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GRADUATION PROJECT

**Defense Industry Competitiveness Strategies Based on
R&D and Innovation: Türkiye's Policies to Reduce
Foreign Dependency and the Case of MERLYNX Inc.**

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PREFACE

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1. INTRODUCTION

Today, the defense industry is no longer limited to ensuring military security; it has become a key sector for technology development, economic growth, and strategic independence. For countries like Türkiye, which are located in geopolitically sensitive regions, the defense industry plays a central role in reducing foreign dependency and strengthening domestic production. In this context, policies focused on R&D and innovation have made it necessary to restructure the defense sector—not only at the level of public institutions but also within the private sector and especially among SMEs.

1.1 PURPOSE OF THE STUDY

The main goal of this thesis is to analyze how R&D and innovation-based competitive strategies impact the competitiveness of the defense industry, and to examine how well these strategies align with Türkiye's broader objective of reducing foreign dependency. In particular, the study focuses on how small and medium-sized enterprises (SMEs) integrate into these strategies and to what extent they are able to build their strategic capabilities. For this purpose, Mer Lynx has been selected as a case study.

1.2 PROBLEM STATEMENT

Türkiye has developed comprehensive strategies and support programs to reduce dependency on foreign technology in the defense sector. However, how these policies are applied at the SME level and what kind of outcomes they produce have not been thoroughly examined. The potential gap between macro-level policies and micro-level implementations could pose a risk to the sustainability and effectiveness of national goals. This thesis aims to highlight that strategic gap and explore how well firms are able to align with policy objectives at the organizational level.

1.3 RESEARCH QUESTIONS

This study seeks to answer the following questions:

- What is the relationship between Türkiye's strategies for reducing foreign dependency and firm-level practices?
- To what extent are Mer Lynx's current operations aligned with national defense industry policies?
- Has the company achieved strategic integration with these defense policies?
- How do structural deficiencies at the institutional level affect the realization of policy goals?
- How do R&D and innovation activities influence a firm's competitiveness?

1.4 RESEARCH METHODOLOGY

This study is based on a qualitative research approach. A case study method was applied, supported by literature review, document analysis, and internal company observations. Mer Lynx's competitive strength and policy alignment were evaluated through a SWOT analysis and Porter's Five Forces Model.

The theoretical framework is grounded in Michael Porter's theory of competitive strategies (1985). According to Porter, firms can gain competitive advantage through differentiation, cost leadership, or focus strategies. This model has been used as the core analytical tool to assess the impact of R&D and innovation-based strategies on competitiveness.

1.5 SCOPE AND LIMITATIONS OF THE STUDY

This thesis focuses on a single firm and relies primarily on qualitative data. Due to limitations in quantitative data and time constraints, generalization is not possible. However, the analysis conducted on the Mer Lynx case may offer valuable insights for other SMEs of similar scale, and has the potential to provide strategic implications for policymakers.

1.6. RESEARCH QUESTIONS AND THEIR CORRESPONDING FINDINGS

The research questions presented in this study have been systematically examined throughout the analytical sections. The findings in relation to each question are summarized below:

1. **What is the relationship between Türkiye's strategies for reducing foreign dependency and firm-level implementations?**

→ The case study revealed a partial alignment between national policy objectives and corporate practices. While Mer Lynx demonstrates a strong local production structure, the lack of institutionalized R&D and digital traceability systems highlights a gap between macro-level strategies and micro-level execution. *(See Sections 4.3, 5.6, and 5.7)*

2. **To what extent are Mer Lynx's current activities aligned with national defense industry policies?**

→ The company's use of local suppliers, quality certifications, and adaptive production capabilities (e.g., NATO-compliant designs) reflect a high degree of alignment with localization and innovation-focused policies. *(See Sections 4.1, 4.2, and 5.5)*

3. **Has the firm achieved strategic-level integration with national defense policies?**

→ Although Mer Lynx has taken preliminary steps (e.g., proposal submissions and pilot product development), full strategic integration has not yet been achieved. The company remains at an early stage of institutional participation. *(See Sections 4.3 and 5.6)*

4. **How do structural deficiencies at the corporate level affect the implementation of policy objectives**

→ The absence of an institutional R&D center, limited academic collaborations, and lack of systematized project documentation hinder the firm's ability to fully operationalize national policy goals. *(See SWOT analysis and Section 6.1)*

5. How do R&D and innovation activities affect firm-level competitiveness?

→ Product-level innovation and technical flexibility contribute positively to Mer Lynx's competitive positioning; however, the lack of long-term R&D strategy limits its sustainable advantage. (*See Sections 4.2, 4.4, and 5.3*)

2. LITERATURE REVIEW

2.1 THE CONCEPT OF THE DEFENSE INDUSTRY

The defense industry refers to the sector responsible for developing and producing all materials, systems, technologies, and services used to ensure a country's national security, strengthen its military deterrence, and maintain its strategic autonomy. This sector not only meets the operational needs of armed forces but also plays a significant role in advancing critical technologies, supporting industrialization, and diversifying tools of foreign policy (Smith, 2014).

In today's world, the defense industry stands out as a strategic sector—not only from a military security perspective but also in terms of economic development, technological advancement, and achieving autonomy in foreign policy. In developed countries especially, investments in defense have encouraged knowledge-intensive production processes, leading to technological spillovers that benefit civilian industries as well (Hartley, 2011).

Key characteristics of the defense industry include a high dependency on R&D, the decisive role of government support, and intense competition in the international market. Within this structure, countries seek to reduce foreign dependency in order to preserve strategic autonomy and prioritize the expansion of domestic production capacity. According to the European Defence Agency, over 80% of European countries have allocated at least 40% of their defense spending to technology development and local production projects over the past decade (EDA, 2022).

In the case of Türkiye, the defense industry is regarded as a multidimensional field in both military and economic strategies. The localization process, which began in the 1980s, gained significant momentum in the 2000s. As a result, Türkiye has managed to reduce its foreign dependency in the defense sector from nearly 80% to around 20% (SSB, 2023). With the contributions of institutions like ASELSAN, ROKETSAN, TUSAŞ, and HAVELSAN, as well as private sector pioneers like Baykar, Türkiye has developed its own technologies in areas such as unmanned aerial vehicles, electronic warfare systems, missile systems, and armored vehicles. These advancements have not been limited to the defense field alone. Through technology transfer, they have also benefited civilian industries. For example, laser and radar technologies developed for defense purposes are now being used in the healthcare, transportation, and communication sectors (Gök, 2020). In addition, defense industry exports reached 5.5 billion USD in 2023, contributing to foreign currency earnings and enhancing Türkiye's international prestige (TÜBİTAK, 2024).

Therefore, Türkiye's domestic and national production policies in the defense industry should be viewed not merely as a security strategy but also as a structural transformation tool that supports long-term economic development.

2.2 R&D AND INNOVATION IN STRATEGIC SECTORS

Research and Development (R&D) refers to planned and systematic activities based on scientific methods, aimed at generating new knowledge, improving existing products, processes, or services, and developing entirely new technologies. According to the OECD (2020), R&D is considered the cornerstone of technology-based competition and plays a crucial role in enhancing a country's long-term growth potential.

Innovation, on the other hand, is the process of transforming the knowledge and technologies produced through R&D into economic value. In other words, innovation is not just the emergence of an idea—it is the process of integrating that idea into production or the market in a way that creates tangible benefits (Tidd & Bessant, 2018). This process is not limited to technological products alone; innovation can also occur in management practices, organizational structures, and marketing strategies.

In the defense industry, the importance of R&D and innovation becomes even more critical. In this sector, technology is not just a tool for competition—it is a pillar of national security. Especially in recent years, R&D investments in areas such as AI-powered decision-making systems, cybersecurity technologies, autonomous unmanned aerial vehicles (UAV/SİHA), and the use of advanced composite materials have become concrete examples of innovation in the defense field. These technological breakthroughs contribute not only to achieving military superiority but also to increasing export capacity and reducing the current account deficit.

When evaluated specifically in the context of Türkiye, the share of R&D expenditures in defense industry investments has been increasing steadily each year. This rise has significantly contributed to the development of indigenous and nationally-produced projects. As of 2023, total R&D spending in the defense sector reached approximately 2.5 billion USD, and the number of R&D personnel employed in the industry surpassed 40,000 (SSB, 2024). These developments not only help Türkiye reduce its dependency on foreign defense technologies but also position the country as a competitive player on a global scale.

From an economic standpoint, R&D investments not only enhance firms' productivity and technological capacity but also pave the way for high value-added exports, directly contributing to economic growth. Therefore, in strategic sectors such as defense, R&D and innovation are not only technical tools but also essential instruments of economic independence.

2.3 R&D'S IMPACT ON COMPETITIVENESS

In today's highly competitive global markets, sustainable advantage for firms depends not only on their existing resources but also on their ability to continuously develop dynamic capabilities. At this point, Research and Development (R&D) emerges as a key tool that enhances a firm's innovative capacity and enables the creation of differentiation strategies. As highlighted in Michael Porter's (1990) framework on competitive strategies, R&D investments provide firms with not only new products but also unique processes and value propositions, giving them an edge in international markets.

In high-tech and strategically important sectors like the defense industry, R&D activities go beyond product innovation; they also contribute to system integration, supply security, and long-term technological independence. For instance, Türkiye's development of indigenous radar systems or domestically-produced UAV/SİHA projects not only increases military

capacity but also strengthens the local production chain, reducing reliance on imports (SSB, 2024).

The contribution of R&D to competitive strength extends beyond the firm level—it also has sectoral and even national-level implications. In publicly supported and politically sensitive fields such as defense, a strong R&D infrastructure supports not only technological development, but also flexibility in foreign policy, the ability to make autonomous decisions during crises, and broader economic independence (Freeman & Soete, 1997).

From an institutional perspective, R&D investments are not limited to diversifying a company's product range. They also enhance capabilities in areas such as human capital, organizational learning, supply chain integration, and knowledge management. This makes firms more resilient to economic fluctuations and helps them strengthen their market position in the medium to long term. Especially for defense industry organizations, elements like reliability, sustainability, and strategic flexibility have become just as critical as technological leadership in determining competitiveness.

In conclusion, R&D enables firms not only to survive in existing markets but also to expand into new ones, establish strategic partnerships, and gain an edge in public procurement processes by meeting technical qualification requirements. In this respect, R&D in the defense industry is not just a technical activity—it is also a strategic investment and an essential policy instrument for safeguarding national interests.

2.4 CONCEPT AND RISKS OF FOREIGN DEPENDENCY

Foreign dependency refers to a situation in which a country is unable to sustain access to strategically important products, services, or information using its own internal resources, and is therefore forced to rely on external suppliers. This situation not only creates economic vulnerabilities but also brings with it political, technological, and security-related risks.

In highly sensitive sectors such as the defense industry, foreign dependency can manifest in various forms—such as reliance on licensed production, the import of critical components or raw materials, the need for approval from foreign firms in maintenance and modernization processes, and even dependence on external software in cyber systems (Ergun, 2016). In cases where technology transfer is limited, such dependency becomes a major obstacle to long-term capacity development.

This structural vulnerability becomes even more apparent during times of crisis. For instance, in cases of war, embargoes, or political tensions, delays or restrictions in accessing foreign-dependent systems can lead to irreversible consequences for national security. Moreover, such dependence not only affects military operations but can also expose strategic decision-making mechanisms to external pressure, thereby undermining a country's ability to maintain an independent foreign policy.

Another critical dimension of foreign dependency is related to information and cybersecurity. Foreign-origin software, electronic infrastructures, and communication systems may pose serious risks in terms of data leaks, external interference, or sabotage. Therefore, in today's defense landscape, reducing foreign dependency is not only about physical hardware—it has also become a priority to develop domestic capabilities in software, algorithms, and AI-based systems as part of national defense strategies.

2.5 LITERATURE ON R&D AND DEPENDENCY

The literature contains numerous studies on the role of R&D investments in reducing foreign dependency. Mowery and Rosenberg (1991) argue that national innovation systems can significantly reduce foreign reliance, particularly in strategic technology domains. This perspective becomes even more critical in high-tech sectors such as the defense industry.

Studies conducted specifically on Türkiye have reached similar conclusions. Yıldız and Şahin (2021) found that defense industry firms with high R&D intensity demonstrated a significant increase in localization rates. This finding highlights that technological production capacity serves not only as an economic driver but also as a strategic lever.

Other studies take a broader view of the impact of R&D, emphasizing that in the defense industry, R&D contributes not only to technological competence but also to enhancing a country's political and economic independence (Ergüder, 2019; Bilgin, 2020). In this context, the development of indigenous defense technologies is not merely seen as an achievement in engineering and production, but as a factor that increases diplomatic maneuverability, supports autonomous decision-making, and plays a fundamental role in building long-term sovereignty. Periods marked by high levels of foreign dependency—such as those involving embargoes, spare parts shortages, or license restrictions—are frequently cited in the literature as cautionary examples. These instances reinforce the idea that developing domestic technology is not only an economic preference, but also a critical national security strategy.

2.6 POLICY INCENTIVES AND R&D SUPPORT

The sustainability of R&D in the defense industry depends not only on the internal resources of firms but also directly on state-supported incentive mechanisms. For policies aimed at reducing foreign dependency to be effective, comprehensive R&D support systems must be developed at the national level.

In Türkiye, several institutions provide R&D support for the defense sector, most notably the Presidency of Defense Industries (SSB), along with TÜBİTAK, KOSGEB, the Ministry of Industry and Technology, technoparks, and regional development agencies. Programs such as the SSB's "R&D Panel" and "Technology Roadmaps" guide firms in structuring projects within strategic technology areas and prioritize funding for projects aligned with key national priorities.

Under TÜBİTAK-TEYDEB, programs such as 1501, 1505, and 1511 provide significant resources to support firms in prototype development, testing, validation, and product development stages. Similarly, KOSGEB's R&D, Product Development, and Innovation Support Program helps small and medium-sized enterprises (SMEs) integrate into the defense industry supply chain.

In addition, structural incentives such as tax exemptions, social security premium support, and customs duty exemptions offered to firms operating in technoparks play a key role in encouraging R&D activities. Furthermore, Article 63 of Public Procurement Law No. 4734 grants a 15% price advantage to firms using domestically produced goods, enabling local defense products to gain priority in public procurement processes.

All of these public policies contribute not only to strengthening technological capacity but also to helping firms in the sector establish a production model free from foreign dependency. These incentives are regarded as part of a long-term industrialization strategy and support structural transformations aimed at increasing the international competitiveness of the defense industry.

METHODOLOGY

3.1 STRATEGIC ROADMAP IN TURKISH DEFENSE INDUSTRY

Türkiye has historically occupied a unique geopolitical position at the intersection of East–West and North–South axes, placing it at the center of both regional and global security dynamics. Instability in the Middle East, energy competition in the Eastern Mediterranean, the threat of terrorism, and power struggles among major international actors have compelled Türkiye to support its national security policies not only with military tools but also through economic and technological strategies.

In this context, the defense industry is not merely a security instrument against external threats for Türkiye; it is also viewed as a development area where the goals of economic independence, political autonomy, and domestic technological production converge. Especially since the early 2000s, increasing the rate of localization and nationalization in defense technologies has become one of the state’s primary strategic priorities (SSB, 2023).

Today, Türkiye is no longer merely a buyer of weapons; it has become a key actor capable of producing and exporting its own systems through domestic engineering power—in areas such as unmanned aerial vehicles (UAVs), missile systems, armored platforms, and electronic warfare technologies. These advancements have not only enhanced Türkiye’s military capabilities but also significantly increased its bargaining power on the global stage.

The competencies gained in the defense industry also play a critical role in reducing foreign dependency, alleviating pressure on the current account deficit, and achieving high value-added export targets. As such, the defense sector is not limited to arms production alone; it is viewed as both an economic development strategy and a tangible representation of national sovereignty.

The table below summarizes the progress of Türkiye’s defense industry across several key performance indicators between 2011 and 2023:

Table 1: Key Indicators of Türkiye’s Defense Industry (2011–2023)

Indicators	2011	2023	Change (%)
R&D Expenditure (Billion USD)	0.8	2.5	+212%
Localization Rate (%)	20%	80%	+300%
Exports (Billion USD)	0.9	5.5	+511%
Number of Projects	240	850+	+254%
Employment (Personnel)	20,000	80,000+	+300%

Source: SSB Activity Reports (2011–2023), TÜBİTAK, TİM data.

These figures clearly demonstrate that Türkiye’s defense industry has evolved beyond being a sector focused solely on security. It has become a strategic field that generates added value, contributes to exports, and plays a vital role in achieving economic independence.

3.2 GOVERNANCE AND POLICY MODEL

The strategic management of the defense industry in Türkiye is carried out through a multi-actor institutional framework. At the core of this structure is the Presidency of Defense Industries (SSB), which operates directly under the Presidency of the Republic of Türkiye. SSB plays a central role in coordinating critical processes such as domestic production, technology development, and project oversight.

However, the system does not consist solely of the SSB. Institutions such as TÜBİTAK, KOSGEB, and the Ministry of Industry and Technology contribute to strengthening the R&D infrastructure of the defense industry through financial and incentive programs. On the technical side, companies like ASELSAN, ROKETSAN, and TUSAŞ serve as key actors in both production and technology transfer.

Thanks to the division of labor and collaboration among these institutions, Türkiye has established a defense industry structure that is not only focused on production but also rooted in knowledge generation, sustainable technology, and strategic governance. The ecosystem built among the public sector, private enterprises, and academia provides a flexible yet coordinated model that enables defense industry policies to be effectively implemented on the ground.

3.3 ROLE OF SMES AND INSTITUTIONAL INCENTIVES

In Türkiye's industry and technology policies, the defense industry is positioned not only as a security-focused sector but also as a central pillar for high value-added technology production and strategic economic transformation. This approach is clearly articulated in the "2023 Industry and Technology Strategy" published by the Ministry of Industry and Technology. In this document, the defense industry is explicitly defined as a "critical technology area," and clear targets have been set for its development.

Key objectives highlighted in the strategy include:

- Achieving a 75% localization rate,
- Producing over 500 critical subcomponents domestically,
- Increasing defense industry exports to \$10 billion,
- Integrating technology-oriented SMEs into the sector.

These targets aim not only to increase production but also to strengthen R&D infrastructure, cultivate a qualified workforce, and enhance civil-military cooperation—steps that are essential for the long-term sustainability of the sector. In this way, the defense industry is framed not solely as a military asset, but also as a key area for economic growth, technology exports, and strategic independence.

One of the noteworthy aspects of the strategy is its emphasis on integrating not only large-scale companies but also SMEs into the transformation process. As a result, not just central institutions, but also subcontractors, suppliers, and tech startups are becoming integral components of the ecosystem.

In this context, companies like **Mer Lynx**, which manufacture containerized infrastructure and steel door systems suited for defense applications, have the potential to contribute to

strengthening the domestic supply chain and placing sectoral expansion on a more inclusive foundation.

3.4 R&D INFRASTRUCTURE AND POLICY FIT

The recent steps taken by Türkiye in the defense industry go beyond mere technological production; they are also backed by structural strategies that place reducing foreign dependency at the center. The targets set out in the 2023 Industry and Technology Strategy form the foundation of this strategic orientation, while institutional structuring and R&D incentive mechanisms—led by the Presidency of Defense Industries (SSB)—have enabled the translation of this vision into practice.

Within this framework, the process of reducing foreign dependency is shaped around three main policy pillars:

A. Critical Technology Development Programs

As highlighted in previous sections, R&D investments have been strategically concentrated in high-dependency areas such as engine technologies, radar systems, electronic warfare, and cybersecurity. These programs aim to develop national alternatives to foreign-sourced solutions, ensuring both continuity and security in technology production.

B. Mandatory Domestic and National Production

In connection with the institutional governance model, new regulations have been enacted to encourage domestic production in public procurement. Under Public Procurement Law No. 4734, price advantages and, in some critical sectors, mandatory local production requirements have driven firms toward localization. This shift has created an ecosystem-wide transformation that includes not only major defense companies but also SMEs and suppliers.

C. A Strategy of Cooperation Instead of Foreign Dependence

Türkiye's strategy is not limited to domestic production; it also reflects a shift in foreign relations from dependency to strategic cooperation. Joint production and technology transfer agreements with countries like Qatar and Pakistan serve as mechanisms that balance external dependency while also enabling Turkish companies to gain a stronger foothold in international markets.

These strategic approaches demonstrate that the vision of technological independence discussed in previous sections is not confined to the realm of planning. It is actively supported by concrete policy actions. When considered together—inter-agency cooperation, SME integration, and on-the-ground implementation—it is clear that Türkiye has established a robust and systematic policy framework aimed at reducing foreign dependency in the defense industry.

3.5 INCENTIVE MECHANISMS AND SUPPORT PROGRAMS

The Turkish government supports defense industry investments through both direct and indirect means. Some of the key programs include:

- **TÜBİTAK 1501 / 1507 Programs:** Designed to support defense-focused SME projects
- **Tech-Invest (Technological Product Investment Support):** Aims to assist firms in transitioning from the prototype stage to mass production

- **Clustering Initiatives such as Taintek and Santek:** Promote university–industry collaboration
- **SSB R&D Panel Support:** Offers project-based calls and co-financing tailored to individual firms

In a high-tech and long-term investment-driven sector like the defense industry, the state's role goes far beyond regulation. In Türkiye, the government has established a multifaceted support mechanism that actively encourages domestic production and accelerates R&D efforts through a combination of direct funding and institutional backing.

These support mechanisms are designed not only for large corporations but also to actively involve SMEs, entrepreneurs, and universities in the process.

Some of the key programs and tools that stand out in this context include:

- **TÜBİTAK 1501 / 1507 Programs:** These programs provide financial support for SMEs operating in the defense sector to carry out R&D and product development projects. Thanks to these grants, smaller firms are also able to participate in technology production processes.
- **Technological Product Investment Supports (Tech-Invest):** This support finances the transition of R&D-completed products from the prototype stage to mass production, which is especially critical for firms at the commercialization phase.
- **Clustering Platforms such as Taintek and Santek:** These structures were established to strengthen university–industry collaboration. They increase knowledge-sharing across the defense industry ecosystem and provide a foundation for more innovative project development by firms.
- **SSB R&D Panel Support:** Managed by the Presidency of Defense Industries (SSB), this specialized support mechanism provides project-based co-financing and publishes targeted calls that directly address the sector's needs. This ensures both the guidance of private sector activities and the efficient use of public funds.

These incentive mechanisms serve as essential tools that support the practical implementation of previously discussed goals: localization, technological production, and the reduction of foreign dependency. At the same time, by integrating not only central firms but also subcontractors and startups into the system, they contribute to the establishment of a sustainable growth model in Türkiye's defense industry.

3.6 EVALUATION AND CRITICAL PERSPECTIVE

Türkiye's defense industry policies have undergone a significant transformation over the past two decades. Strengthening institutional structures, expanding R&D-focused incentive schemes, integrating SMEs into the sector, and implementing strategies to reduce foreign dependency have positioned the defense industry as a strategic and economic priority. However, despite these advancements, several structural challenges still remain within the system.

- **First,** foreign dependency in critical subsystems has not been completely eliminated. Areas such as jet engines, long-range radar systems, and advanced optical technologies still rely on external suppliers. This undermines the strategic integrity of domestically developed platforms at times.

- **Second**, although the localization rate has increased, full domestic design and integrated engineering capabilities have yet to reach the desired level. Moving beyond local production to achieve independence in system-level design and software development remains a crucial need.
- **Third**, while university–industry collaboration is emphasized in policy documents, it continues to be fragmented and limited in practice. There is a need for more systematic models to commercialize knowledge and transform academic outputs into market-ready products.
- **Finally**, as of 2023, R&D expenditures remain at approximately **1.5% of GDP**, which is relatively low for a sector as strategically and technologically intensive as defense. This limits the sector’s long-term innovation capacity.

In this context, policymakers must adopt a strategic approach centered on **greater integration across the entire defense industry ecosystem**. Building closer and long-term partnerships with the private sector, supporting technology-driven startups, and establishing a more coordinated framework between the public sector, universities, and industry should be among the top priorities for the coming period.

4-FINDINGS: THE MERLYNX CASE

4.1 COMPANY PROFILE AND ITS POSITION IN THE DEFENSE INDUSTRY

Mer Lynx Inc. is a domestic manufacturing company established in 1994 that specializes in fire-rated doors, steel security doors, modular container systems, and turnkey construction solutions. Operating in both domestic and international markets, the company aims to contribute directly to Türkiye's goals of localization and sustainable production in the construction and defense industries.

Mer Lynx plays an active role not only in the civilian sector but also in military and industrial projects. With its production capabilities, skilled technical staff, and certified quality standards, the company is positioned as a secondary supplier within the defense industry. In recent years, its modular container systems, custom-designed fire doors, and rapid deployment units have been developed and manufactured for critical applications such as military bases, border outposts, and mobile operations centers.

The company's production approach is supported by management system certifications such as ISO 9001, ISO 14001, and OHSAS 18001. Additionally, its product portfolio includes TSE and CE-certified items, as well as several nationally and internationally patented designs. These qualifications not only enhance Mer Lynx's competitiveness in the local market but also strengthen its position in international markets, reinforcing its identity as a domestic manufacturer in the defense industry.

With these characteristics, Mer Lynx aligns closely with Türkiye's defense industry policy goals—such as expanding the domestic supply chain, increasing civil-military collaboration, and integrating SMEs into strategic sectors. The company stands as a practical example of these national objectives in action.

4.2 R&D ACTIVITIES AND INNOVATION STRATEGY

In recent years, Mer Lynx has adopted an R&D strategy focused on fire-resistant doors and modular security structures. With the increasing demand for defense-oriented products, the company has taken significant steps toward enhancing its technical design capabilities and delivering customized solutions.

Some of the innovative applications developed in this context include:

- **Prototypes based on fire-resistant alloys and insulation technologies** have been created, offering material solutions suitable for both military and civilian projects.
- **Multi-layered door systems** that provide insulation against air, water, and impact have been designed, specifically to meet high-security needs in bases located near border regions.
- For **modular container systems**, domestically produced integrated ventilation units and concealed access modules have been developed. These solutions are tailored to deliver critical functionality in military operations and emergency response scenarios.

The company adopts an open approach toward collaboration with universities and is currently preparing to apply for various R&D support programs, particularly those offered by TÜBİTAK. However, the absence of a fully established R&D center indicates that Mer Lynx's potential has not yet been fully translated into a systematic and institutionalized structure. This highlights the need for a more structured, project-based, and interdisciplinary R&D framework that can support the company's current production and design capabilities. In the defense industry, continuous development and the accumulation of knowledge cannot rely solely on product-level improvements; they require the long-term establishment of research and technology development capacity.

4.3 FOREIGN DEPENDENCY REDUCTION TACTICS

Due to its inherent nature, the defense industry requires both high technology and strategic knowledge—making foreign dependency a significant risk factor. Supply chain vulnerabilities, geopolitical pressures, and potential delays during sudden crises can pose serious threats to both production security and operational continuity for companies operating in this sector. To minimize these risks, **Mer Lynx has adopted several strategies that prioritize domestic production and aim to reduce reliance on foreign suppliers.**

These strategies can be grouped under three main headings:

A. Domestic Supply Chain Development Policy

The company adopts a sourcing approach that prioritizes procuring the majority of its primary and intermediate inputs from within Türkiye. In this context:

- Long-term procurement contracts are established with domestic producers for key raw materials such as steel profiles and sheet metal,
- A localization rate of over 80% is maintained for critical components like locks, hinges, insulation, and coating materials,
- For highly sensitive components, dependency on foreign suppliers is minimized as much as possible.

This policy not only provides a cost advantage, but also ensures supply continuity during times of crisis—offering flexibility and reliability in production planning.

B. Integrated System Development through Domestic Production

Mer Lynx follows an approach that aims not only to produce components but to develop fully integrated systems using domestic resources. In this framework:

- Locally sourced climate control and ventilation solutions are used in modular container systems,
- In fire-resistant door units, domestic insulation materials are combined with locally developed electronic access systems,
- A systems-based integrity principle is adopted, prioritizing domestic solutions across all product components.

This strategy helps reduce technological dependency on foreign suppliers while also enabling faster, more controllable logistical and operational solutions.

C. Integration into the National Defense Industry

Mer Lynx aims to actively integrate into the domestic defense industry policies implemented by the Presidency of Defense Industries (SSB) of the Republic of Türkiye. In this context, the company has:

- Participated in preliminary proposal stages for projects supported by SSB and TÜBİTAK,
- Developed specialized mobile living containers for military camps,
- Carried out product testing and evaluation processes with the Ministry of National Defense and the General Command of Gendarmerie.

These initiatives support Mer Lynx's goal of attaining approved supplier status in government defense projects. At the same time, they reinforce the company's strategic position within public-private cooperation frameworks and contribute to solidifying its long-term identity as a fully domestic producer.

Evaluation:

Mer Lynx's strategies for reducing foreign dependency present a compelling framework that contributes to both national security objectives and market competitiveness. Initiatives such as building a domestic supply network, developing integrated systems, and actively participating in national defense projects are well aligned with the company's goal of becoming a strategic supplier.

However, despite these advancements, there remains ongoing reliance on foreign sources for certain high-tech components—such as electronic control circuits, specialized alloys, and precision sensors. This indicates a need for increased investment in R&D and a more accelerated effort to build technological know-how for long-term sustainability and independence.

Given the company's strong production infrastructure and technical flexibility, these gaps can be addressed over time through university partnerships, project-based incentive programs, and the establishment of a formal R&D center. By doing so, Mer Lynx could transition into a more permanent, high value-added, and technology-driven player within the defense industry.

4.4 COMPETITIVE ANALYSIS: SWOT AND PORTER MODEL

4.4.1 SWOT Analysis

Mer Lynx's performance in its integration into the defense industry reflects not only its strengths but also areas requiring development. The table below presents the company's current position through a SWOT framework:

Strengths	Weaknesses
Strong domestic production capacity	Continued dependence on foreign suppliers for high-tech components
Product portfolio with national and international certifications	Lack of a fully established R&D center

Patented and original product designs	Limited university–industry collaboration
Trusted supplier image in defense and public sectors	Low global brand recognition

Opportunities	Threats
National localization and indigenization policies in Türkiye	Disruptions in international supply chains
Government incentives specific to the defense industry	Price pressure from low-cost foreign producers
Growing demand for containers in regions such as the Middle East and Africa	Exchange rate volatility and regional geopolitical risks

Strengths	Weaknesses
Integration opportunities in SSB-led projects	Risk of prolonged dependency on foreign technology transfer

This analysis generally indicates that Mer Lynx is strong in terms of domestic production capacity, certification, and supply reliability. However, there is room for improvement in technology development and the establishment of a formal R&D infrastructure. Additionally, advancing in globalization and brand positioning would further strengthen the company's role within the defense industry.

4.4.2 Evaluation Using Porter's Five Forces Model

Michael Porter's Five Forces Model can be used to evaluate Mer Lynx's competitive power in a more holistic way:

Force	Assessment
Industry Rivalry	High – Many producers operate in the door and container segment, but Mer Lynx stands out in terms of quality and design
Threat of New Entrants	Medium – High initial investment creates entry barriers, but low-cost startups still pose a potential risk.
Bargaining Power of Suppliers	Low – The company primarily works with domestic suppliers and has flexibility to switch between alternatives.
Bargaining Power of Buyers	High – Especially in public procurement, pricing is a dominant factor, often pushing firms into intense price competition.
Threat of Substitutes	Low to Medium – While there are alternative modular structures, Mer Lynx's customized solutions offer clear differentiation.

General Evaluation:

With its certifications, domestic production structure, and tailored solutions, **Mer Lynx holds a competitive advantage over many firms in the sector**. Thanks to its defense-focused product line, the company has strong potential to become a more prominent player in government-led projects. However, there is still a need for improvement in areas such as the production of advanced technology components, the establishment of an R&D center, and global brand recognition.

In this regard, the company should consider the following strategic priorities in the near future:

- Increasing investment in **strategic R&D**,
- Strengthening **university and technology-driven partnerships**,
- Focusing on **marketing efforts and organizational development** for international expansion.

These steps will enable Mer Lynx to build a more **resilient and sustainable competitive position** in both domestic and global defense markets

5.DISCUSSION AND CONCLUSION

5.1 INSTITUTIONAL COMPETENCY ANALYSIS THROUGH CERTIFICATIONS AND QUALITY DOCUMENTS

Mer Lynx adopts a production approach focused on quality and sustainability, reinforcing this commitment through various national and international certifications. These certifications not only enhance the company's institutional credibility but also serve as a prerequisite for participating in defense industry projects.

As highlighted in the guidelines published by the Presidency of Defense Industries (SSB), quality certifications and technical competency documentation are among the fundamental requirements for companies seeking to participate in public procurement and defense contracts (SSB, 2022)

Mer Lynx holds several key certifications, including:

- **ISO 9001:2015 – Quality Management System Certificate**
- **ISO 14001:2015 – Environmental Management System Certificate**
- **ISO 45001:2018 – Occupational Health and Safety Management System Certificate**

These certifications demonstrate that production processes are carried out in compliance with established quality and safety standards. They enhance the company's competitiveness in both domestic and international markets. According to the Turkish Accreditation Agency (TÜRKAK), such certifications play a critical role in gaining customer trust, increasing process efficiency, and maintaining risk control (TÜRKAK, 2021).

In addition, the company holds a certificate confirming the absence of outstanding tax liabilities—an essential administrative requirement for participating in public tenders. As stated in the Public Procurement Authority (KİK) regulations, such documents fall under the category of “administrative eligibility documents” and are taken into consideration during the evaluation phase of tenders (KİK, 2023).

Overall, these certifications indicate that Mer Lynx is not only capable in terms of production capacity, but also demonstrates strong competencies in corporate governance, occupational safety, and environmental sustainability. These qualities reinforce the company's position as a **reliable supplier** for public and defense sector projects. In this regard, Mer Lynx offers a solid foundation for meeting the disciplined and standards-based production environment required by the defense industry.

5.2 MILITARY STANDARDS COMPLIANCE CAPABILITY

Mer Lynx stands out as one of the companies offering strategic flexibility by demonstrating the ability to adapt its civilian products to meet military requirements. According to the company's

internal documentation, certain product groups can be modified to comply with international military standards such as **NATO**, **MIL-STD**, and **STANAG** (Ticari_Urunlerin_Askeri..., 2024). This demonstrates that the company contributes to the defense industry not only through standard production capacity but also through the ability to develop customized technical solutions.

Some of the adaptable product groups include:

- **Fire Doors:** Certified for EI 60/90/120 fire resistance and available in production formats compliant with NATO color coding.
- **Modular Containers:** Designed with insulation systems that meet **MIL-STD-810G** standards, making them suitable for use in border posts and temporary base areas.
- **Steel Doors:** Models can be manufactured with ballistic resistance or blast protection, and customized to meet the needs of special operations units.

Even if these products are not currently deployed in direct defense projects, their adaptability and development potential indicate that Mer Lynx possesses strong capabilities in both manufacturing and engineering. This flexibility also enables the company to respond effectively to sudden changes in demand or project-specific technical requirements, which are common in the defense industry.

From this perspective, Mer Lynx's technical adaptation capability represents not only production competence but also a strategic advantage in terms of **sectoral sustainability and flexible positioning**. The company can be considered a potential supplier not only for public projects but also for military procurement demands.

5.3 FINANCIAL AND OPERATIONAL SCALE

An analysis of Mer Lynx's 2021 balance sheet data (2021 MER LYNX DETAILED BALANCE SHEET...) indicates that the company operates at the scale of a medium-sized industrial enterprise. In particular, the total asset size suggests that the company has reached a certain level of maturity in terms of production infrastructure.

The company's fixed asset investments have been predominantly directed toward production equipment, reflecting a clear priority on expanding manufacturing capacity and strengthening technical infrastructure. This is a positive indicator in terms of the company's ability to meet the high technical requirements of the defense industry.

In addition, the relatively low level of short-term liabilities on the balance sheet suggests that the company follows a financing model based on equity capital. This structure points to a low liquidity risk and a stable financial outlook.

An assessment based on gross sales and trade receivables indicates that Mer Lynx has a strong and stable customer base in the domestic market. The company's consistent involvement in both public projects and private sector procurement processes reflects the expansion of its institutional capacity.

However, the available data also shows that Mer Lynx has not yet been fully integrated into large-scale military projects. Nevertheless, its existing infrastructure, financial structure, and production capacity provide a solid foundation for such integration. With the right strategic direction and increased investment in R&D, the company has the potential to significantly strengthen its position in this domain.

5.4 INTERNATIONAL EXPANSION: SERBIA OFFICE

The office and showroom that Mer Lynx has established in Belgrade represent a significant step in the company's strategic motivation to expand into international markets (Merlynx Serbia Introduction File, 2024). Although this investment is not directly aimed at the defense industry, it holds considerable potential in terms of general trade, brand promotion, and the development of a regional network.

The Serbia initiative highlights several important aspects:

- The office is commercially and promotionally oriented rather than defense-focused, targeting broader market access for door systems and container products.
- However, this presence offers a functional pilot area for establishing contact with defense-related firms in the Balkans, showcasing the product portfolio, and testing the market.
- Considering Türkiye's defense and trade relations with Balkan countries, this move holds strategic value for strengthening potential export routes.

Such initiatives indicate that Mer Lynx is not limiting itself to the domestic market but is pursuing long-term visibility in international markets. Establishing a physical presence in a strategically significant region like the Balkans can serve as a foundational step for promoting defense-oriented products in the future.

In conclusion, this step is a **positive move** for expanding export capacity, enhancing brand recognition, and gaining experience in foreign markets. With proper strategic guidance, this expansion could evolve into a platform for penetrating international markets with Mer Lynx's defense industry products as well.

5.5 SUMMARY EVALUATION

Mer Lynx's current institutional capacity presents a notable profile in terms of domestic production strength, technical flexibility, and sectoral alignment potential. Based on the analyses conducted, the key strengths identified are summarized below:

- The company's quality certifications and management system standards indicate a production infrastructure that is competitive both nationally and internationally.
- The ability to produce in compliance with NATO standards demonstrates the firm's capability to respond quickly and effectively to specific defense industry demands.
- Financial statements show a strong reliance on equity-based operations, indicating that the company avoids risky, debt-driven growth models.
- The Serbia office illustrates the company's motivation to expand into international markets and serves as a launch point for future export ambitions.

However, despite all these positive indicators, certain structural shortcomings are also noteworthy:

- A formal R&D center has not yet been established, and the company's capacity for systematic technology development remains limited.
- Although university–industry collaborations are possible, these partnerships have not been institutionalized or documented.

- Branding and external promotional efforts have been limited, with a noticeable gap in corporate communication—especially regarding defense-specific visibility.
- The company has not yet fully achieved direct integration into defense projects or obtained approved subcontractor status.

In light of these findings, it can be concluded that **Mer Lynx is strategically aligned with Türkiye’s defense industry policies**, but has yet to complete certain operational and institutional building blocks. The company presents the profile of an SME with strong production infrastructure and high potential, yet with a **strategic capacity that remains under development**.

Brief Summary of Mer Lynx’s Current Position

Category	Assessment
Quality Certifications	Present and valid; provide a competitive edge in defense-related projects
Military Compatibility	High; strong engineering flexibility and adaptation capability
Financial Resilience	Moderate but stable; high growth potential
International Expansion	Initiated (e.g., Serbia office), but not yet defense-focused
Key Gaps	No formal R&D center; project outputs not yet systematized

5.6 POLICY ALIGNMENT AND INSTITUTIONAL IMPLEMENTATION ASSESSMENT

Türkiye’s defense industry policies are built around the objectives of reducing foreign dependency, increasing domestic production in critical technologies, and enhancing the innovative production capacity of private sector firms. These goals were solidified through the **2023 Industry and Technology Strategy**, which introduced concrete targets and support mechanisms for the private sector.

The key policy focus areas include:

- **R&D and Innovation-Oriented Growth:** Sector-specific R&D programs are conducted under the Ministry of Industry and Technology, supporting firms’ technology development capabilities.
- **Domestic and National Production Priority:** Local companies are prioritized in procurement processes for SSB-led projects.
- **Clustering and Ecosystem Development:** SMEs are encouraged to integrate into the supply chains and technology ecosystems surrounding major players such as TUSAŞ and ASELSAN.
- **Mandatory Certification and Quality Standards:** Certifications related to quality, environment, and occupational safety have become essential criteria for public procurements.
- **Export Support Mechanisms:** Diplomatic initiatives, trade fair participation, and promotional incentives are provided to facilitate international market access for defense products.

Mer Lynx's Position in Light of National Defense Policies

Based on the policy areas outlined above, Mer Lynx's current position can be summarized as follows:

- **R&D and Innovation:** Although the company does not yet have a formal R&D center, it demonstrates product-level design and technical adaptation capabilities. This indicates that innovative potential exists but has not yet been institutionalized.
- **Domestic Production:** Over 80% of the company's products are manufactured in Türkiye using domestic suppliers. In this regard, Mer Lynx is highly aligned with national localization policies.
- **Ecosystem Integration:** While the company does not yet have direct experience with SSB-led projects, it has reached the stage of submitting preliminary proposals for SSB-supported calls—indicating entry-level engagement.
- **Certification:** The company holds ISO 9001, ISO 14001, and ISO 45001 certifications, which meet key public procurement standards and increase its attractiveness for government projects.
- **International Expansion:** The Serbia office reflects the brand's desire to access foreign markets; however, this initiative is currently focused more on commercial activity than on defense-related outreach.

Conclusion

Mer Lynx is largely aligned with the **strategic goals** of Türkiye's defense industry policies. However, at the implementation level, the company has not yet fully realized its potential due to gaps in institutional capacity, the lack of a systematic R&D infrastructure, and limited direct integration into defense projects.

From an academic perspective, this situation can be summarized as follows: *"The structural framework outlined by Türkiye's defense industry policy presents important opportunities for companies like Mer Lynx. However, the ability to capitalize on these opportunities institutionally depends on the development of key infrastructures and strategic partnerships."*

5.7 SWOT + POLICY MATRIX ASSESSMENT

In this section, the internal and external factors identified in the earlier SWOT analysis are cross-referenced with the core focus areas of Türkiye's national defense policies. This matrix-based evaluation provides a systematic and academically grounded assessment of Mer Lynx's current status in relation to policy objectives.

SWOT-Based Policy Alignment Matrix

SWOT Element	Corresponding Policy Area	Alignment	Explanation
Strength: High domestic production rate	Domestic production & localization	ALIGNED	Over 80% domestic sourcing directly aligns with national policy
Strength: Quality certifications (ISO)	Certification standards	ALIGNED	ISO certificates provide competitive advantage in public procurement
Strength: NATO/MIL-STD compliant production	Military product standards	ALIGNED	Adaptable designs demonstrate technical adequacy
Weakness: Lack of R&D center	R&D support policy	MISALIGNED	No institutionalized R&D structure yet established
Weakness: Lack of systematic data systems	Digital transformation	PARTIALLY ALIGNED	Records not fully systematized; documentation remains weak
Weakness: No direct integration into defense projects	Clustering & integration policy	PARTIALLY ALIGNED	No direct collaboration with state defense projects yet
Opportunity: Serbia office	Export incentives	POTENTIALLY ALIGNED	Commercial presence exists; can evolve into defense-oriented outreach
Threat: Dependency on foreign technology	Reducing foreign dependency	MISALIGNED	Critical component imports still continue
Threat: Low brand recognition	Clustering & integration policy	PARTIALLY ALIGNED	Recognized within niche circles, but lacks broader national branding

This matrix illustrates that Mer Lynx is **highly aligned** with Türkiye's defense industry policies in certain areas. However, due to some **critical institutional shortcomings**, the company has not yet been able to fully leverage policy opportunities. In particular, the **lack of a formal R&D structure**, limited **digital traceability**, and the **absence of direct integration into public defense projects** stand out as key barriers to achieving full strategic alignment.

To frame it academically:

"The company is positioned close to policy targets and holds substantial potential; however, the organizational infrastructure needed to translate these targets into institutional reality has not yet been developed."

6. CONCLUSION AND POLICY RECOMMENDATIONS

6.1 SUMMARY OF FINDINGS:

This thesis has examined in detail the impact of R&D and innovation policies on competitiveness in the defense industry, as well as the sectoral implications of strategies aimed at reducing foreign dependency. The case analysis of Mer Lynx has provided insight into how the theoretical framework translates into practice and how alignment occurs at the institutional level.

Key findings reveal that:

- Türkiye is committed to strengthening its defense industry through policies emphasizing domestic production and national technology.
- R&D and innovation incentives are strategically important not only for technological progress but also for economic independence and foreign policy flexibility.
- Efforts to reduce foreign dependency have moved beyond technical necessity and become an integral part of broader political and economic sustainability goals.

In line with this strategic vision, **Mer Lynx**:

- Demonstrates potential for integration into the defense sector through its high domestic production ratio, certified quality standards, and technical flexibility.
- However, the absence of a formal R&D structure, insufficient digital documentation infrastructure, and lack of direct engagement in public defense projects limit the firm's sustainable growth and policy alignment.

At present, Mer Lynx represents an SME that is **strategically aligned** with defense policy goals but has not yet developed the **organizational capacity** to systematically realize and implement those goals.

6.2 SECTORAL AND DIRM-LEVEL RECOMMENDATIONS

Based on the analysis, the following recommendations are proposed to enhance both the effective implementation of defense industry policies at the sectoral level and the strategic capacity of Mer Lynx:

Sector-Level Recommendations

1. **Establish R&D support programs specifically for SMEs**, with simplified application procedures tailored to firms below a certain turnover and employee threshold.
2. **Create digital platforms** that improve small-scale firms' access to defense projects; these platforms should match project needs with producers in a transparent, trackable, and open-access format.
3. **Map imported parts and systems** used in the defense sector in order to reduce dependency on foreign technology. Develop targeted incentives and accelerator programs for domestic production in these critical areas.
4. **Simplify certification procedures** and implement a point-based scoring system in public tenders that rewards firms holding relevant certifications. This would increase the motivation of companies to obtain such documents.

Recommendations for Mer Lynx

1. **Establish a formal R&D center** and develop innovation capacity through structured collaborations with universities.
2. **Systematize production processes, project proposals, and documentation**, ensuring that each stage is digitally traceable through an integrated infrastructure.
3. **Initiate trial-based collaborations** with major defense actors such as SSB, TUSAŞ, and ASELSAN. Mer Lynx should seek visibility through pilot projects as a subcontractor.
4. **Launch a targeted marketing campaign** for defense products through the Serbia office, and plan an international certification process tailored to the Balkan market.
5. **Strengthen human capital** by recruiting personnel with defense industry experience and technical expertise.

These recommendations are not merely aimed at short-term improvements. They form a strategic roadmap for a sustainable transformation aligned with national defense policies. With the right support and direction, SMEs like Mer Lynx can become direct contributors to Türkiye's goals of localization and competitiveness in the defense sector.

6.3 SUGGESTIONS FOR FUTURE RESEARCH

This thesis was conducted primarily through qualitative methods and focused on a single firm (Mer Lynx). While case studies like this are valuable for making micro-level dynamics within the defense industry visible, broader studies are needed to support and enrich these insights.

Suggestions for future research include:

- **Comparative analyses involving multiple firms** of different sizes and operating in various sectors could help assess the degree of alignment with defense industry policies across a wider spectrum.
- **Evaluations of SSB support programs** through beneficiary firms could measure how effectively incentives contribute to institutional capacity building.
- **Quantitative studies** could explore the relationship between R&D expenditure and export performance using econometric methods. This would provide clearer insights into the impact of technology investment on international trade.

Such academic contributions would not only support the development of more rational and targeted policy frameworks, but also help design applications that are more responsive to the needs of the private sector.

Final Words

Türkiye's defense industry journey is not solely shaped by large enterprises; it is a collective vision shaped by every producer who holds potential and is open to development. Firms like Mer Lynx are among the building blocks of this vision — but in today's conditions, being a “block” is not enough; it must be **strategically positioned** within the broader structure. In this context, enhancing institutional capacity and aligning with national policy goals is not just an organizational necessity — it is a fundamental condition for long-term presence in the defense sector.

SUMMARY

This study examines the R&D- and innovation-driven competitiveness strategies developed in line with Türkiye's defense industry policies to reduce foreign dependency. The theoretical section of the thesis addresses the strategic importance of the defense industry, the impact of R&D investment on competitiveness, and the concept of foreign dependency, supported by relevant academic literature.

In the applied section, **Mer Lynx** was selected as a case study. The firm's certifications, domestic production capacity, technical flexibility, and existing — albeit limited — R&D initiatives were analyzed.

Although the company aligns well with national policy objectives, it still faces institutional shortcomings in **transforming these goals into a sustainable organizational structure**.

Within this framework, the study aims to evaluate the opportunities and barriers encountered in the private sector's integration into strategic policy frameworks.

It also offers recommendations on how **SMEs** can take on a more active role within the defense industry.

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APPENDIX

Appendix 1 – ISO 9001:2015 Quality Management System Certificate

Appendix 2 – ISO 14001:2015 Environmental Management System Certificate

Appendix 3 – ISO 45001:2018 Occupational Health and Safety Certificate

Appendix 4 – Certificate of No Tax Debt

Appendix 5 – Technical Compliance Report for Military Standards

Appendix 6 – Detailed Balance Sheet for 2021

Appendix 7 – Promotional Catalog of the Belgrade Office