

Activities of enterprises of the defence-industry complex of the countries of the Euro-Atlantic community: experience for Ukraine

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Abstract

The theoretical foundations of the activity of small and medium-sized enterprises in the defence industry of leading Western countries are considered. Since these enterprises are a crucial factor in innovation and economic growth, adapting relevant experience in Ukraine will create additional opportunities for increasing the stability and productivity of the domestic defence-industrial complex.

Key words: innovations, small and medium-sized enterprises, advanced technologies, defence-industrial complex, weapons and military equipment, military-technical policy, military-technical cooperation, Germany, Italy, Poland.

Introduction

Today, Ukraine's defence issue is the leading state priority – a significant part of budget funds is directed primarily to the needs of Ukraine's Armed Forces and other military formations. Ukraine's resistance to full-scale Russian armed aggression revealed severe shortcomings in equipping our state with the necessary modern weapons and military equipment. First of all, this was manifested in insufficient staffing before the start of the war with the main types of weapons (complexes, systems). Among the reasons for this state of affairs, one can name the inadequate attention on the part of the Ministry of Defence and the country's state defence-industrial complex to establish a strategic partnership with the private sector and small enterprises (SMEs) in this area.

Sector and small enterprises are one of the critical factors in the economic development of most countries. They contribute to global economic growth and act as innovators, employers and producers of goods and services. SMEs comprise about 90 per cent of businesses and employ more than half of the world's workers. Formal SMEs generate about 40 per cent of GDP in emerging and developing markets and provide at least seven out of ten jobs.

Today, private defence enterprises play a vital role in meeting the needs of Ukraine's Armed Forces (now there are about 100 of them, and they produce more than half of the state defence order). The flexibility and mobility of SMEs in their small size is a significant advantage. Besides, they are less vulnerable to Russian missiles and artillery than powerful factories. Such diversification can fundamentally improve the stability and productivity of the domestic military-industrial complex, especially since it has already shown high efficiency in the countries of the Euro-Atlantic Commonwealth.

Material and methods

Professor J. Rice singles out three approaches to constructing defence industry systems: integration, autarky and dominance [1]. The analysis of the arms market conducted by A. Azarli shows that the market has a competitive structure at the corporate level and an oligopolistic structure at the state

level. As the primary criterion for supporting arms-producing industries and corporations, he suggests choosing whether they have an oligopoly status [2].

Hartley K. presents the production of weapons systems as a new class of economic goods and also defines their distinctive characteristics in the form of advanced technologies, increasing costs from generation to generation and decreasing production volumes [3].

Kayasusila A., analysing the strategic environment and characteristics of the world defence industry, highlights the connections between the historical development of the country and the national model of the defence industry that it builds and implements [4].

Thus, it is possible to state that the theoretical and applied principles of the functioning of SMEs in the defence industry are insufficiently developed. The limitations of the developed tools also actualise the need for an in-depth study of the outlined issues.

The purpose of the article is to develop the theoretical foundations of the functioning of small and medium-sized enterprises in the defence industry of the countries of the Euro-Atlantic Commonwealth and the formation of promising directions for introducing relevant experience into Ukraine's defence-industrial complex.

Results and Discussion

The modern development of the defence industry of the countries of the North Atlantic Treaty Organization largely depends on the activities of megacorporations with annual sales of tens of billions of dollars: Boeing, the European Aeronautic Defence and Space Company (EADS), Lockheed Martin, BAE Systems, Northrop Grumman, Raytheon, General Dynamics, Finmeccanica, and Thales. The success of these companies was built over a long period. They possess significant resources, have ample opportunities to conduct successful marketing and lobbying campaigns, and employ leading researchers and developers. Equally important is the fact that after retirement, some armed forces officers continue working in defence corporations, creating unique opportunities to understand customers' current needs. It is widespread today that profound military innovations appear only when civilian authorities encourage large companies to respond more relevantly to existing threats and improve the effectiveness of management decisions [5].

It should be noted that the most innovative weapons systems that appeared on the market during the last decade were developed by small (by industry standards) firms. Comparative studies of the theoretical foundations of innovation in small firms and large corporations have a long history. Thus, even in the middle of the last century, Joseph Schumpeter concluded that large corporations have significant advantages in introducing stable innovations into clusters of technological progress, and the degree of innovativeness varies significantly depending on the economic sector [6].

The rapid development of purely research organisations led to radical changes in the classical understanding of the effectiveness of innovation – a considerable share of them falls on software, in which small firms sometimes succeed, having “two programmers and a person who makes them coffee” [7]. Despite the popularity of J. Schumpeter's theory, today, there are fewer and fewer arguments in favour of industrial giants in solving issues of rapid and effective implementation of technological changes and the use of the latest technologies [8]. Indeed, there are good reasons to believe that introducing computer technologies as an essential full-fledged production factor can change the dynamics of innovation and affect the structure of defence production. Before automated software development (CASE) tools were introduced, almost all automation was related to production processes, not design and management processes [9]. Thus, the Lockheed Martin company and one of its customers – the US Air Force – allowed overspending funds and labour resources while developing F-22 Raptor stealth fighters. This resulted from a mistaken decision in the 1990s to build a highly integrated set of on-board computers based on the Intel 960 processor. If the project were more minor and more critical to the future development of the US Air Force, it would have to be curtailed, but funding continued despite obvious miscalculations [10]. Today, there are significant disagreements regarding the driving forces of military-technical innovations. One is that they should act as endogenous features of military needs and financing processes; the second is that innovations

act as exogenous factors of actual technical innovations [11]. If the introduction of innovations is considered an endogenous factor relative to demand, then all organisational and financial issues automatically become the responsibility of the military. If the manufacturers themselves stimulate innovations, the firms with the latest developments will have significant advantages. Innovation is complex to define precisely, but not all technological advances can be called innovations, no matter how profound. So, for example, the MQ-1 Predator combat drone cannot compete with the F-18E/F Super Hornet fighter bomber. Still, it cannot be argued that the aircraft is more innovative, even if it is technologically more advanced by specific indicators. Clearly defining innovation as distinct from technological improvement is critical to identifying markets where small businesses can succeed. Small firms are usually more flexible in making decisions about promising technologies and systems; accordingly, innovations that do not require significant financial investments are implemented much faster. At the same time, they must counter possible resistance efforts by powerful diversified defence contractors to prevent the development of new weapons production concepts, as this could lead to a drop-in sale of their military equipment. The next factor contributing to the development of SMEs in the defence sector is the level of qualification of personnel – they often have advantages in industries that require a high proportion of skilled labour.

Speaking about the vast possibilities of reducing the cost of production by large corporations due to an increase in the scale of production, it is necessary to clearly distinguish between savings at the level of an individual product, at the level of production and at the corporate level (quite often at the last level, economic advantages are neutralised due to high administrative costs). Even if giant companies dominate the defence industry, there are examples of sectors where small manufacturers enjoy excellent customer loyalty. So, for example, almost the entire market of military helicopters is now divided between five megacorporations, while little-known MD Helicopters are considered essential players in this market [12; 13].

At the end of the 1990s, about 75 per cent of the US Department of Defence's budget was directed to purchasing aircraft, missiles, electronics, and communications [14]. Today, the Pentagon spends most of its money on precision strike equipment. Tendencies to increase the production volume of this kind of product have opened up new opportunities for small, innovative firms [15]. Thus, the fundamental technologies of high-precision interaction and network intelligence, surveillance and reconnaissance (ISR) are becoming critical in deploying new forces and means. Small firms will likely have a comparative advantage in their production if these systems remain primarily modular.

The US Department of Defence's Small Business Strategy 2023 focuses on streamlining the department's business orientation efforts to support and empower small businesses to modernise. The strategy is aimed at achieving three goals: improving management practices as small business leaders try to understand how to get involved in defence order fulfilment; creation of a small business ecosystem that will meet national security priorities (development of innovations in the defence complex); improving communications between the Pentagon and representatives of small businesses. It is noted that these and other initiatives of the Small Business Development Strategy are aimed at transforming small companies into equal partners in ensuring US national security [16].

The new initiative, called "Project Vista" (Project Vista), is one of several ideas the US Army plans to implement to assist small firms that already cooperate with the US Department of Defence. The basis of the project is the adaptation of technologies financed under the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs for functioning weapons systems [17].

The structure of the European defence industry, like other industries, is divided between several prominent players and approximately 1,350 small and medium-sized enterprises. Although the companies are scattered almost throughout the territory of the EU, several countries (Austria, the Czech Republic, France, Germany, Italy, Poland, Spain, Sweden, and Great Britain) can be singled out, where the concentration of defence enterprises is much greater than in others. The group of leading arms manufacturers is represented by 31 companies with an annual turnover ranging from 0.5 to 23 billion

euros (an average of 3 billion euros). The lack of information in Eurostat complicates the analysis of relevant statistics on small and medium-sized European enterprises. However, the available data show that small companies are mainly engaged in the production of weapons and ammunition. In contrast, large companies mainly focus on producing military vehicles and aircraft [18].

Small and medium-sized enterprises related to the European defence industry are vital drivers of innovation and economic growth. They occupy a central place in Europe's complex supply chains of defence products. However, they function primarily at the national level. To correct this situation, the European Commission launched several initiatives to stimulate cross-border cooperation in the defence sector, emphasising increasing the competitiveness of small and medium-sized enterprises [19].

Conclusions

We believe that when it comes to the market dynamics of defence manufacturing, there are specific industries in which small firms tend to have an advantage. These industries are distinguished using the following criteria:

- firstly, these are innovative industries with a low level of R&D intensity. They are highly uncertain about sales markets or future technological development directions. Although uncertainty is an inherent property of the defence sector, quite often, innovations that are considered radical and promising are not implemented because they are politically inexpedient;

- secondly, although small firms are always quite limited in financing, thanks to their internal communication, they can respond more quickly to changing market conditions. This advantage is significantly strengthened in the case of innovations that do not depend on the presence of high-value laboratory equipment;

- third, the uncertainty of the defence sector means that small firms, unlike large companies, are more willing to share the risks associated with developing new technologies. They have more room for innovation without fear of losing some market share, which is characteristic of more diversified defence corporations;

- fourth, small and medium-sized enterprises optimally combine skills and resources in sectors operating on “learning by doing”. Often, the volumes of production required by the armed forces are too small and large companies are unable to use all the advantages associated with large-scale volumes of production;

Fifth, the diversification of large corporations provides an opportunity to distribute the financial risks of a specific cycle of R&D better. Still, they can be pressured by shareholders motivated to obtain higher returns in the short term. Obstacles to the regulatory plan also limit the possibilities of large enterprises' activities in risk conditions, which leads to the depreciation of innovation implementation.

As the results of the analysis show, the sector of development and research in defence production does not tend to critical technological breakthroughs – now, we can only talk about assimilation and combined use of already implemented technologies. This may lead to the continuous recombination of existing technologies, determining the future of defence systems and innovations based on the introduction of the latest information systems.

Today, Ukraine's government urgently introduced several important regulatory innovations designed to reduce the fiscal burden on business and stimulate the development of small entrepreneurship, in particular, in the defence sector. *Obstacles that prevented Ukrainian enterprises (including SMEs) from participating in defence government orders due to rigid price fixing were removed. The Cabinet of Ministers of Ukraine has significantly expanded the list of grounds for price revisions under state-funded contracts for the security and defence sector.* These and other economic liberalisation measures indicate that the government is aware of the direct relationship between the degree of financial freedom, the pace of economic development and radical changes in defence production.

Prospects for further research. Future research may determine the variables that encourage SMEs in the defence sector to look for ways to maximise production synergy (integration), resorting

to mergers and acquisitions. In contrast, others develop due to increased state funding (autarky). Other empirical research may address the need to understand what interventions will foster closer relationships between small firms and defence industry enterprises. In this context, it is advisable to try to adapt the servitisation models developed for industrial and civil production to the possibilities of their application in the defence sector.

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