currently serving or having recently (within two years) served abroad in a Nato centre or agency, also according to criteria. This combination of interviewees provides a complementary and diverse collection of insights, experiences, knowledge as well as expectations about the topic. Altogether, out of eleven interviewees four were from Stavanger region and sevem from Szczecin or representing the West Pomeranian business region.

The interview data is treated with confidentiality and anonymity. No names or any other identifying details will be shared publicly. The data was anonymized for the analysis. Also, the interview data, such as notes and recordings was deleted after analysis. Interviewees were not disclosed to each other, even though in the case of recommendation they naturally knew of each other and might have referred to other people they knew discussion were had with. Interviewees from the entrepreneurial ecosystem and the roles they represent are described in the following. It is important to note that to ensure anonymity, descriptions of the roles and organisations are described on generic level, and on purpose left without

defining the city, region or community in detail. Neither their comments presented later in Findings can be connected to interviewee profile description.

The experience of interviewees represents a vast spectrum of expertise relevant to respective regional development, innovation and entrepreneurship. Their experience spans from senior advisory roles in both privately and publicly owned innovation and startup hubs to public-sector business development and academic insights. Roles and titles of the interviewees include senior advisor and board member, business advisor, department head and professor, consultant specializing in innovation support, entrepreneurial advisory, funding instruments and public-private partnerships, and CEO roles in entrepreneurship incubator.

The organisations represented by the interviewees have established roles in regional innovation and business development. Organisations have been active within their regions 10 years and more. The cooperation stakeholders of the organisations cover startups, SME's, academic institutions and public bodies, working at the intersection of technology, funding, business, research and innovations, each having an aim to strengthen entrepreneurship and regional growth. Together, the interviewees, their roles, expertise and organisations they represent cover the continuum from academic research and analysis to early-stage entrepreneurial support, business advisory and strategic regional development.

Additionally, the interviewee set includes six officers who are either currently working in or recently returned from secondment in one of the case cities NATO centres. One of the interviewees had worked elsewhere in NATO organisation. The interviewee was chosen to the pool of interviewees with justification that interviewees specific expertise in procurement procedures would bring depth to the research. Nationalities represented within the interview set there were American, Danish and Finnish. Some of the interviewees has additional role as "nation's eldest". The role is the leader, managerial head and representative of the nation, being responsible of the wellbeing of the national team, and taking care of relations towards host nation, local authorities, businesses and e.g. consulate.

Table 3 Information about the interviewees

Role of the interviewee	**Business experience in the area (y)**
Business advisor	+ 20
CEO	8
Head of Unit	+ 10
CEO	+ 10
Senior Advisor	+ 10
Staff Officer, nation's eldest	3
Procurement Officer	2
Staff Officer	7
Staff Officer	5
Staff Officer, nation's eldest	9
Officer, planning team	0,5

Table 3 summarises the roles of the interviewees, as well as their experience within the designated region in years.

4.4.2 Interview process

Before the interview sessions interviewees were provided with a slide set which described the research setting and the structure of themes and example questions. After first couple of preliminary discussions the interviewees were provided with a set of questions, and an illustration of entrepreneurial ecosystem framework to build a basis for the discussion and describe the research question setting and research background. In interviews conducted with entrepreneurship ecosystem's representatives, the question structure was simplified during interviews. The original question structure included several sub questions to elaborate the question and the theme. Yet, it became soon evident that elaboration was not required. The interviewees were familiar with the dimensions either academically, or intuitively via their substance expertise within the job, and thus the interviews did not require detailed backgrounding and breaking down the questions. Semi-structured interview approach functioned well, and even though the flow of discussion was different between

each interviewee, all themes were covered as planned. The answers from the interviewees were starting to be similar with each other after few interviews, and the themes repeating each other. According to e,g, Eskola & Suoranta (1998 p. 62) that indicates the number of interviews is seen as sufficient and the so-called saturation point was reached.

The interviews varied a lot in length and intensity. One of the informants did not have time for discussion, but offered to provide comments in writing, and a complementary set of answers and reflections was received via email. Some interviewees were very thorough in their voluntary preparation for discussion, which obviously gave high quality material for analysis. On the other hand, the lengthy discussions also produced lots of material, which was not relevant for the research, and needed to be first analysed and then deleted during data preparation phase, making it more elaborate. The lengthy discussion provided also data that was not directly asked or expected, such as recommendations for small entrepreneurs and service providers. Many interviewees also offered thoughts, reflections and ideas for the city of Mikkeli, though Mikkeli wasn't in the exact scope of interview or the questions. These findings are included into results as separate chapter under "emerging themes".

Table 4. Information about the interviews

	Date	**Duration**
Interviewee #1	23rd June 2025	46 minutes
Interviewee #2	24th June 2025	41 minutes
Interviewee #3	4th July 2025	32 minutes
Interviewee #4	30th June 2025	34 minutes
Interviewee #5	2nd July 2025 [email received]	-
Interviewee #6	24th June 2025	1 hour 11 minute
Interviewee #7	25th June 2025	1 hour 1 minutes
Interviewee #8	4th July 2025	1 hour 4 minutes
Interviewee #9	22nd July 2025	48 minutes
Interviewee #10	12th August 2025	1 hour
Interviewee #11	2nd September 2025	43 minutes

Table 4 summarises information about interviews. The language of the interviews is not disclosed, to maintain the confidentiality of the interviewees. Interviews were recorded and the transcript feature of Microsoft Teams application was used to have written

documentation of the discussion. Additionally, manual notes were written throughout the discussion yet knowing that the coverage of those notes will not be sufficient alone. The quality of the automatic transcript was surprisingly high, and there were not any challenges to use that document as a basis for further analysis.

4.4.3 Interview data analysis

Analysis often begins during the interview. When the researcher conducts the interviews, he/she will start to identify findings and analyse them based on how they are repeated or divided within the interview. (Hirsjärvi & Hurme 2001 p.136) Processing of qualitative data consists of several phases. Yet, it basically consists of analysis and synthesis. Analysis classifies and categorises data, and synthesis aims to create a comprehensive view of the phenomena and present the phenomena in a new perspective. (Hirsjärvi & Hurme 2001 p.143)

The analysis of the interviews was done by reading the interviews few times in text format, cleaning off the irrelevant points, and highlighting the relevant comments and answers as well as organizing them following the themes, in case there was any one discrepancy in the interview material. In general, the discussions were mostly already structured based on entrepreneurial ecosystem themes, as per the discussion structure. To support the first phase of analysis and collecting the evidence on whether entrepreneurial ecosystem dimensions or related themes are mentioned or not, a supporting table was also used. The main goal of the first step of analysis was to ensure that overview on data and evidence collection is comprehensive and overarching, as the amount of interview data was vast. A simplified version of the table used for preliminary analysis of the data is presented in Figure 5 to describe the first phase of the analysis process.

	Dimension						Identified impact description						
Interviewee	Culture	Finance	Market	Support	Policy	Human Capital	Other	Culture	Finance	Market	Support	Policy	Human Capital
#1	No	No	Yes	Yes	No	Yes		-	-	Contractors	"Base load" Stavanger integration services, networks, housing, english speaking on high level infrastucture (flights, schooling)	-	Skilled labour - yes. Education - no
#2	Yes	No	Yes	Yes	No	Yes	"Base load"	Big pop up markets organised by expatriates, professionally			infrastucture (flights, schooling)		
#3	No	No	No	No	No	No	University cooperation in Bydgoszcz					Immediatel	Immediately in the city - no
#4	Maybe	No	No	Yes	No	Yes	Wish to make things differently Questions about deftech towards organisation Cooperation ideas; applying for funding				Yes - infrastucture (flights, schooling)		Education - no Skilled labour/spouses: visible in the startup community, volunteer basis

Figure 5. Simplified exemplary illustration of interview data analysis table

After the first step of the process, the highlighted comments were collected under the thematic chapters in questions to support the collection and identification of findings and later writing of the text. Also, a collection of relevant and descriptive quotes was kept within the text. The direct quotes summarise a relevant point or attitude which in some cases could be generalised to some extent to represent certain aspect of the findings. Also, the quotes are meant to make the text more vibrant and livelier to the reader, to illustrate the discussion and the nature how the topic was perceived and discussed by the informants. The Chapter 5 Findings includes a collection of findings per each entrepreneurial ecosystem dimension. Also, a set of so-called emerging themes is gathered in to separate chapter.

4.5 Secondary data

Secondary data was collected mainly from public sources, and in English. Some of the websites and articles were in local languages, and in those cases Google Translator has been used as translation support. Furthermore, local university libraries were contacted with a description of the research and support requests to identify relevant material especially in local language. Stavanger University library declined the request, whereas the Main Library of University of Szczecin did provide statistical material as well as articles. Additionally, a Polish localization consultant supported the research with providing articles and other material. Both centres were reached via official channel with an interview or email questionnaire request, without a response.

The key sources for secondary data were selected based on the entrepreneurial ecosystem dimensions, thus using the entrepreneurial ecosystem theoretical framework as strategy. That approach would ensure the research questions are answered fully, by ensuring all the aspects of the entrepreneurial ecosystems are systematically investigated and covered. Data sources were identified via searches related to entrepreneurial funding and finances, possible markets and networks, entrepreneurial and innovation hubs' publications and assessments of the region, and different public policies and strategy reports. One of the key criteria for data was availability, and accessibility via English language. This obviously excludes a set of data being published in local languages and might alter the results. Additionally, the secondary data consisted of analysing sources or publications which were mentioned by interviewees in relation to some theme that were discussed, or directly to some dimension of the entrepreneurial ecosystem.

Centre's LinkedIn and Facebook (MNCNE) sites were selected as one data source. The lack of findings from the regions or cities' documentary sources directed to search evidence from centre's own communication channels. The centre's official profiles were considered as reliable and valid source of information to provide complementing information to the case, and postings from the start of year 2025 were reviewed. The obtained data was limited, yet included relevant information, such as cooperation with universities without official partnership affiliation, which likely would not have been available elsewhere from public sources, yet providing richness to the research. As per research questions, the aim was to identify the impacts the centre might have to surrounding regions and identify underlying mechanisms. The postings were reviewed to discover possible regional partners or other impact dynamics, following the positivist research philosophy. Any other content was not used in analysis.

Secondary data was analysed by themes, by searching for indications of the centre's possible impact to entrepreneurial ecosystem dimensions, according to entrepreneurial ecosystem framework theory. In this research it is relevant to also notify what was not found and to interpret that fact as a finding, in addition to identifying and analysing exact findings. For example, the city strategies or marketing materials did not contain any mentions or references to Nato centre, which is a finding itself. When reflecting against research questions, the finding indicates that there isn't any identifiable impact, connection or value which the city itself would see as beneficial and thus mentionable asset.

4.6 Data triangulation

Eriksson and Kovalainen (2008) state that accuracy, diversity and richness of case studies is usually increased if they utilize several sources of empirical data, like putting together a puzzle. Triangulation in both data gathering and analysis means that discoveries identified using certain source data, evidence and methods are then cross-checked with another set of data and evidence. Triangulation is the most used way of combining both qualitative and quantitative data, materials as well as methods in case studies. Such cross-validation provides multidimensional observation approach of activities in a specific social setting. (Eriksson and Kovalainen 2008; Hewson no date)

In this research, the main role of secondary data was to define and deepen the context to understand more about the entrepreneurial profile of the case cities, then later to both support and verify the interview findings, and to validate against the interview findings, to identify any possible gaps or misinterpretations. For example, there were very limited number of findings from secondary data indicating any impact which the NATO centre would have had to the entrepreneurial ecosystem. Alone this finding could have indicated that there's lacks and gaps in the data source. Yet, combined with primary data, it supports the findings gained via interviews. Table 5 below describes the data sources used in the research to complement each other.

Table 5. Types of data sources used in the research.

Entrepreneurial Ecosystem domains	Interviews – officers	Interviews – EE domain experts	Articles, reports, websites, statistics	LinkedIn
Market	Yes	Yes	N/A	N/A
Policies	N/A	N/A	N/A	N/A
Finance	N/A	N/A	N/A	N/A
Human Capital	Yes	Yes	Yes	Yes
Culture	Yes	Yes	N/A	No
Support	Yes	Yes	Yes	Yes

Table 5 summarises the analysis and findings of both primary and secondary data. Altogether, the summary does not reflect the amount of the data analysed. Secondary data was in more complementary role when compared to the interview data, which in turn was the primary source of findings.

5 Findings

This chapter summarises the findings of the research. First, general findings are presented. Later, findings per entrepreneurial ecosystem dimensions are discussed in more detail. The emerging findings, positioning outside the EE dimension framework are also presented, as well as perceptions about the NATO centre. The chapter is concluded with summary of the key findings, which in turn build base for conclusions, answering the research question and wider discussion about the research topic in Chapter 6.

General

In general, in both Stavanger and Szczecin the impact of the centre is pretty much diluted. Headcount wise, the centre is relatively small compared to inhabitants within the region and the city. Stavanger has strong and long historical international presence. The area's industrial backbone has been oil and gas production. Later, there's ongoing transition towards renewable energy sources such as wind energy, yet within the energy sector altogether. "*Since early 1970's, the city has been the centre of Norwegian energy, oil and gas activities. It is called the energy capital of Norway* [*interviewee 2*]" Global companies have had their offices and headquarters within the city for decades. "*Due to that, there has been high inflow of international residents. 20% of our inhabitants are not born in Norway, and we probably have the highest ratio of expats in Norway". [interviewee 1]* Consequently, there exists a vibrant expatriate community as well as international services, such as international schooling, besides specific French and American schools, enabling easy integration for expatriate officers. Both Nato officers and their spouses and families "fit in" if willing to actively integrate and are not treated differently as any other company representative. Additionally, the centre provides different community activities and opportunities for sent officers families.

Szczecin is newer to international operations altogether. Yet, the maritime industry is a major economic sector at the region, as well as nearshoring services (IT, Finance) have strongly changed the city more towards international agent. Szczecin and the West Pomeranian region benefit from several competitive advantages. It is geographically strategically located near

the German border and the Baltic Sea, with access to Scandinavian markets. Strong industries are maritime, logistics, and green energy sectors, especially offshore wind and hydrogen. There are developing ICT and cybersecurity ecosystems, with academic and startup support. Active innovation infrastructure, including Technopark Pomerania, Regional Centre for Innovation & Technology (RCIiTT), and strong EU project experience. *[interviewee 5]*. Furthermore, the larger area of West Pomeranian was commented by one informant as following: *"... very important regions for Polish industry and Polish economy. That's why we see a synergy of two roles, the typical military and also infrastructure role for a growing up an industry, which is also impacting on the defence and deterrence mission. In Poznan nearby Szczecin, we have a different military production site which is specializing in tanks and are also armed with personal carriers. Or infantry fighting vehicles with the reconnaissance specification. So this is the second field I can emphasize right now."* [interviewee3]

On the other hand, the area is still on development curve when it comes to internationalization, for example experienced language barrier was brought up by several informants.

5.1 Markets

As per entrepreneurial ecosystem dimensions definition, *markets* refer to customer, potential partners and suppliers. Findings indicate that the main impacts arise from the presence of additional population and consequent added spending. The centre's staff represent added consumers within the local economy. The centre itself purchases supporting services for maintenance, operations and services of the premises, which may also create some limited market for such services. Strategically, the procurement of any items related to military capability development or defence and security industry specific goods and services is done centrally via NATO's official procurement channels. Therefore, the impact on regional markets seems to be limited.

There were some weak indicators pointing to centre being a customer for specialized products or services. Especially Stavanger's Joint Warfare Training Centre employs highly specialized contractors, such as specialists for software development for simulations and scenario writing. Yet, these jobs or services were assumed not be openly available on the

free market [*interviewee 1*]. Alternatively, the procurement of such services would happen via official procurement channels, but the volume and visibility in general is so limited in the region that interviewees did not recognize the market potential as customer or notable service procurer.

Overall, the analysis of the market dimension suggests that regional impacts generated by the NATO centres are modest and primarily indirect, realising mainly via additional population, travel and spending. The centres themselves have limited influence on local markets, mainly due to centralised NATO procurement structures. Yet, it is possible that since the market for defence and security related services might not be publicly communicated, some of the possible evidence is not detected.

5.2 Policy and Finance

Domain "policy" refers to the local or regional governmental and regulatory environment. To ensure policies support entrepreneurship they should be aimed and designed to eliminate different bureaucratic barriers, and provide some form of incentives for entrepreneurs, startup companies and investors alike. Incentives could manifest via favourable taxation or grants. There wasn't any indication in the findings that some local policies or regulations would recognize or be connected to the presence of a Nato centre in any way. However, there are local financial frameworks existing in the region, which could be interpreted to be themed under both *policy* and *finance* within the EE framework. For example, in Szczecin there is a region "Zachodniopomorskie's RIS3 Strategy" focusing on security, ICT, and circular economy. Furthermore, "Startups West Pomerania", "Regional Centre for Innovation & Technology RCIiTT were highlighted, and national grant programs via Polish Agency for Enterprise Development (PARP) or National Centre for Research and Development (NCBR) were mentioned, along with European Regional Development Fund ERDF, Horizon Europe and Interreg. [*Interviewee 5*] Also Stavanger has local publicly funded programs which support immigrating entrepreneurs and provide some minor financing. [*interviewee 2*]. However, any connections or impact to or from related to local NATO centre couldn't be reasoned for any of the identified programs. Also, for example the regional innovation strategy reaching to 2030 does not contain any references about NATO presence at the area. (Pomorze Zachodnie no date)

NATO's innovation program DIANA (Defence Innovation Accelerator for the North Atlantic) (see chapter 3.2.3 Incubator) is an initiative which can be categorized under "*policy*" as an institutional agent. Its' list of Affiliated Network Test Centers (DIANA no date) recognizes one test centre in Norway, which is located in Kjeller, nearby Oslo. For Poland, there's centres are in Warsaw, Poznan, Wroclaw, existing in affiliation with a local university. This further indicates that there aren't any regional reach or associations to case cities to be identified.

NATO as an organisation grants innovation funding via specified procedures and programs. There wasn't any evidence found which would support the assumption of the centre's presence to influence on investors' interest, add investment capital within the region, or any local business to be able to secure funding for any operations in relation to or with any impact or connection with the presence of the centre or the emphasized ecosystem. The centres are not sources of major contracts, unless there would be some major infrastructure development needs.

When it comes to future opportunities, some interviewees representing the domains of entrepreneurial ecosystem were thinking for example to apply for joint funding from regional, national or EU level funding programs. "*[interviewees 4,5]* "The NATO centre could help influence a more targeted defence-tech funding agenda or catalyse new acceleration or PPP schemes aligned with NATO priorities. "*[interviewee 5]* That would likely call for changes in regulations and rules applied for admittance of the funding and might not be in the interest of NATO, as it has established industry cooperation procedures in place (chapter 3.2). Yet, as a thought this would support the strategic positioning of the region and enforce cluster and ecosystemic approach.

To summarise, impacts neither on finance or policy entrepreneurial ecosystem domains could be identified based on either informants' comments or any secondary data available.

5.3 Culture

Entrepreneurial cultural aspect refers to societal attitudes towards entrepreneurship. Identifiable elements are such as attitudes towards wealth generation, social status of an entrepreneur, tolerance for mistakes and failures and learning from them, innovation,

creativity and experimentation, and international reputation. Additionally, it includes the presence of entrepreneurial role models and visible success stories, and existing network of experienced and skilful entrepreneurs willing to share their knowledge and guide and mentor new entrepreneurial endeavours.

International visibility provided by the presence of a NATO centre was mentioned by several interviewees:

"*It reinforces Szczecin's role as a strategic location, especially in the context of the current geopolitical climate"* [interviewee 5].

"Stabilising and prestigious asset" [interviewee 3]

"we will be placed as a city in the holistic picture of every NATO map which is presenting around the world in the transatlantic area"…"promotion without the cost"[interviewee 2]

"A more international profile that can attract professionals and talent. [interviewee 5]

Even though the strategic value for international visibility the centre provides was mentioned by the informants, it wasn't possible to identify mechanisms or dynamics on how it would have impacted the entrepreneurial ecosystem. Neither was there evidence on how it would have been deliberately utilized for example in marketing materials towards businesses or investors, or in other systematic way by the city authorities.

Interviewees did not recognize any company from defence and security industry which would serve as a visible success story or be in any connection with the centre's presence. In Stavanger there was recognition of a local fact-checking startup being admitted to NATO's DIANA program. As stated earlier, DIANA procedures are managed in different organizational branches and are not in any official connection with Joint Warfare Training Center.

However, there was evidence via which the international community, including the NATO families, contribute to local culture, for example "*they [international expatriate community] organized kids sales the where they gathered over 500 people selling a used children clothing and equipment, and it's all really professional is set up, done by the expats and been going on for 10-15 years*" [interviewee 2]

The assumption was in general that international expatriates are willing to volunteer and contribute, find a way to be part of the local community. In interview discussions for example possibilities to act as mentor or coach for startups were mentioned. If there is a proper integration point in place, organized one way or another, the influx by the expatriates can benefit entrepreneurial ecosystem and promote entrepreneurial culture via openness, innovative ideas, activity and voluntary efforts within the ecosystem.

In both case cities, the NATO centres were seen to enhance international visibility, interviews noticing increased international recognition and strengthened strategic positioning. However, no concrete mechanisms were identified, through which the visibility would have been translated into entrepreneurial ecosystem impacts, or been systematically leveraged by city or regional authorities or business actors. Yet, the international expatriate community which includes NATO families, appears to enrich local culture. With suitable structures, this influx of internationally oriented residents could be a contributing factor towards entrepreneurial culture.

5.4 Supporting Structures

Supporting Structures in the context of entrepreneurial ecosystems cover three different subdimensions; Infrastructure refers to elements such as telecommunication, transportation, energy and structures like incubators, zones and clusters. Support professions cover availability of expertise services, such as accounting, legal and technical. Thirdly, Non-Government Institutions refer to events and institutions such as business plan contests, conferences and entrepreneur-friendly associations.

In general, both cities are startup-friendly and entrepreneurial oriented also from supporting structure perspective having core elements in place. This can be stated both based on statistics as presented earlier in chapter 3.1, and on the interviewees' comments especially from Stavanger.

"*Yeah, the network for entrepreneurs and startup ecosystem is, I would say very good. We have many co-working places, we have an incubator serving the entire country. We have tech transfer office, and we have access to different kind of investments, we have meeting*

phases and arrangements. We actually have more investment capital than we actually know, or most people know." [interviewee 4]

"If you're an immigrant, if you're from Ukraine or anywhere, basically, it's there are systems in place to make sure if you want to set up your own business, you will get support." [interviewee 2]

The presence of the NATO centre has a direct impact on supporting the presence of infrastructure, such as transportation and accommodation services. Added "base load" was brought up by several interviewees, both seconded officers as well as the representatives of the entrepreneurial ecosystem dimensions. For example, possible relocation of Joint Warfare Center was in public discussion during 2007. (Stavanger Aftenblad 2007). An interviewee commented the same:

"*but if the NATO centre would move to another location, I know that it's very critical for Stavanger because we've built up lots of things around it. I think the airport, everything has like links to the right of centre. And if they were to move, we would have a lot of unstability*". [interviewee 2].

"I would say that the more international activity we have, the more international flights". [interviewee 4]

The findings indicate a direct, yet relatively narrow impact on this ecosystem dimension. The most visible contribution relates to infrastructural elements, as the centre provides stability or "base load" to transportation, accommodation and other local services, thus providing stability. In this sense, the NATO centres can be said to reinforce these infrastructural elements within regional entrepreneurial ecosystem, thus strengthening the foundational conditions within which entrepreneurial activities occur.

5.5 Human Capital

The Human Capital dimension of the entrepreneurial ecosystem framework covers three major aspects. First, Networks refer to entrepreneurs' networks within the area. Labor covers skilled workers and presence of experienced entrepreneurs. Thirdly, education institutions refer to presence of schools and universities producing graduates equipped with relevant skills.

For this dimension, findings provided multiple evidence. First, the labour will be discussed. A long-term commandant of Szczecin centre retired during autumn 2024. (Polska Zbrojna 2024) Later, during spring 2025, he has been nominated to the board of at least two growing defence and security companies, called Speergroup (venture capital for defence-related ventures) and Frankenburg Technologies (developing next-generation missile systems). This indicates that the expertise cultivated in NATO organisation is available for industry and business after military career, naturally providing valuable expertise as well as networks for startups or any businesses.

Second, informant shared an example of a startup for which a spouse of a NATO officer had joined to work on. The person had a strong international expertise background and specific skillset as a finance lawyer. Spouses were also seen as potential employees in the region by several informants.

"Treat spouses like spouses and you'll get someone to hang out and support cafes, treat them like professionals and you'll have professional international expertise" [interviewee 2]

In Stavanger it was said that they can see the impact in nursing and childcare professions. Furthermore, that city being international by nature, the language barrier does not play a significant a role even in caregiving roles, whereas in Szczecin the language was seen as immediate obstacle for any type of local employment.

"But there are several nurses, physios. All kind of different spouses with a lot of good qualifications. That is not even asked for in Poland and that is of course, you can't work as a nurse in Poland without the language." [interviewee 8]

Also, it was found that there are contractual differences within the sending nations. In all cases the spouses would be contractually limited to joining the salaried local workforce, even if they would otherwise be willing.

Evidence for official university cooperation for research, teaching or publication was not found from any local universities and their public communication. However, secondary data revealed a student group from German University, located nearby yet on the other side of the border, visiting MNCNE. The evidence is weak but is suggesting that the centre's would be open to some level of cooperation within the region.

Networks between people, and interaction between the centre and local authorities as well as businesses were mentioned also on multiple occasions. Networks were found to form several ways, such as via families, schools and hobbies such as sports. However, the centres also had internal integration efforts:

"So in the barracks there are many organisations built up for spouses"" Barracks have an unclassified area. There's a cafeteria. They are doing like weekly coffees. Then every month, there's an international breakfast, for example Turkish and Greek are good examples" [interviewee 8]

"Quickest networks are created at the office, and it's because officers, despite the origins think likewise. We have similar attitudes on what is good and bad, and it's the military culture, you could say, similar all around the world. Connections are built quickly, and deep friendships". [interviewee 7]

This indicates that whereas some networks build naturally through families, schools and shared free time activities and may hold opportunities for common interests or benefits develop also to support entrepreneurial activities, many social and professional connections are established internally, within the NATO community itself. Consequently, the network formation being within-organisation rather than organically towards local business or entrepreneurial networks. This may limit the opportunities for knowledge sharing and potential current or future cooperation opportunities. Even though the current role of the officers in the region would not be in relation to military capability development, the situation may be different later.

"Y*ou never know what the next assignment for a soldier is going to be"* [interviewee 7]

Beyond the personal and informal networks as above, there are more formal roles contributing to how connections between the centre and the local environment are established. Nationalities represented at the centre have a designated "Nation's Eldest", a role for senior officer which includes duties on facilitating local interaction, including relationships with local authorities and businesses. One interviewee described it as following:

"then the role includes participating. In many of the events, being a senior national officer that the municipality or also sometimes businesses are conducting here in [host city]" ... "The purpose most often is that businesses or business communities that they want either to

be informed about NATO or about the NATO corps or that they want to establish or to strengthen the link between [home country] and [host country]or [home country] and [host city]. Sometimes it's business communities, like Scandinavian business communities. Sometimes it's [host city] business community. Most often it's the town of [host city] [interviewee X].

Furthermore, the importance of networking, particularly within the defence industry was strongly emphasized by the officer interviewees. Industry events, such as defence trade shows were described as "*extremely efficient way of networking"*. The centre's location provides convenient regional reach to such events, providing meeting opportunities. In the relatively small and trust-dependent circles of the defence industry, personal networks play a crucial role. Building and maintaining trust and knowing each other personally, were considered essential elements for effective cooperation. Formal events provide efficient platforms for contacts, yet *"best networks are built via friendship, working together and spending free time together"* as described by one the interviewees.

Impact on the Human Capital dimension of the NATO presence could be an major asset, yet with challenges. There is potential for highly experienced and networked individuals, such as retiring officers, to enrich the regional ecosystem with knowledge, expertise and contacts. However, another source of talent, the spouses of seconded officers, might be prevented from joining the local workforce due to language barriers and contractual restrictions. Strong social and professional networks form relatively quickly inside the military community, but the connections don't necessarily flow outside. This might limit knowledge sharing and potential partnerships with the wider local business scene.

5.6 Emerging themes

Perspective of an expatriate, and the needs and requirements of a person entering a new country was highlighted in the interviews. These themes cannot be categorized directly under any dimensions of entrepreneurial ecosystem as in the used theoretical framework and are thus discussed under "emerging themes". They are considered a relevant finding, as the evidence from the data was unanimous. Also, from the interviews it was possible to gather direct advice to small entrepreneurs or service businesses. As this thesis also seeks to be of

support for local practitioners, this set of findings will be included in the work, although they also fall outside of the exact scope of entrepreneurial ecosystem and its dimensions.

Depending on nationality, the expectation for integration services differs. For seasoned NATO nationalities, such as Denmark and USA, the national defence forces have organised local consultants who take care of any daily errands and needs, like registering a car and getting insurance to any possible legal support. Their point of view was that there's not much services they personally would have used or been in interaction with locally, as they have received solid support organized by the centre. The support was recognized and valued, enabling the focus and effort put on the primary mission. On the other hand, officers from nations newer to seconded officer procedures were receiving only limited amount of practical support, needing to manage everything independently, and thus saw opportunities in location services.

"So it's not, for example, the job of my wife to take care of all these things. She can do what she wants to do, so the value of that support is enormous [interviewee 8]

"[Sending nation] ended up paying enormous overprice for apartment which was not suitable size wise and location wise. If there would have been an opportunity to use local support, everyone would have benefitted" [interviewee 7]

Especially Stavanger, having long history and traditions in international energy business has developed certain infrastructure within the city such that demand for additional services or for example social integration elaboration is limited. Seconded officers have possibility to integrate into existing structures. Chamber of Commerce was mentioned as one of the key centre and facilitator for all immigrants as well as foreign businesses, facilitating connections between locals and immigrants and providing different means of support.

One of the founding strategies to foreigner integration has been not to place foreign immigrants to certain areas, to avoid centralisation. There is established system for international education, covering the schooling journey from kindergarten to IB high school. Five international schools in the region, including two English schools, a large international American school and French school. High integration and involvement between the local residents and foreigners, who have built their own networks. Nato families have had the opportunity to land on the existing integration platform. [interviewee X]

"there's social events, everything is in English, is a very international city to begin with. So it's to attract personnel, it's it's really easy in Stavanger." [interviewee X]

Consequently, when a functioning international infrastructure exists, it becomes self-enforcing. First, by enabling foreign personnel and families to relocate with ease, and second by enhancing the city's attractiveness as a destination for a future relocation. As an interesting contrasting detail, one interviewee noted that their sending nation categorizes secondment destinations based on whether officers are encouraged to bring their families or not. From host city's perspective it is a disadvantage if the family does not relocate.

"But I think it also is positive related to international schools that we have a certain amount of people coming and going and being part of the society, living on permanent basis but also being there for some time. That means that there's ground for international schools [interviewee X]

"There wasn't any kind of reception of behalf of the host city. Nothing fancy would be needed, but for example even some central place where you could go and ask about services instead of starting with nothing" ... "I'd think the role of the city would be to provide some kind of a platform to help the newcomer and promote the city, with valid up-to-date information, in English. Or someone to visit the Nato centre once a week in lunch time" [interviewee X]

To summarise, an emerging theme is the importance of international integration the host societies and readiness to accommodate international residents, in this case, the seconded NATO officers and their accompanying families. The presence of an effective "international landing platform", including integration services, accessible administrative processes and core public services such as schooling seems to play a significant role. That benefits the host region also by enriching the service offering. Whilst these factors are not explicitly categorized within the domains of the entrepreneurial ecosystem framework, they enable several of its core dimensions, especially those which are related to human capital, networks and overall attractiveness of the region for any international actors.

5.6.1 Practical implications to small businesses

Although small businesses are not directly included within the entrepreneurial ecosystem framework, several insights relevant to their operations were identified from the data. Interviewees emphasized that service providers, especially in foreign setting, should be easy to reach, responsive, provide clear communication and reliability. Practical factors, such as clear opening hours when they might differ from international expectation, and of course service in English were seen as fundamental. Clear and precise communication of such details helps to align expectations. Also, a solution-oriented and "can-do" attitude was valued. As one interviewee summarized, *"people will want to do things, but not to use excess time in order to organize it. Solution orientedness and sense of progress would be important"* [interviewee 6]

This highlights that efficiency and smooth customer experience are important, and often so over the lowest possible price. Overall, price is not necessarily the main concern for this customer group. Professionalism and trustworthiness were mentioned by the informants, to make the integration as easy as possible in any daily operations. When such customers find a reliable service provider, for cleaning, house maintenance or such, they tend to recommend it within the community. Personnel rotation typically last for 2-4 years. So, for reliable service provider a stable, recurring customer base is available.

These insights, yet outside the entrepreneurial ecosystem framework, illustrate how local businesses, while building their own efficient and quality-oriented businesses, can on their part strengthen regional attractiveness, and support international integration in practice.

5.7 Perception of the NATO centre and cooperation in the region

The traditional assumption that military, defence and security are highly confidential industries proved to be true in this research, as well. Many interviewees commented on the secrecy and low visibility surrounding the centre and its activities. NATO as a military establishment has what one interviewee described as a "vail of secrecy", making it naturally distant from public view and civilian interaction. The core role and mission of the local NATO centre, as explained earlier in Chapter 3, was not necessarily known to all interviewees. interviewees. Likewise, the official structures through which NATO in terms

of industry cooperation (buyer, consultative partner and incubator, Chapter 3.2) are not common knowledge Therefore, when recent developments in the environment and public discussion emphasized the growth of defence and security industry many local actors intuitively connect this to presence of the NATO centre.

"*It's in the typical military way, based on need to know*." [interviewee 1]

When asked about potential impacts on entrepreneurial culture or possible cooperation cases with local businesses, one interviewee noted

"*they probably wouldn't like to get that attention.*" [interviewee 1] Another summarized "*So what's happening inside the fence remains inside the fence and what's happening on the outside is another story*" [interviewee 3]

Furthermore, the centre nature as a military establishment made it appear a distant and hard-to-reach actor.

"It's it's hard to to work with. Working with NATO is next to impossible." [interviewee 2]

I think I think a lack of information what can be done and not be done. We don't have enough knowledge. I think. I think maybe that we don't contact because we think that we are not allowed because of security, I would say. [Interviewee 4]

"Everybody knows we have the NATO Joint Warfare Centre, but no one knows what they actually do. I've been living here for decades, and I have no idea". [interviewee X].

Overall, these perspectives highlight a gap as well as mental barrier between the establishment and business community. While NATO centre's presence is widely acknowledged and appreciated, its concrete functions, boundaries and potential points and methods of interaction remain unknown and thus a distant agent in the area.

5.8 Summary of findings

Impact, mechanisms as well as the estimated value of the impact towards entrepreneurial ecosystems varied. For Finance and Policy ecosystem dimensions there weren't any findings which would support presence of any kind of impact the centre might have, and thus no impact mechanisms couldn't be identified. Figure 6 summarises the findings regarding the identified impact. For context, Figure 1 reflected the theoretical framework, and Figure 3

described the research setting. Figure 6 now integrates the empirical results of this research, highlighting the arrows for dimensions Market, Culture, Support and Human Capital, thus indicating the identified impacted domains of the entrepreneurial ecosystem.

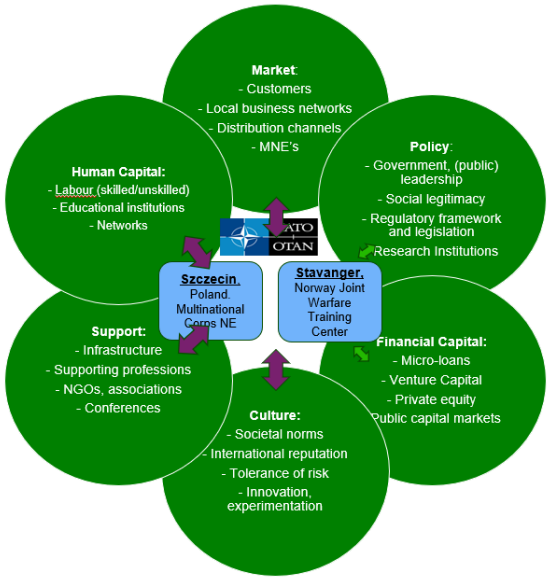

Figure 6 Illustration of identified impacts to entrepreneurial ecosystem domains

The impact mechanisms vary by depth on some occasions. The impacts identified for *Market* and *Culture* domains highlight the potential of strategic value of international reputation and awareness of the city via NATO centre presence. However, this potential was not actively utilised within case cities. More strong evidence supported the operative, daily and individual levels to *Market*, such as added household consumption and demand for small business services. Similarly, impacts under *Human Capital* domain can be realized on strategic level by providing connections and crucial networks to support business towards defence industry, as well as on more operative level by providing possible workforce for other areas, too.

Additionally, there were a set of findings which do not map directly under any entrepreneurial ecosystem dimension, as presented in Chapter 5.7 Emerging themes. The "**integration support layer**" emerged as fundamental enabler for ecosystem interaction, when international aspect and impact to ecosystem is observed. Such layer should be driven by public governance actors who, if not organize, actively facilitate or fill potential service gaps related to international integration. In successful cases, such as Stavanger, businesses

and expatriates also play a significant role in providing and further developing these services. Without such integration base, it becomes challenging for the dimensions of entrepreneurial ecosystem to function effectively and to highest potential. This, in fact forms to be the key finding of this multi-case research. Therefore, while the direct impact on most entrepreneurial ecosystem domains remains limited, the presence or absence of this integration layer emerges as the core foundation for successfully building dynamics and regions utilising the presence of a NATO centre, or any other international operator.

5.8.1 Future opportunities and strategic implications

While historical evidence of direct impacts on the entrepreneurial ecosystem remains limited as discussed in previous chapter, the finding pointed on several interviewees shared reflections and expectation regarding future opportunities. The growing interest towards defence and security industry is eminent.

"I get more questions on what we do on tech transfer and technology development on defence the last few weeks than I've had the last 10 years" [Interviewee X]

The presence of the centre is widely perceived as an underutilized regional asset. The recent rise of the defence and security sector has amplified local expectations for new collaboration and business opportunities. These perspectives underlined the shifting landscape as touched upon in the Introduction Chapter. The post-2022 geopolitical situation has increased attention to defence and security technology all over Europe. Regional actors recognise the potential for dual-use innovation and NATO-affiliated accelerator programs.

"So there is a window now to" … "think about or maybe agree on how can things be done in another way than the way that we have always done it." [interviewee 3]

"The NATO centre could help influence a more targeted defence-tech funding agenda or catalyze new acceleration or public-private partnership schemes aligned with NATO priorities." [Interviewee 5]

"I think that we could apply for EU projects together to develop new competence." [Interviewee 4]

Currently, according to NATO's industry cooperation methods, the investigated centres do not have the formal mandate for such local cooperation. However, the cities and regions hosting such centres should actively utilise the strategic value of NATO centres presence. The findings provide several implications and suggestion towards city and regional policymakers and ecosystem representatives operating within cities hosting a NATO centre or comparable international institutions.

Integration support layer

This study identifies the integration support layer as a critical enabler of entrepreneurial ecosystem functioning in internationally impacted regions. Smooth integration of incoming NATO personnel, families and other expatriates determine whether their human capital, networks and to some extent purchasing spending will benefit the local ecosystem. To ensure this, local authorities should treat international integration services, such as clear connection point towards any services, guidance, cultural onboarding and international schooling as core infrastructure. Public actors should collect existing integration services, and actively coordinate both private, public and community-based services and providers to both avoid gaps, and to be able to efficiently communicate the offering. Partnerships with different expatriate organisations and other international communities can further facilitate networks and promote continuity.

Unlock the human capital potential

Overall, the presence of international, skilled officers, spouses and professionals is an opportunity. Lacking networks might limit the connections spillover to ecosystem. To avoid that, structured means, such as startup advisory or coaching programs, forums or similar methods should be established to create a channel towards local businesses and entrepreneurial ecosystem. Also, education institutes could be active in facilitating such cooperation to enable low-threshold engagement.

Furthermore, raising awareness of NATO's operating principles, limitation and contact points and industry cooperation methods would help regions to better align those opportunities within the defence and security sector. Different regional actors like authorities, incubators, universities and business advisories should ensure they are informed, up to date and thus can further support entrepreneurs and ecosystem on initiatives NATO

and EU provide towards defence in form of innovation processes, regulations and funding mechanisms and realistic cooperation channels.

Strategic value of visibility

The strategic value of international visibility, credibility and networks seem to remain largely underutilised. The visibility and credibility can strengthen the regional position within the broader European defence and security landscape. To systematically utilise the potential, regional development strategies and programs should recognise the NATO presence. Related visibility should be included in investor promotion and city branding efforts. Without active and intentional strategic approach, the reputational benefits will not realise. Furthermore, the growing national and European level interest in defence and security technologies and other mechanisms to promote comprehensive security creates environment were international reputation and visibility could create more value than pre-2022.

6 Discussion and conclusions

This chapter contains answers to set research questions, discussion about the results identified, as well as contributions towards theoretical framework. Also, the identified limitations to research are presented, as well as considerations for further research.

6.1 Answers to research questions

This chapter presents the conclusions of the research by answering to research questions and later discusses with literature about the findings and results.

Main Research Question "How does the establishment of a NATO command centre impact the socio-economic development of entrepreneurial ecosystem of a medium-sized city in Europe?"

Overall, the impact to socio-economic development of entrepreneurial ecosystem seems to be limited. In case cities examined, the effects and impact are diluted to development within the region, which makes the impact of the NATO centre difficult to isolate.

The most visible socio-economic impacts arise from the needs of the personnel and their families. These impacts realise primarily via increased demand for local services, such as housing, transportation, grocery stores and small-scale businesses. The presence of international staff and their accompanying family members also strengthens the base load for international and integration-related services, such as international day care and schooling and language training. Also, increased travel demand supports local flight connections, accommodation services and local transport services. Negative impacts were not identified.

From the perspective of the entrepreneurial ecosystem, the effects remain limited. NATO's capability development and procurement activities operate via separate organizational branch, through national defence structures and public procurement procedures. They do not

directly reach regional or local actors. However, some indirect network impacts could be identified, through cooperation, visibility and connections between actors within the region.

Opportunities do exist, especially in two areas. First, the cities and regions strategic positioning and visibility can support the entrepreneurial ecosystem in the long term, through public image and strategic international visibility and positioning. Secondly, human capital can add to local skill, knowledge and resource base, as well as networks. Those can realize besides employment through voluntary activities or local engagement. The network creation and development would be most beneficial for agents within the defence and security sector.

Subquestion #1 What kind of impact does NATO command centre have on local/regional entrepreneurship?

The evidenced impact on local entrepreneurship is primarily demand-driven. The most evident effects are related to increased demand for services in following areas: Basic household services, such as housing and related support services, groceries and other consumption. Secondly, integration and education services, such as international schools and childcare. Thirdly, well-being and leisure services, such as sports, leisure, and health care services. Fourth set of demand are the operational services for the centre itself, such as catering, maintenance and logistics.

Due to centre's headcount ratio compared to case cities, the demand created by the centre is not remarkable, yet it brings stability. It means that it tends to support existing businesses, rather than generate or promote new entrepreneurial activity. The entrepreneurial activities in general are strong and vibrant within the examined regions as it is, the presence of relatively small international NATO centre is not as significant or of interest as one element or contributor to the ecosystem, as it likely would be in smaller city in more rural areas.

Subquestion #2 What are the underlying mechanisms and dynamics?

The identified impact mechanisms function on different levels. The primary mechanism is direct economic impact. Personnel relocating to the area generate demand through household spending and using local services. Additionally, the centre's operative purchases and logistics needs provide limited, yet stable business opportunities for local suppliers and service providers.

The secondary mechanism relates to human capital. The presence of the sent officers and their accompanying family members can bring new skills, perspectives and most importantly, connections to the region. In some cases, these networks can stimulate new initiatives or cooperations which directly or indirectly support the regional entrepreneurial ecosystem. Opportunities posed by networking might include the major potential when it comes especially to defence and security sectors.

Yet, realization of such benefits depends on local dynamics and context. Elements like city's international orientation, openness to foreign residents, and availability of integration services influence whether these impacts have space and surrounding to materialise. Strong welcoming culture and active facilitation and support for integration can benefit further positive effects, whereas language barriers or bureaucratic challenges may limit interaction, cooperation, networking and thus consequent benefits and potential realisation.

Subquestion #3 What regional entrepreneurship ecosystem could do to support the centre and to gain benefits?

First element is to ensure that incoming personnel and their families have sufficient services to promote integration. A stable "integration support platform" for international residents should include integration support and practical services throughout the stay. Also, opportunities to engage and contribute to local region and its activities, daily life and professional networks are important. Such services or networks cab ne publicly, privately or jointly provided. In any case, they should be user-centric, minimize bureaucracy and promote "one-stop-shop" principle. Importantly, such services and structures would benefit all international immigrants as well companies considering relocation to locate the area.

Supporting the spouses and accompanying family members through platforms providing integration point allowing their participation in local integration, entrepreneurship, volunteering or mentoring activities could also be beneficial. These initiatives could help utilize the skills and experience of accompanying partners, while enabling and encouraging long-term networking between people, organisations and businesses.

Establishing a structure between the NATO centre and city authorities would enable efficient coordination of activities, and better alignment of expectations between local stakeholders. Companies, public agencies and regional developers would have the opportunity to utilize the regional reach of the military personnel. However, it is essential that all parties recognize

the centre's primary mission, which is to plan and execute defence and deterrence. Any civilian cooperation and interest are to be balanced with the operational boundaries.

The strategic international and diplomatic visibility the centre brings to the region represents another long-term opportunity. To capitalize this, potential benefits should be strategically acknowledged and managed, e.g. within regional development and innovation policies. Including such considerations into regional planning, urban development and investment programs would enable the area to position itself as credible host for cooperation. For example, infrastructure investments by city, regional or even national authorities could strengthen the long-term viability and attractiveness for future NATO or other defence-related increments or functions.

To conclude, the establishment of a NATO command centre does not directly stimulate entrepreneurship or create new markets. Yet, it does generate indirect socio-economic benefits through increased demand for local services and international needs. Also, it introduces opportunities linked to international human capital, networks, and strategic visibility.

To realize these benefits, regional actors should actively promote integration, enable and support collaboration between the centre and local stakeholders, and align the NATO presence with broader regional and innovation strategies. When strategically managed, the centre can evolve from a neutral and "bubbled" military presence into a long-term asset supporting regional development and the entrepreneurial ecosystem.

6.2 Discussion

It is notable that NATO is not a business organisation and does not operative according to commercial objectives or competitive drivers. Its resources are mainly owned and managed by national defence forces. Budgets are determined at the national level, yet in line with treaty guidelines. According to Lundberg et al. (2024) Defence industry altogether operates in unique ways. National security administration is basically the only customer, thus determining the demand and to some extent the offering. Nations can impact on the size, structure, market entry and exit, prices and technology selection when it comes to defence sector. This also leads to close relations between suppliers, procurement and national

defence forces. Stabilised relations with suppliers are based largely on mutual trust and loyalty. (Lundberg et al. 2024, p.12)

The regional proximity of a NATO centre, and networking opportunities embedded with the potential of region's strategic profile may seem like a limited form of impact, but in the context of especially defence industry, they can be highly significant. E.g. in a recent Master's Thesis on the defence industry and its changing operating environment Pölönen (2025, p.66) has identified networks and cooperation between businesses and defence forces as the most critical success factors. In small markets, such as Finland where the number of actors is modest, trust-based relationships and informal networks become particularly valuable and strategic assets. This aligns also with Isenberg's (2011) take on entrepreneurial ecosystem theory, emphasising that in research they've often noted "high order interactions", in which many variables operate together, and major progress can be catalysed by and handful of individual actors, who are able to connect systems and foster collaboration.

6.3 Reflections towards entrepreneurial ecosystem theories

There are three key findings in this research when it comes to entrepreneurial ecosystem theory framework. First, according to many entrepreneurial ecosystem theories the focus of an entrepreneurial ecosystem model is on entrepreneur itself. In this research and the related findings, the role of entrepreneur was not highlighted. Secondly, there are different academic approaches whether entrepreneurial ecosystem include the small entrepreneurs or small businesses, into the concept of entrepreneurship. In this research, it was evident that it wouldn't be justified to exclude any type or format of entrepreneurship. Thirdly, this research suggests an addition to the framework used based on findings.

According to some of the literature, e.g. O´Connor et al. (2018 p.5), the focus of the entrepreneurial ecosystem is the *entrepreneur* and *entrepreneurial activity* or "The entrepreneurial ecosystem approach thus begins with the entrepreneurial individual instead of the company but also emphasizes the role of the entrepreneurship context." (Stam 2015 p.1761). The approach of this research does not aim to solely focus only on entrepreneurs and their activities as such, but rather to analyse the dimensions of the ecosystem, which are in the interaction with entrepreneurs and support entrepreneurship. The core focus was finding possible implications which the centre might have to those dimensions, which, in

turn, would turn out to be either positive, neutral or negative towards the entrepreneurs operating and performing entrepreneurial activities within the ecosystem. On the other hand, Stam (2015) states that "entrepreneurial ecosystem approach not only sees entrepreneurship as a result of the system but also sees the importance of entrepreneurs as central players (leaders) in the creation of the system and in keeping the system healthy" (Stam 2015 p.1761). The research did cover for example startup hubs and innovation consultants, which by the definition are entrepreneurs, which facilitate the creation and development of both the entrepreneurial ecosystem structures, as well as entrepreneurs and entrepreneurial activity. Focusing on entrepreneurs and their perspective alone would not have supported the research setting and answering the research questions.

There are different academic approaches whether entrepreneurial ecosystem includes the small entrepreneurs or small businesses, into the concept of entrepreneurship. According to Stam (2015), this distinction "between the traditional measures of entrepreneurship and the conceptually more adequate measures of entrepreneurship, such as innovative and growth-oriented entrepreneurship" is even increasingly emphasised in the literature (Stam 2015 p.1761). Even the literature tends to narrow entrepreneurship down to scaleups or high-growth startups, excluding traditional statistical indicators of entrepreneurship like 'small businesses or 'self-employment'. Such separation seems empirically too narrowing and exclusive in the light of this study. 'Scaleups are highlighted as sources of innovation, employment and productivity growth, but also "networks of innovative startups or entrepreneurial employees can be forms of productive entrepreneurship, and thus also be the source of welfare outcome" (Stam 2015, p.1761).

This research did not limit any types of entrepreneurships from analysis scope. As the interview results show, the role and relevance of small and non-growth-oriented businesses providing daily services was highlighted as one of the key findings. Thus empirically, excluding such entrepreneurship would have limited the results remarkable. Additionally, it could be also stated that even though the presence of the basic household, integration, accommodation and schooling services is not in the core of the entrepreneurial ecosystem theories, it is evident that the absence of such core elements within a region would significantly harm any ambitious growth-business and their international operations.

Furthermore, the main purpose of this thesis was not to test the entrepreneurial ecosystem theories and assess its applicability. The purpose of the theory usage was to provide a tool

and framework via which the impact could be investigated and assessed, in a case where different economical calculation models would not be able to produce the answers to research questions. The framework proved to be applicable and served the purpose. Yet, the findings of this research would suggest an addition to the theoretical framework. The full utilization of international influx of an institution such as a NATO centre requires a functioning integration support. Such aspect is not covered in the framework, and is suggested to add as a founding layer, to enable, support and further facilitate the successful dynamics of the entrepreneurial ecosystem. Suggestion is illustrated in the Figure 7.

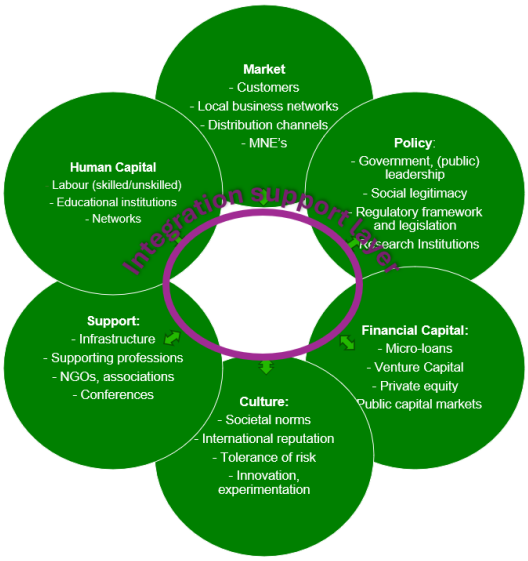

Figure 7. Suggested addition to Entrepreneurial Ecosystem framework

The Figure 7 reflects the integration support layer positioned as foundation for the entrepreneurial ecosystem, enabling the more efficient dynamics of all its dimensions. As this research shows, the layer is particularly important in situations where an international influx influences the ecosystem's functioning.

6.1 Limitations of the research and trustworthiness considerations

"The classic criteria of good quality research, which originally stems from quantitative research are the concepts of *reliability*, *validity* and *generalizability.* They provide a basic framework for the evaluation of research in social sciences as well as in business research" (Eriksson & Kovalainen 2018). Yet, "qualitative researchers and method books are strongly diversified in their opinion about whether validity is an adequate evaluation

criterion in qualitative research" (Eriksson & Kovalainen 2018). However, *validity* is chosen as one measure to assess the accuracy of this research on following analysis approach. "*Validity* refers to the extent to which conclusions drawn in research give an accurate description or explanation about the phenomena" (Eriksson & Kovalainen 2018). Major factor which could affect the validity of the research was availability of data. Secondary data searches were done mainly in English language, despite the narrow points where local support was available. Some local language publications were browsed and keyword "Nato" being searched from contents. It is possible that there are publications, newspaper articles and such documentation containing information which would have emphasized the positioning of the Nato centre within the local or regional entrepreneurial environment but were neglected due to language constraint. Yet, this gap was mitigated via data triangulation, as explained in detail in Chapter 4.7., to ensure the validity of the results. The findings from interviews and discussions indicated that there weren't any such gaps in secondary data sources which would have compromised the key findings of the research.

According to Eriksson and Kovalainen (2018), there are alternative criteria for qualitative research and its trustworthiness, and they are discussed in following paragraphs. "*Credibility* answers to question whether any other researcher can, on the basis of your materials, come relatively close to your interpretations or agree with your claims" (Eriksson & Kovalainen 2018). In this research, using the same method, frameworks and profile of interviewees it is likely that similar results will appear from similar setting and same cities. However, different case cities could provide different results. This is typical feature case studies and reflects the uniqueness of entrepreneurial ecosystem.

"Transferability is concerned with researcher's responsibility to show the degree of similarity research, in order to establish some form of connection between previous results" (Eriksson & Kovalainen 2018). The research setting itself was unique, at least the researcher could not find similar studies in which entrepreneurial ecosystem framework would have been used to investigate the regional impacts of a military centre. However, the dimensions of entrepreneurial ecosystems were empirically identifiable as per existing theories, which would support the transferability aspect of the research quality criteria. Yet the entire research can be seen as exploratory nature, to see whether results can be identified at all with such research setting. In these cases, the research setting was functioning, but more repetition should be done to generalize both the usage of such research setting, as well as to support

the suggested addition to the entrepreneurial ecosystem theory. As Eriksson and Kovalainen (2018) state, “in analytical generalization, empirical results of a case study are compared with previously developed theory. If two or more cases support the same theory, then replication may be claimed” (Eriksson and Kovalainen 2018).

To ensure the *dependability*, e.g “offering information to the reader, that the process of research has been logical, traceable and documented “(Eriksson & Kovalainen 2018) this thesis contains detailed description of data collection and analysis processes in chapters 4.4, 4.5 and 4.6.

Furthermore, it is to be noted that the interviewees who were or are working for NATO centres gave their comments as private people, and not as official NATO representatives. Therefore, the findings reflect individual’s point of view and insights instead of official statements. As this research touches on topics which concern military and defence industry, it is also possible that not all data was accessible or available for sharing. That limitation is yet seen as minimal, because the defence and security related topics are not in the core of this research.

6.2 Further research

Although there is much variation in academic approaches when diving deep into entrepreneurial ecosystems literature, there is one element of which scholars seem to agree, and it’s the uniqueness of each ecosystem. “Major differences in entrepreneurial ecosystems exist from one region to the next. While entrepreneurs do consider expansion opportunities beyond their country or region, there is a potential alignment issue with governments who often adopt a strong country/regional focus in their entrepreneurial ecosystem policies.” (World Economic forum 2013). “Each entrepreneurship ecosystem is unique. Although any society’s entrepreneurship ecosystem can be described using the same six domains, each ecosystem is the result of the hundreds of elements interacting in highly complex and idiosyncratic ways” (Isenberg 2011). This is of course true for the case cities and their entrepreneurial ecosystems, which, in turn has the major impact on the conclusions of this research. Whilst the findings and conclusions of the NATO centre’s modest impact on entrepreneurial ecosystem are well justified for these case cities in the scope, results cannot

be generalized, as per the nature of case studies. Different case cities might have given different results.

Several of the interviewees mentioned or proposed the city of Bydgoszcz. The city was not in the research scope, but as per several referrals a brief look was taken to understand the phenomena. This city in Poland seems to be an example of a city which has deliberately taken a strategical approach to utilize the presence of NATO centre, made strategic choices, infrastructural investments, and now hosts several Nato centres, the recent one being established in February 2025 and called "Ukraine Joint Analysis, Training and Education Center. (Vincent, B. 2024) Also, the local Kazimierz Wielki University cooperate strategically with NATO Military Police Center for research, and publication, teaching, conferences, seminars and internships. (MPCOE 2022). The city is referred as "strategic hub for NATO activities "the NATO city of Poland" in national newspapers. As Isenberg (2010) has stated, the biggest impacts occur when many variables are working together, and "success breeds success". This seems to have realised in the case of Bydgoszcz. One interviewee's quote about this city was "build it and they will come", which, promoting the proactive approach by the region, could be taken as one guiding advice of the research. The case research on Bydgoszcz could maybe answer better on the research sub question #3 "What regional entrepreneurship ecosystem could do to support the center and to gain benefits". This poses a straightforward proposal for further research with similar research setting and design.

Different regional networks around defence industry are emerging in Finland, and this phenomenon calls for further research from ecosystem perspective. As discussed in theory section, the theoretical understanding of ecosystems is constantly evolving. A regional approach could help identify how different regions build and facilitate such networks, and what is the winning formula in such ecosystem acceleration. Another potential direction for future research lies in innovation of high technology and dual-use applications. Examining the prerequisites for successful innovation management, public-private cooperation and whether these dynamics are most efficient regionally or at national level.

The evolving research of entrepreneurial ecosystems is considering the place and location, thus touching upon similar themes than geo-sociological and anthropological research. The place and location are inarguably relevant for entrepreneurship, e.g. Stam & Spiegel (2016) have collected research and call for further research, stating "a context such as location

should not be treated a simple variable; a deeper examination of how the cultural, social, political and economic structures and processes associated with a place impact all aspects of the entrepreneurial journey is required. Location reflects much more complex influence on entrepreneurship" (Stam & Spigel 2016).

Following further in this thought, what if the entire setting of this research was viewed from very opposite angle? While this study has focused on the NATO centre and the potential benefits it may bring to its immediate surroundings, the perspective could be reversed: what if the surrounding region, borderland itself is the actual strategic asset? The geographical positioning alone may be the obvious reason for the location NATO's centres especially with the mission of defence planning and execution. Yet, the region's potential could be much more multidimensional. The strength of such regions could be their unique capabilities stemming from "geographical proximity, experiential knowledge of adversarial behaviour and adaptive capacity developed through managing persistent uncertainty" as suggested by Laine (2025 p.27) in publication *Redefining the Front: Borderlands as Strategic Assets*. These characteristics may not be captured within the framework of entrepreneurial ecosystems and would require different analytical approaches. Nevertheless, the opportunities and resilience embedded in borderland regions can be recognized, developed, and leveraged by local entrepreneurs, seen as an advantage itself, as well as one of the cornerstones for long-term regional development.

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Appendix 1. Interview protocol

Questions to NATO officers:

1. Please describe the organisation you represent and your role and experience on the region?
2. Please describe the interactions have you had with local businesses as a client, partner or user?
3. Local entrepreneurial potential: do you recognise any gaps or needs that could be addressed through local entrepreneurial activity?
4. Can you identify any successful examples of co-development, pilots or procurement with local businesses?
5. Collaboration and ecosystem interaction: What formal or informal interactions have you had with regional entrepreneurial ecosystem actors?
6. Expectations for collaboration with local actors?
7. Perspectives or experiences of officers or families engaging within local community or businesses?
8. What support or collaboration would you welcome from the region or its entrepreneurial ecosystem?
9. What would be one thing the region could do better to engage with or benefit from NATO presence?
10. What are unique advantages or disadvantages of this host city/region in relation to NATO presence?
11. What could be done to improve the ecosystem and better leverage the presence of the NATO command centre by local businesses and decision makers?

Questions to entrepreneurial ecosystem dimension representatives:

1. Please describe the organisation you represent and your role and experience on the region?
2. What would you say are the region's strategic and economic strengths?
3. Do you see any unique advantages or disadvantages this city or region could have had / would have in relation to NATO's presence?
4. Have you or your organization had any interactions with a) Polish/Norwegian Defense forces b) Nato Center personnel c) accompanying family members as a client, partner or user? (Markets)
5. If not, is there any aspects you could see it happening? (Markets)
6. Is there visible public cooperation in the region between local actors (public or private sector), businesses and Nato center? (Policy)
7. What kind of development is visible in the local or national government policy- or regulation adaptation to Nato, defense industry, or locally center’s presence? (Policy)
8. Are public / regional / local funding programs (EU, Nato, governmental R&D) accessible and utilized? (Finance)
9. Has the NATO center influenced public perception of the region's strategic or economic relevance? (Culture)

10. Is there any notable regional success stories of entrepreneurs or businesses related to the a) NATO command center or b) defense and security industry?
11. How would you describe the professional or entrepreneurial networks in this region?
12. Is there any established, official or unofficial networks existing in the region which would connect civilian businesses with the defense sector and/or Nato center?