TARAS SHEVCHENKO NATIONAL UNIVERSITY OF KYIV

Faculty of Economics

THE UNIVERSITY OF MACERATA

Department of Political Sciences, Communication & International Relations

Product Innovations for Ukrainian Manufacturers of Security Systems in the Italian AgriTech Market

by

Diana Karvetska

Full-time student

of the second-year master's degree course in Business Administration & Consulting

The dissertation in partial fulfillment of the requirements for the degree of Master in Marketing (Curriculum Business Administration & Consulting)

I certify that in this thesis, there are no borrowings from the works of other authors without corresponding references

Student _____

Adviser approval _____ Associate Professor N. Y. Kochkina

Approval of the Department of International Economics and Marketing

_____ Head, Professor A.O. Starostina, DEcon

Minutes No ____ of _____, 2022

Kyiv – 2022

Київський національний університет імені Тараса Шевченка
Економічний факультет
Кафедра міжнародної економіки та маркетингу

«Затверджую»
Завідувач кафедри міжнародної економіки та маркетингу
д-р екон. наук, проф. _____ А.О. Старостіна
«22» жовтня 2021 р.

ЗАВДАННЯ

на кваліфікаційну магістерську роботу
студентки 2 курсу денної форми навчання спеціальності 075 «Маркетинг»
освітньо-наукової програми «Бізнес-адміністрування і консультування»
Карвецької Діани Дмитрівни

1. Тема роботи: Розробка інноваційної продукції українських виробників охоронних систем для італійського агротехнологічного ринку (затверджена на засіданні кафедри міжнародної економіки та маркетингу «22» жовтня 2021 р., протокол № 3).
2. Термін завершення роботи: травень 2022 р.
3. Попередній захист роботи: 4 травня 2022 р., протокол № 11.
4. Об'єкт дослідження: впровадження українськими виробниками інновацій охоронних систем на міжнародні ринки в умовах прискореної розбудови України в повоєнних умовах.
5. Предмет дослідження: продуктова інновація виробника охоронних систем «Укрспецтехніка» для італійського агротехнологічного ринку.
6. Мета та завдання дослідження

Мета: теоретичне обґрунтування та розробка практичних рекомендацій щодо розробки продуктової інновації українським виробником охоронних систем «Укрспецтехніка» для італійського агротехнічного ринку в умовах прискореної розбудови України в повоєнних умовах.

Завдання:

6.1. Розкрити теоретичні основи стратегії маркетингу інновацій на ринку високотехнологічної продукції через висвітлення сутності концепції інновації.
6.2. Виявити вплив факторів зовнішнього мікро- та макромаркетингового середовища на діяльність компаній, що займаються охоронними системами, на агротехнологічному ринку.
6.3. Визначити конкурентні позиції виробника охоронних систем «Укрспецтехніка» в італійському та польському сегментах та обрати цільовий за допомогою портфельного аналізу.
6.4. Надати рекомендації щодо розробки стратегії маркетингу інновацій для «Укрспецтехніка» на італійському агротехнологічному ринку.
6.5. Оцінити економічну ефективність запропонованої стратегії.

Науковий керівник: к.е.н., доц. _____ Кочкіна Н.Ю.
Студент: _____ Карвецька Д.Д.

Календарний план виконання завдання

№ з/п	Зміст виконаної роботи	Термін виконання	Відмітка керівника про виконання
1.	Затвердження теми	вересень 2021 р.	
2.	Затвердження плану	жовтень 2021 р.	
3.	Затвердження завдання на роботу	жовтень 2021 р.	
4.	Написання розділу 1	жовтень 2021 р.	
5.	Врахування зауважень наукового керівника до розділу 1	грудень 2021 р.	
6.	Подання розділу 2 науковому керівнику	лютий 2022 р.	
7.	Врахування зауважень наукового керівника до розділу 2	березень 2022 р.	
8.	Подання розділу 3 науковому керівнику	березень 2022 р.	
9.	Врахування зауважень наукового керівника до розділу 3	квітень 2022 р.	
10.	Написання загальних висновків, оформлення додатків та джерел	квітень 2022 р.	
11.	Врахування зауважень наукового керівника до всієї роботи	квітень 2022 р.	
12.	Подання готової роботи	квітень 2022 р.	

Графік консультацій

Дата консультації	Консультант	Зміст консультації	Підпис консультанта
10.09.21	Кочкіна Н.Ю.	Узгодження редакції теми роботи	
20.09.21	Кочкіна Н.Ю.	Узгодження плану	
05.10.21	Кочкіна Н.Ю.	Визначення мети, завдань та концепції роботи	
16.11.21	Кочкіна Н.Ю.	Зміст 1 розділу	
28.11.21	Кочкіна Н.Ю.	Редагування висновків розділу 1	
січень-березень 2022 р.	Кочкіна Н.Ю.	Зміст 2 розділу	
17.03.22	Кочкіна Н.Ю.	Редагування висновків розділу 2	
30.03.22	Кочкіна Н.Ю.	Зміст 3 розділу	
08.04.22	Кочкіна Н.Ю.	Редагування висновків розділу 3	
13.04.22	Кочкіна Н.Ю.	Редагування загальних висновків	
20.04.22	Кочкіна Н.Ю.	Консультування щодо оформлення списку використаних джерел та додатків	
27.04.22	Кочкіна Н.Ю.	Консультування щодо оформлення готової роботи	
04.05.22	Кочкіна Н.Ю.	Консультування щодо підготовки презентаційних матеріалів	

SUMMARY

The thesis consists of 70 pages, 16 tables, 12 drawings, a list of 111 references, 6 appendices.

PRODUCT INNOVATIONS FOR UKRAINIAN MANUFACTURERS OF SECURITY SYSTEMS IN THE ITALIAN AGRITECH MARKET

The research subject is product innovations for Ukrspetstechnika security systems manufacturer in the Italian AgriTech market.

The object of the study is the implementation of AgriTech innovations by Ukrainian manufacturers in the international markets under accelerated reconstruction of Ukraine in the post-war conditions.

The thesis aims at the theoretical substantiation and development of practical recommendations on the product innovations of Ukrspetstechnika (the Ukrainian security systems manufacturer) for the Italian AgriTech market under accelerated reconstruction of Ukraine in the post-war conditions.

Based on the study results, methodological recommendations have been formulated for Ukrspetstechnika on implementing an innovation marketing strategy and evaluating the effectiveness of the proposed measures.

The practical significance of the research is the development, organization, and implementation of the product innovations at Ukrainian enterprises operating in the market of high-tech products.

2020-2022: undertaking the thesis research.

2022: defense of the thesis.

РЕФЕРАТ

Дипломна робота містить 70 сторінок, 16 таблиць, 12 рисунків, список літератури з 111 найменувань, 6 додатків.

РОЗРОБКА ІННОВАЦІЙНОЇ ПРОДУКЦІЇ УКРАЇНСЬКИХ ВИРОБНИКІВ ОХОРОННИХ СИСТЕМ ДЛЯ ІТАЛІЙСЬКОГО АГРОТЕХНОЛОГІЧНОГО РИНКУ

Предметом дослідження є продуктова інновація виробника охоронних систем «Укрспецтехніка» для італійського агротехнічного ринку.

Об'єктом дослідження виступає впровадження українськими виробниками інновацій охоронних систем на міжнародні ринки в умовах прискореної розбудови України в повоєнних умовах.

Мета дипломної роботи полягає в теоретичному обґрунтуванні та розробці практичних рекомендацій щодо розробки продуктової інновації українським виробником охоронних систем «Укрспецтехніка» для італійського агротехнічного ринку в умовах прискореної розбудови України в повоєнних умовах.

За результатами дослідження сформульовані конкретні рекомендації на основі встановлення покрокового плану організації маркетингу інновацій в «Укрспецтехніка» та оцінювання ефективності запропонованих заходів.

Одержані результати можуть бути використані для розробки, організації та впровадження продуктових інновацій на вітчизняних підприємствах, що функціонують на ринках високотехнологічних товарів.

Рік виконання дипломної роботи: 2020-2022.

Рік захисту дипломної роботи: 2022.

TABLE OF CONTENTS

INTRODUCTION

In terms of market relations, the decisive factor in the competitiveness of companies is the effectiveness of the marketing system. However, today the role of innovation, which has become a weapon of competition, has seriously expanded since innovation leads to the creation of new products that are usually in great demand among consumers Furthermore, innovation enables the creation of needs, and new segments, capturing markets, boosting profits, increasing the image of the manufacturer of the new product, and, ultimately, improving the company's competitiveness.

Implementation of innovative processes in production is becoming crucial for the thriving economic activity of companies. As experienced by industrialized countries, innovation intensification is a substantial area of enterprise development. It could provide a company with a steady position in the market. Moreover, innovation development is an effective instrument for enhancing production efficiency.

The research of innovative activity and innovation marketing application background is devoted to scientific developments of known foreign and Ukrainian scientists: Schumpeter (1974), Twiss (1980), Kotler (1984), Porter (1985), Ansoff (1988), Kondrat'ev (1993), Nagachevska (2000), Zhurylo (2008), Illiashenko (2008), Honcharova (2009), Prygara (2013), Kovalchuk (2013), Grizovska and Romanova (2018), and others. They formulated several theoretical approaches and methodological tools for innovation marketing for solving market analysis problems for new products, the formation and stimulation of demand, innovation promotion in the market, and more. In addition, some authors have created models for developing an innovation marketing complex.

At the same time, there are almost no scientific works specifically devoted to the innovation marketing strategy implementation in the industrial markets. In addition, most scientific sources do not sufficiently reveal the importance of establishing a dialogue between the various functional stages involved in developing an innovation marketing strategy. Nevertheless, international background reveals that companies consistently executing all stages of both marketing and innovation achieve great

success in innovation development and implementation. Thus, this determines the relevance from a scientific point of view.

Indeed, it is pretty arduous to find data on the success of the innovation marketing strategy in Ukraine in open sources. We suppose that one of the reasons for this is that such schemes are developed individually for each company, and the features of innovation development itself are a trade secret. Consequently, there will not be much applicable data.

The phenomenon of innovation marketing in Ukraine has emerged relatively recently but is already developing rapidly. Therefore, their successful implementation in the company requires urgent research. The example of a particular company will prove the practical significance of this study.

Joint Stock Company Holding Company Ukrspetstechnika (hereinafter Ukrspetstechnika) is a Ukrainian manufacturer of complex electronic and other special equipment. In 2019, the company received authority for exporting goods of its production. Previously, Ukrspetstechnika worked with foreign customers through Ukrspetsexport. In Arabic countries, the company continues the cooperation with Spetstechnoexport, which has extensive experience dealing with such clients. Therefore, Ukrspetstechnika has a managerial opportunity that gives a possibility to implement the following plans. Firstly, further foreign market expansion. Secondly, the diversification of activities to other segments of the security systems market. Since fulfilling state defense orders has a significant impact on the company. So, there is a need to develop an innovation marketing strategy for Ukrspetstechnika in the foreign market.

In connection with the hostilities currently taking place on the territory of Ukraine and the effective struggle of the country in this war, the brand of Ukraine is gaining considerable strength. Moreover, after the victory of Ukraine, dual-use goods will gain significant recognition globally. These products will be a mark of quality and safety, especially since they had a successful practical test. Therefore, since Ukrspetstechnika is a domestic enterprise with production facilities within Ukraine, this study is crucial for the state’s economy. Besides, by exporting products to foreign

markets, Ukrspetstechnika increases the number of foreign exchange earnings to the budget of Ukraine.

The object of the study is the implementation of AgriTech innovations by Ukrainian manufacturers in the international markets under accelerated reconstruction of Ukraine in the post-war conditions. The research subject is product innovations for Ukrspetstechnika security systems manufacturer in the Italian AgriTech market.

The thesis aims at the theoretical substantiation and development of practical recommendations on the product innovations of Ukrspetstechnika (the Ukrainian security systems manufacturer) for the Italian AgriTech market under accelerated reconstruction of Ukraine in the post-war conditions.

The objectives are:

- determine the theoretical basis of innovation marketing strategy in the market of high-tech products through uncovering the essence of the innovation concept;
- identify factors of the international business environment influencing the market activity of companies dealing with security systems in the AgriTech market;
- determine competitive advantages for Ukrspetstechnika security systems manufacturer in the Italian and Polish segments and choose the target one using portfolio analysis;
- provide guidelines for developing the innovation marketing strategy for Ukrspetstechnika in the Italian AgriTech market;
- evaluate the economic efficiency of the proposed strategy.

In the process of research, we used the following general scientific and specific research methods: system approach and system analysis (systematization and classification), methods of analysis and synthesis, unity of history and logic in the study of the essence of the innovation concept (p. 1.1); method of scientific generalizations, synthesis, deduction, system approach, and system analysis for collecting, sorting, and studying sources of scientific information, as well as

modeling and theoretical methods when considering the specifics of the innovation marketing (p. 1.2); unity of history and logic, economic and statistical analysis; content analysis; system approach and system analysis; scientific generalization for the international business environment analysis (p. 2.1, 2.2); system approach and system analysis, analytical method, modeling for performing company competitive and portfolio analysis; content analysis, synthesis, the ascent from the abstract to the concrete for developing the innovation marketing strategy (p. 3.1, 3.2); economic analysis in the assessing the effectiveness of the proposed activities (3.3); method of scientific generalizations, system approach, synthesis, descriptive methods for conclusions, graphical presentation of the results.

The prior related research's main scientific and practical results were presented at the 19th International Scientific and Practical Conference: Shevchenko's spring 2021. Economy. On the path to sustainable development (Karvetska, 2021).

The thesis consists of a summary, introduction, three sections, conclusions, a list of 111 references, and 6 appendices. The total volume of work is 98 pages. The main text is set out on 70 pages containing 16 tables and 12 figures.

CHAPTER 1
THE THEORETICAL BASIS FOR INNOVATION MARKETING STRATEGY IN THE MARKET OF HIGH-TECH PRODUCTS

1.1. Uncovering the essence of the innovation concept

Innovations are the main driving force for production and society's dynamic development in the era of intense scientific and technological revolution. They form the basis of competitiveness of firms, industries, and entire countries; they contribute to the large markets conquering by developing new products and services that are more attractive to consumers and have fundamentally new consumer properties.

There are different views on the nature and content of innovation in domestic and foreign literature devoted to innovation and innovation activity studying. As usually stated, the first most complete description was introduced in 1912 by the Austrian economist Josef Schumpeter, who is considered to be the innovation theory founder. Nevertheless, there was no discussion of innovation but of 'new combinations, best ways, use, or impact' of transformations in development (Schumpeter, 1974).

New views on the innovation issue were introduced in the second half of the twentieth century owing to the work of such scientists as Bright (1969), Twiss (1980), Santo (1990), Kondrat'ev (1993), and others. There was a departure from the simple renewal notion instead of focusing on profitability and effectiveness of innovation. However, more and more approaches to innovation interpretation have emerged every year. Nevertheless, no generally accepted content of this concept has been identified so far.

To identify the main idea of innovation, firstly, we are to consider the points of view of different scholars to the definition of the concept. We composed it in Table 1.1 in terms of the three components of the concept structure (Starostina, Kravchenko, & Nagachevska, 2019).

Table 1.1

The structure of the innovation concept in the approaches of different scholars and official documents (ten definitions are in use out of the forty-three ones)

№	Author, year/concept	The essence of the phenomenon	The content of the phenomenon	The result of the phenomenon
1.	Prygara (2017) / innovation is	the result of human creativity,	aimed at transforming a particular object of management	to realize the economic interests of economic entities
2.	Oxford Dictionary of Business and Management (2016) / innovation is	any new approach to	designing, producing, or marketing goods that	gives the innovator or his company an advantage over competitors
3.	Shchepkina (2010) / innovation -	the result of novelties creation and use	embodied in the form of improved or new goods (products or services), technologies of their production, management methods at all stages of production, and sale of goods that	contribute to the enterprises' development and efficiency
4.	Fatkhutdinov (2008) / innovation -	the result of novation implementation	to change the object of management and	obtaining economic, social, environmental, scientific, technical, or other types of effect
5.	Polehenka (2016) / innovation is	the original solution that	has novelty, is based on scientific and technical achievements, the implementation of which leads to changes in all areas of the enterprise through the creation, development, and use of a new product, service, or technology	to achieve the maximum possible economic, social, environmental, or other effects
6.	Law of Ukraine on innovative activity (2002) / innovation -	the newly created (applied) and improved competitive technologies, products, or services, as well as organizational and technical solutions - production, administrative, commercial and other that	-	significantly improve the structure and quality of production and (or) social sphere

Continuation of table 1.1

№	Author, year/concept	The essence of the phenomenon	The content of the phenomenon	The result of the phenomenon
7.	Malytskyi (2009) / innovation -	the complex process,	aimed at creating, developing, and bringing scientific or any other new idea to the stage of commercial use and dissemination in the economy	
8.	Azgal'dov (2008) / innovation -	the process in which:	Wholly or partially protected results of intellectual activity are used; and/or the release of patent products is provided; and/or the production of goods and/or services of world-class quality is ensured	-
9.	Hotjasheva (2006) / innovation -	the purposeful changes	in all spheres of the company's economic activity for adaptation to the external environment	to achieve long-term efficiency of the company
10.	Tucker (2008) / innovation is	putting forward new ideas and implementing them.	Its creative aspect is the incubation of new ideas; that's the most important thing. After all, if there are no ideas, there will be no chance for innovation; implementation of ideas in practice is a hallmark of innovation.	The purpose of innovation is to create a new value that is perceived by the consumer

Source: developed based on Azgal'dov and Kostin (2008); Fathutdinov (2008); Hotjasheva (2006); Law (2016); Law of Ukraine (2002); Malytskyi (2009); Polehenka (2016); Shchepkina (2010); Starostina et al. (2017); Tucker (2008)

Next, we systematize the points of view, perform their critical analysis and construct our definition. So, in the process of innovation theory development, many authors provided their interpretation of this concept. Therefore, we anticipated four points of view on the innovation concept essence interpretation: as a result in the form of a new product; as a process of implementing some changes; as some changes, certain transformations; as a new solution/idea. The most spread are the first three approaches.

So, the first point of view supported by such authors as Prygara (as cited in Starostina et al., 2017), Shchepkina (2010), Fatkhutdinov (2008), Balabonov (2001), Il'enkova (1997), Kanagal (2015), Kovaljov (1999), Pavlenko (2010), Purchase and Volery (2020), Rogers (2003), Sokolov, Titov, and Shabanova (1997), Vázquez,

Santos, and Alvarez (2001), and others. They consider the concept a definite result, expressed in a new product, method, technology, etc. According to the second point of view, innovation as a process of implementing some changes is interpreted by: Malytskyi (2009), Azgal'dov (2008), Santo (1990), Twiss (1980), Bezdudnyj, Smirnova, and Nechaeva (1998), Dodgson and Gann (2010), Grinev (2004), Haustein and Maier (1985), Lavrinenko (2010), Medinskij and Sharshukova (2007), Reguia (2014), Shajtan (2005), and others. The third – transformational – sight is based on Schumpeter's views and considers innovation as definite changes in the enterprise. This interpretation is joined by: Hotjasheva (2006), Damanpour and Gopalakrishnan (2001), Danylenko (2018), Drucker (2008), Fagerberg (2004), G. Krayukhin, and L. Shcherbakova (1995), Huchek (as cited in Kuchko, 2008), Khorakian (2011), Noori (1990), Valenta (1985), and others.

In the XXI century, recently developed views on the innovation essence – the fourth point of view – began to appear. Thus, Polehenka (2016), Tucker (2008), and the Oxford Dictionary of Business and Management (as cited in Law, 2016) define the concept as an original solution, a new approach, new ideas promotion, focusing on the creative component. Dundon (2002) adheres to this view, noting that innovation is ‘a profitable realization of a creative strategy based on the ability to generate new ideas.’

In general, all of the above points of view can be grouped even further by defining static, dynamic (Polehenka, 2016), and creative approaches. In the first one, innovation serves as a product embodied in goods, technologies, methods, etc., and is identical to the first previously considered point of view. In the second approach, innovation is some process or change rather than a definite materialized result. This approach groups the representatives of the second and third points of view. Finally, the third (creative) approach focuses on the creative aspect, without which neither change nor implementation of the new is possible.

Analyzing the concept of ‘innovation’ according to the content of the phenomenon, we found that the authors vary widely in interpretations. Thus, Polehenka (2016), Shchepkina (2010), and Hotjasheva (2006) highlight the

application of innovation in the enterprise. They point to its materialization in new products, methods, technologies, etc. Instead, Malytskyi (2009) and Tucker (2008) emphasize the importance of the idea behind innovation. At the same time, Prygara (as cited in Starostina et al., 2017), Fatkhutdinov (2008), and the Oxford Dictionary of Business and Management (as cited in Law, 2016) see the content of innovation as a process of some changes, whereas Azgal'dov (2008) and (Polehenka, 2016) are the only ones to concretize innovation features. And only in the Law of Ukraine no content on the phenomenon is observed.

Next, we considered the 'innovation' concept according to the result of the phenomenon. So, we grouped the views into three approaches: purely economic benefits for the enterprise; inclusion of social, environmental, and other effects; creating new value for the consumer. Remarkably, Tucker (2008) and Prygara (as cited in Starostina et al., 2017) are the only ones to note the third approach. They see in innovation not only an effect on the company but also the importance of meeting some social needs. At the same time, many foreign scholars mention 'considering consumer interests… for creating value, a novelty for the market' (Teodorescu & Vladut, 2016; Ulwick, 2005), etc., while defining the 'innovation' concept.

It is critical to say that some scholars mentioned such terms as 'novation', 'novelty', and 'new' in the innovation concept. Hence, it is essential to define whether these phenomena differ and what is considered an innovation.

Indeed, we determined several studies conducted on the above topic after reviewing the existing literature. In particular, Ivanova (2021) assumes that, firstly, there is a novation based on the idea, and then the latter is implemented and becomes a novelty. The author proposes considering innovations only those novelties that are effective and based on intellectual property rights. Altshuler and Behn (1997) support similar views, considering 'innovation as an intended novelty in action.'

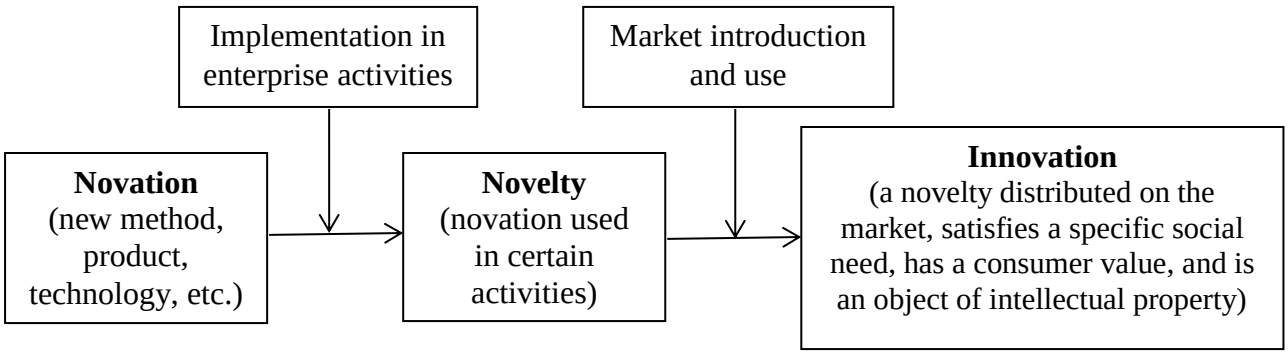
Thus, we can assume that not everything new is an innovation, although the latter is inherent in scientific and technological novelty. In our opinion, Schumpeter had a meaningful view on this issue. He noted that a new product, technology, or

method is not itself an innovation; it becomes an innovation when the company first implements them for itself.

In some scientific studies, innovation is associated with ‘invention’ and ‘improvement’. In this regard, Marchenko and Saienko (2016) note that innovation is a more capacious definition. In particular, the author also points out that any invention or improvement (for example, equipment refinement) will be an innovation only if it is included in the production process and will have a visible economic effect. Thus, innovation is also characterized by production applicability.

Prygara (as cited in Starostina et al., 2017) and Ilyenkova (1997) also highlight the third characteristic of innovation: the ability to commercialize. This opinion supports and Shestakov (2018). He considers innovation implementation if the latter is introduced into production and has market demand. In this case, a positive effect is obtained by the producer (when the technology changes), the consumer of innovation (renewal or improvement of products), or both, and hence the whole economic system.

Thus, based on the above study, we created a scheme presenting the differences between 'novation', 'novelty', and 'innovation'. Picture 1.1 represents it.



*Picture.*1.1. **Relationship between 'novation', 'novelty', 'innovation' categories**

Source: developed based on Ivanova (2021); Shestakov (2018); Starostina et al. (2017)

Before constructing our definition, we will consider another approach to the innovation components withdrawal, proposed by Mykytyuk (2015). According to

them, the concept includes four elements: creativity (ability to generate new ideas), strategy (finding out the novelty and usefulness of the thought in terms of enterprise development), implementation (transition from a new and beneficial idea to its execution in the form of specific products and services) and profitability (maximizing the value of the final product or service derived from the implementation of a new and profitable idea). Authors note that profitability can manifest in practice in different ways: as a financial gain, as an increase in the employees' morale and corporate solidarity, or as a contribution to society.

Theoretical generalization of foreign and domestic scientists' research on the issue allowed us to develop our interpretation and clarification of the basic concept of innovation. So, innovation is a strategic result of innovation and creative activities aimed at transforming a particular object of management, characterized by scientific and technological newness, industrial applicability, and the ability to be commercialized, to realize the economic interests of economic entities and the possible achievement of social, environmental or other effects.

In this definition, we have taken into account certain shortcomings, which, in turn, allowed us fully reveal the basic idea of innovation. First, we noted that innovation is based on a strategy that includes several stages and enables turning a new idea into an innovation. Secondly, we emphasized the equivalence of the concept originating both from the innovation activity (creation, use, and dissemination of novelties) and human creativity. Thirdly, we have specified the main features of innovation. Finally, the emphasis stood on the fact that innovation primarily satisfies economic interests (but not only the company's interests – also consumers' ones, whose needs innovation meet). At the same time, other types of effects are created as a result of the innovation application and dissemination, but do not necessarily have a place to be.

1.2. Peculiarities of innovation marketing in the market of high-tech products

Innovation should be considered inseparable from the innovation process, which is the consistent transformation of a new idea into an innovation. It includes some interrelated stages that allow turning a new idea into an object of intellectual property, bringing it to practical use to obtain a specific sort of effect. At the same time, although innovation increases the company's competitiveness and makes it possible to ensure the profitability of its activities by meeting new market needs, market 'support' of innovation remains an underdeveloped area of research (Komarist & Aldokhina, 2012). Therefore, developing and commercializing new goods is still a difficult task. In particular, numerous new products launches annually, but commercial success reaches no more than 25% (Sumets, 2006). At the same time, 75% of such market failures are mainly due to market factors.

Thus, special attention is devoted to innovation marketing, which enables solving market analysis problems for new products, demand formation, and stimulation, innovation promotion in the market, etc. In particular, Kuharskaja and Novoshinskaja (2016) believe that the innovation marketing concept is the basis of the entire marketing department, market research, and search for competitive strategy.

Remarkably, concepts of 'innovation marketing' and 'innovative marketing' can be found in scientific works. However, they are not identical. In this regard, Ermakova, Belotcerkovetskaya, and Ivanchenko (2014) conducted a study that found that innovation marketing includes the use of traditional tools, technologies, and marketing techniques to promote innovation in the market. Instead, innovative marketing involves new tools usage, technologies, and marketing techniques to foster new or existing goods (services) on the market.

In addition, the main feature of innovation marketing, unlike traditional marketing, is that the former does not work with a 'real' product, but with an idea, an innovation. The challenge is to reveal whether the given idea or innovation will bring sufficient profit to offset the cost of supporting the innovation (Andrew, Sirkin, &

Butman, 2007). In addition, it is important to note that product innovations are implemented through the development of an innovation marketing strategy.

In turn, innovative products form a peculiar market for science-intensive and technical goods. We offer to call it the market of high-tech products. According to Davlyatova and Kurpayanidi (2020), its peculiarities, compared to the market of 'traditional' products, are various and impact many aspects of the company-consumer relationship. It, accordingly, needs consideration when developing marketing activities of the enterprise (Zhurylo & Kochkina, 2011). Specifics of the market of high-tech products include:

- product uniqueness, its technological complexity, high production costs at the development phase;
- unknown product for the market (and, sometimes, also the manufacturer);
- unpredictable consumer behavior;
- a market or segment novelty for the company;
- the absence or lack of strategic competitors, since the new high-tech product is protected by intellectual property rights.

Worth noting that the problem of potential consumers' unpredictable reactions to a new product or service can appear in any market. However, this feature is principally influential in the market of high-tech products. In particular, there should be an appropriate preparation of potential consumers before introducing an innovative product to the market. Otherwise, it could fail (Mohr & Shooshtari, 2003).

So, the features of the market of high-tech products specify the peculiarities of innovation marketing in it. Brad (2007) defines the latter as follows:

- innovative products should not only satisfy needs in a new way. They should also deliver extra benefits, understandable to potential consumers, compared to existing substitutes;
- often, the technical sophistication of innovative products signifies offering an after-sales service;

- the real advantages and potential benefits of an innovative product should be presented in a complex to uncover all its specifics and introduce the product in the best way;
- while promoting innovative products to the industrial goods market, one should note that company-buyer in such market usually form a decision-making unit that includes various people performing different roles in the purchasing process;
- since innovative, high-tech products are goods of preliminary choice, they are subject to prolonged negotiations before a client would make a purchase decision in the industrial goods market. This process involves consulting and discussions within a decision-making unit.

At the same time, an innovation-oriented enterprise chooses a specific innovative development model and builds innovation processes. The selected model becomes the basis for further innovation marketing strategy and management mechanism development. Among the innovative development models of a modern enterprise (Nagachevska & Prygara, 2018), the theory of ‘open’ innovations is notably popular. It states that companies should focus on the external environment to stimulate innovation instead of concentrating on innovation using internal potential. Thus, the external environment analysis provides an idea of new market needs or new technologies that exist in the market.

Thus, innovation marketing has some features in the market of high-tech products. It can be considered a constant response to changes in the company’s macro- and micro-environment as one of the most vital tools to increase its competitiveness. The result is new opportunities in new, growing, or competitive markets. In addition, enterprises need to increase innovation efficiency in a dynamic, highly competitive business environment and accelerate scientific and technological development. In this study we will analyze the segment of the market of high-tech products, namely the AgriTech market.

Chapter 1 Conclusions

Chapter 1 reveals the theoretical basis of innovation marketing strategy formation in the market of high-tech products. As a result, we have drawn the subsequent conclusions.

Innovation is a strategic result of innovation and creative activities aimed at transforming a particular management object to realize the economic interests of economic entities and the possible achievement of social, environmental, or other effects. In addition, innovation is characterized by scientific and technical newness, the ability to be materialized for use in production or other activities, and the ability to be commercialized.

In the market of high-tech products, innovation marketing has quite specific features. So, the negotiation process with a potential buyer is long since the procurement process involves not one person but several people that form a decision-making unit. In addition, innovative products should also offer additional advantages which are understandable for consumers over existing alternatives. However, not all innovative solutions mean guaranteed success as the significant influence exerted by changing business environment. Therefore, efforts to implement and disseminate innovation will have a positive, cost-effective effect but only provided that efficient marketing activities embody an innovation marketing strategy.

CHAPTER 2
COMPETITIVE POSITIONS OF UKRAINIAN SECURITY SYSTEMS MANUFACTURERS IN THE ITALIAN AGRITECH MARKET

2.1. Microenvironmental opportunities and threats

In the first chapter, we considered the theoretical basis of innovation and the importance of innovation marketing in the current environment. This chapter will assess the influence of micro factors of the international business environment on the Ukrainian manufacturers of security systems. We will perform it on the example of Ukrspetstechnika, which has one of the leading positions in the Ukrainian telecom and electronic technology market (Holding Company Ukrspetstechnika, 2022).

Strategic analysis of Ukrspetstechnika's competitive positions in the security systems international market will begin with conducting a national market selection using the filter model (Kanishchenko, 2004). It will help identify attractive segments for the further analysis of market threats and opportunities.

Firstly, we will determine the general direction of Ukrspetstechnika's external activities expansion. So, we have already identified some macro-segments that are the possible spheres of security systems application. We offer to name this a 'zero criterion' (Table 2.1).

The industry criterion will start the preliminary assessment of the macro-segments attractiveness. Prior research has shown that the main reasons to choose the agricultural industry are the following.

Firstly, due to the peculiarities of using radar security systems, the area for surveilling must have line-of-sight zones. There should be a maximum absence of local objects and power supplies; no power networks, communication antennas, metal objects, or concrete walls in the district 100 meters from the security system. Such type of terrain is most typical for agriculture. Such type of terrain is most typical for agriculture.

Secondly, as a substitute product, security systems should provide potential users with greater efficiency than usual methods of the adjacent territory surveillance.

Table 2.1

Macro-segmentation of the security systems international market

Segmentation criterion	Segments
Industry (by application)	*Agriculture:* agro-industrial holdings, farms, etc.
	Critical infrastructure: power plants with all their facilities.
	Airport perimeter security: enterprises and organizations for the operation and maintenance of civil aviation; airports, air squadrons, independent airports, civil aviation agencies.
	Other: companies with their own open-type warehouse network.
The nature of consumption	*To secure and surveil the adjacent territory:* • pastures, gardens, fields, farms, etc. (agriculture); • strategic facilities (electric power engineering); • air squadrons (air transportation); • open-air warehouses (others).
Geographic region	*Europe*
	East Asia
	Middle East (Arabic countries)

Source: developed based on the author's research (industry taxonomy based on MarketsAndMarkets, 2020)

Therefore, the adjacent territory should occupy many hectares as the principal radar security system advantage is its range of nearly 10 kilometers. According to Lowder, Sánchez, and Bertini (2019), farms of less than 2 hectares are considered small ones.

Thirdly, the form of business ownership is preferably a private one since state formalities do not limit such companies. Therefore the process of negotiations might be conducted only with the business owner and other persons who form a decision-making unit. According to Skoet, Lowder, and Raney (2016), most of the world's more than 570 million farms are family-owned, and family farms operate about 75% of the world's agricultural land.

Finally, a segment being attractive for a company must be sufficiently large in terms of potential clients. In 2019 there were about 608 million farms globally (Lowder et al., 2019).

Next, we will assess which geographic region will be the most attractive for Ukrspetstechnika. We constructed Table 2.2 for this purpose.

The need to consider physical terrain as a criterion in Table 2.2 is due to the peculiarities of using radar security systems. Namely, the monitored area must be

Table 2.2

A preliminary assessment of the geographic regions' attractiveness

Criterion	**Geographic region**		
	Europe	*East Asia*	*Middle East*
Export and delivery capabilities	Comparatively easy delivery through European single market	Difficult delivery due to the need to cross many state borders	Ukrspetstechnika is already working there through intermediaries (supply for military purposes)
Physical terrain	Relatively flat terrain with some hills and mountains	Quite a mountainous territory which limits the possibility to use radar security systems	Hilly terrain interspersed with flatland
Agriculture potential	Many countries with powerful agricultural facilities	Huge agriculture areas are only in China	Almost no areas for agriculture
Average farm size	21,3 hectares	1,5 hectares	3,6 hectares
Number of agriculture enterprises	4% out of all the farms worldwide	9% out of all the farms worldwide (35% in China)	3% out of all the farms worldwide

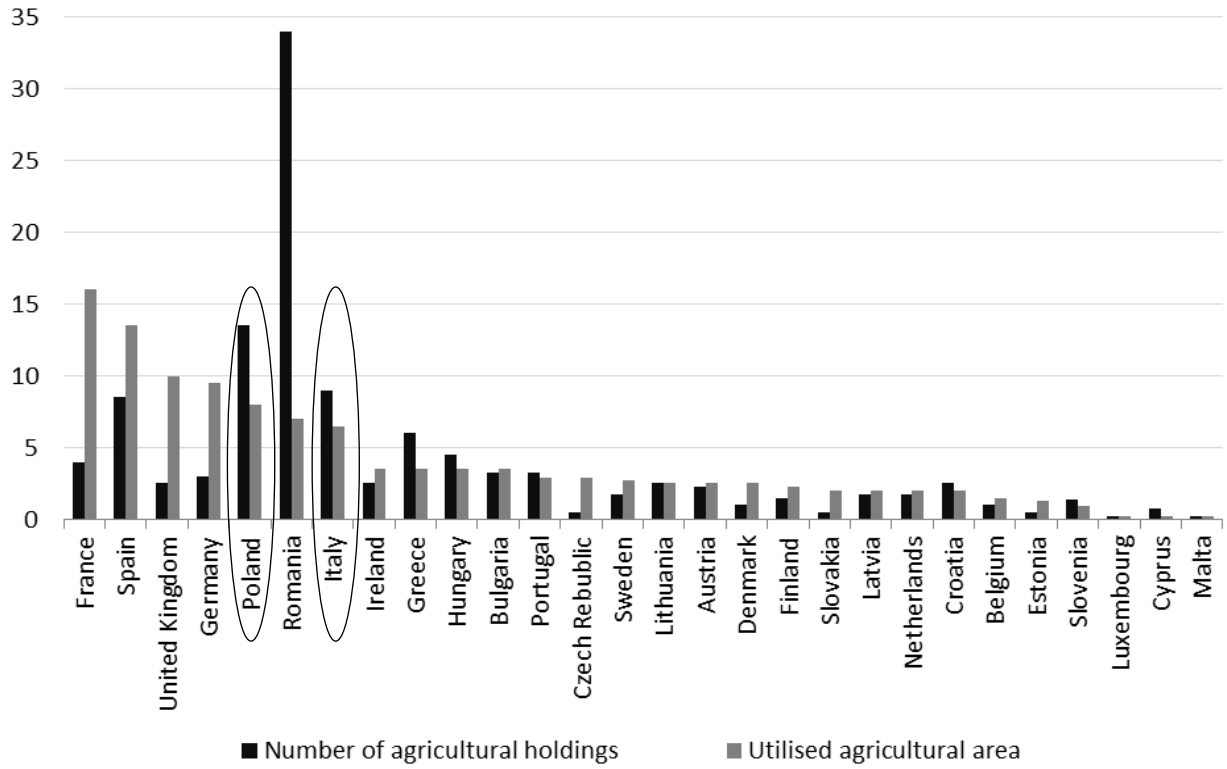
Source: developed based on the author's research (agricultural data based on Lowder et al., 2019; Skoet et al., 2016)

predominantly a flatland. Thus, based on the preliminary comparative analysis, we revealed that West Europe is the most suitable vector for Ukrspetstechnika external activities expanding.

Next, we will define the most attractive countries in Europe in terms of potential clients in the agricultural industry. Picture 2.1 shows the farm structure statistics from the European Commission.

As seen from the picture, France and Spain had the largest share of the EU agricultural land (15.9 % and 13.3 %, respectively). By contrast, the most such holdings are in Romania (3.6 million), one-third (33.5 %) of all farms in the EU. Poland had the second-highest share of agricultural holdings (13.2 %), slightly ahead of Italy (9.3 %).

Thus, based on the preliminary assessment, we determined that the most attractive security systems national markets are Poland and Italy. These countries have an optimal ratio of agricultural facilities (especially Italy with its wine produc-



Picture 2.1. **The number of agricultural holding and utilized area in share within all EU countries in 2019**

Source: developed based on European Commission (2019)

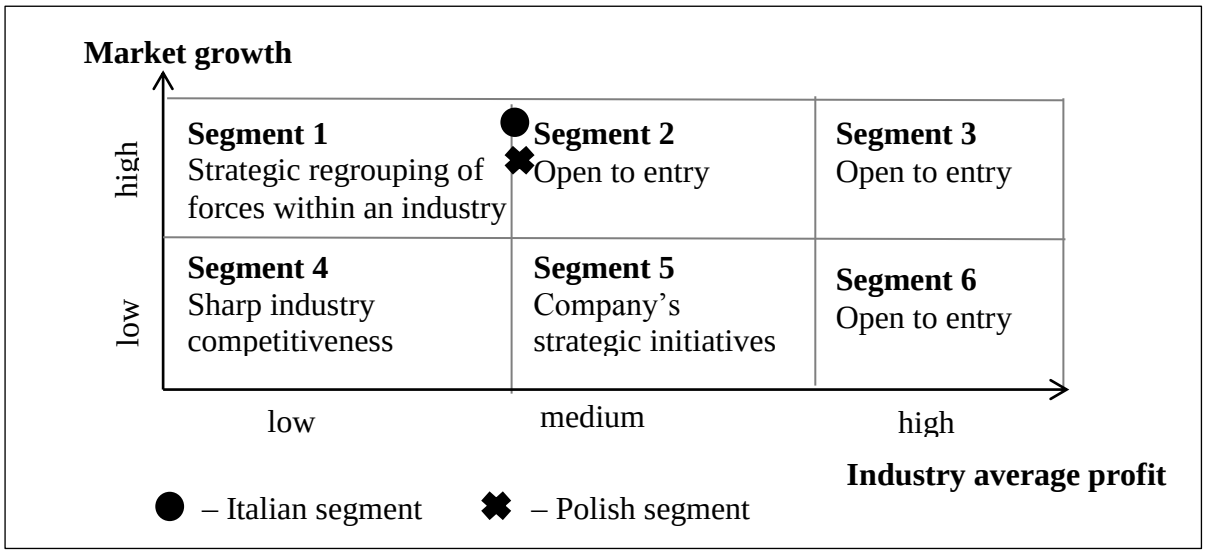
tion) as they have many agricultural holdings with large agricultural areas. When referring to these two segments, we offer to call them AgriTech markets. So, next, we will conduct a strategic analysis of their attractiveness and Ukrspetstechnika competitiveness in them.

Assessment of the company's competitive positions in the two defined segments will begin with the micro-environment analysis. It will help assess the data of security systems national markets and determine which of them is the most promising for the Ukrspetstechnika future.

We used the Five Forces model to analyze the micro-environment opportunities and threats (Porter, 1979). Overcoming competitive threats involves developing a strategy based on building a two-dimensional matrix to assess the strength of each threat (Kochkina, 2019).

First, we will analyze the competitive rivalry within an industry. There is no data on the average profit in the Italian and Polish Agritech markets. Nevertheless,

some reports give expert analysis and global forecasts of the market growth to 2025. So we can assume that the market average profit is medium. Picture 2.2 reflects the competitive rivalry within the industry.



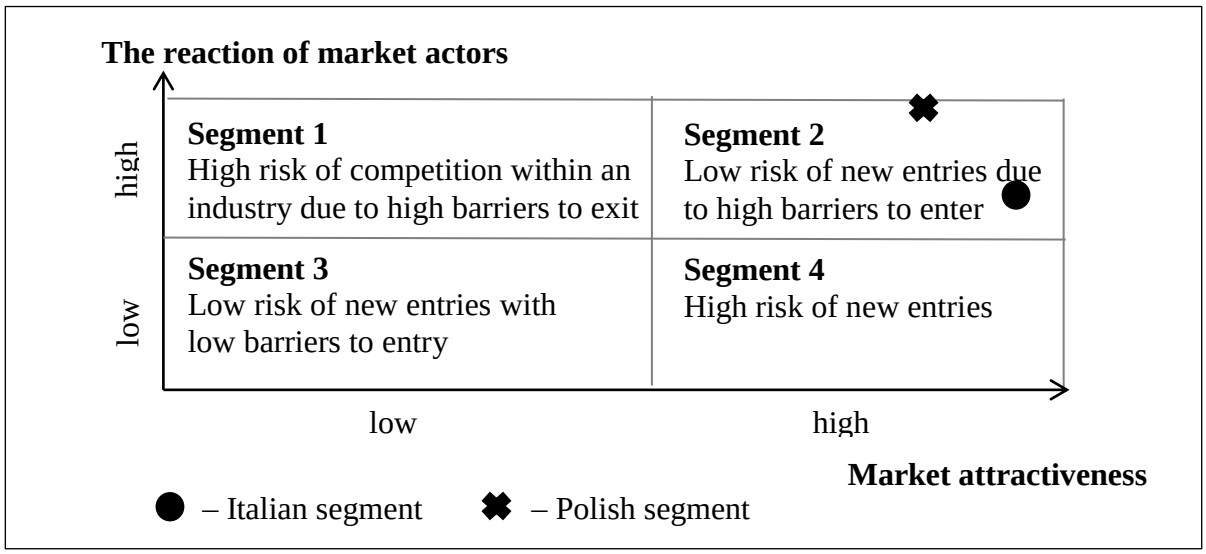
Picture 2.2. **Competitive rivalry within the global radar security systems market**

Source: developed based on the author's research

We carried out the preliminary assessment for the above matrix on a set of parameters, each of which got a current evaluation score from 0 to 10, where 10 was the highest point. It can be seen in Appendix 1 (Table 1.1). According to the research by MarketsAndMarkets (2020), the radar security systems market is classified into commercial, military, homeland security, and others based on the radar applications. The commercial segment promises to be the fastest-growing segment up to 2025, owing to the increased demand for replacing conventional air traffic control units with technologically advanced radar-based air traffic control units. Thus, Picture 2.1 shows that both segments have a medium competitive rivalry level within the security systems market. Nevertheless, the Polish AgriTech market is comparatively less competitive than the Italian one.

We analyzed the threat of new entrants (Picture 2.3). The preliminary assessment can be seen in Appendix 1 (Table 1.2).

Thus, the picture shows that both Italian and Polish AgriTech markets are in segment 2. They are attractive for competitive attacks, but the reaction of market actors in the industry differs. So, the willingness of existing players to lower prices is



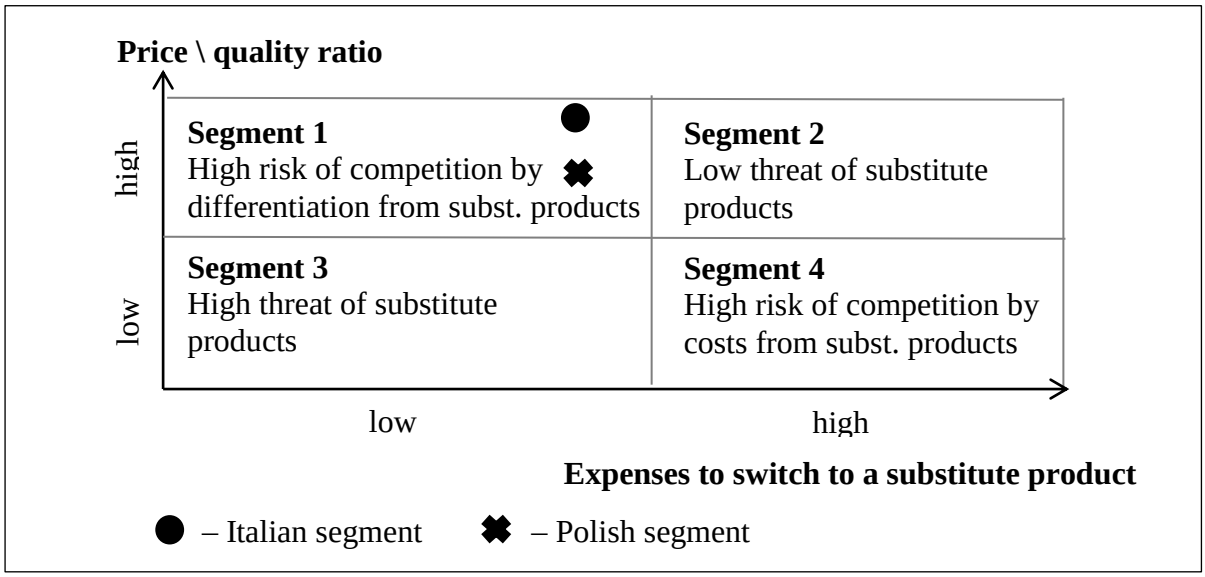
Picture 2.3. **The threat of new entrants in the global radar security systems market**

Source: developed based on the author's research

comparatively higher in the Polish segment. At the same time, Italian companies will potentially show less readiness to lower prices if there is a cheaper offer (Appendix 1, Table 1.2). Thus, only companies with significant financial resources, experience, and reputation can risk entering such a market. These are usually businesses that hold leadership positions in other industries and try to diversify their market activities by entering new attractive and profitable markets (as Ukrspetstechnika).

We analyzed the threat of substitute products in Picture 2.4. The preliminary assessment can be seen in Appendix 1 (Table 1.3).

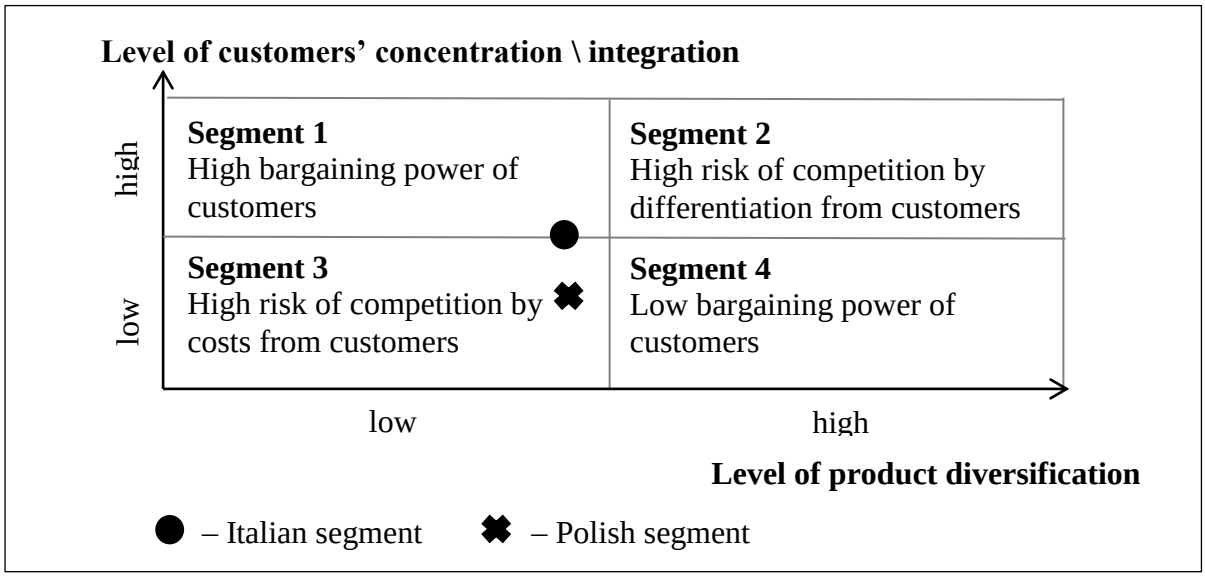
Thus, the picture shows that both Italian and Polish AgriTech markets are in segment 1. It is characterized by the competitiveness of the product offer with low expenses of switching to a substitute product. In particular, the radar security systems satisfy the need to monitor the adjacent territory. However, this need can be also satisfied by hiring security guards or installing technical devices (e.g., video surveillance cameras, motion sensors). Maintaining a market position in this segment requires more differentiation of marketing efforts to create a unique value for the consumer, who should understand what he is paying for.



Picture 2.4. **The threat of substitute products in the global security systems market**

Source: developed based on the author's research

As the radar security systems are not presented yet in two defined potentially attractive segments, it was not possible to conduct a preliminary assessment of the bargaining power of customers as in previous cases. Nevertheless, we analyzed this force in the matrix form (Picture 2.5).



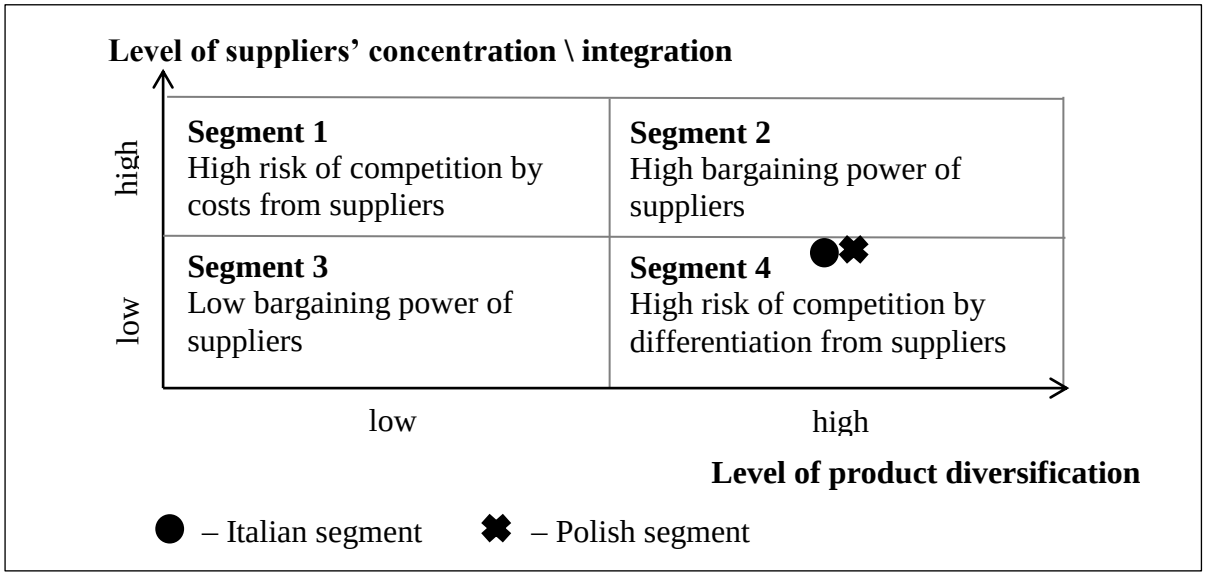
Picture 2.5. **Bargaining power of customers in the global radar security systems market**

Source: developed based on the author's research

Thus, Picture 2.5 shows that both Italian and Polish AgriTech markets are in segment 1. So, the products are standardized, but the level of customer integration differs a bit. Namely, Poland uses outdated radar equipment and, therefore, potential users are more likely to agree to purchase a new one without dictating the conditions so much. Nevertheless, customers require a price decrease.

Ukrspetstechnika has its production facilities in Ukraine, and the company uses the services of national suppliers. For the radar security systems production, the company needs three groups of suppliers: for purchasing materials and components and receiving additional services. Moreover, in terms of the number of purchases, accessories make the largest share, while supplemental services are the smallest one. Therefore, we used an ABC analysis (Flore & Whybark, 1987) for preliminary assessment (Appendix 2).

As a result of the ABC analysis, we can conclude that the average market power of suppliers is medium. Since the suppliers are Ukrainian, the position of Italian and Polish segments on the matrix of bargaining power of suppliers will be the same (Picture 2.6).



Picture 2.6. **Bargaining power of suppliers in the global radar security systems market**

Source: developed based on the author's research

The specifics of Ukrspetstechnika activity in Ukraine imply that sales are made exclusively through direct sales. Moreover, in 2019 the company received a permit to export goods of its production, while, previously, it worked with foreign customers through the State Company Ukrspetsexport (Holding Company Ukrspetstechnika, 2022). Therefore, it is impossible to build a matrix of bargaining power of intermediaries. Potential intermediaries include transport companies that will deliver products to consumers. However, Ukrspetstechnika also has its transport service.

Thus, we analyzed micro-environment threats to the two segments within the radar security systems market through Porter's Five Forces model. To conclude, we compiled Table 2.3.

Table 2.3

Final assessment of the microenvironmental opportunities and threats

№	Factor	Evaluation criteria			Current evaluation	
		Low (0,0-3,3)	Medium (3,4-6,6)	High (6,7-10,0)	Italy	Poland
Market threats						
1.	The threat of substitute products	in segment 2	in segment 1, 4	in segment 3	7	8,5
2.	The threat of new entrants	in segment 3	in segment 1, 2	in segment 4	7	8,0
3.	Bargaining power of customers	in segment 4	in segment 2, 3	in segment 1	5	4,5
4.	Bargaining power of suppliers	in segment 3	in segment 1, 4	in segment 2	4	4,0
5.	Competitive rivalry within the industry	in segment 2, 3, 6	in segment 1, 5	in segment 4	4	3,5

Source: developed based on the author’s research

As the table reveals, substitute products pose the greatest threat among microenvironmental factors since Ukrspetstechnika plans to offer a modernized product that will be an innovation for the new markets. The second most influential force is the threat of new entrants, as existing companies can also enter the newly created market. All of this emphasizes the importance of innovation marketing strategy formation.

2.2. Macroenvironmental opportunities and threats

As part of the macro-environment analysis of Ukrspetstechnika, we will identify opportunities and threats for the two attractive segments identified in the previous paragraph – the Italian and Polish markets of radar equipment.

We will analyze four groups: political and legal, economic, social, and technological factors. For each of these groups, a series of tables will be constructed (Starostina, 2012, 2021). Due to the specifics of Ukrspetstechnika, environmental factors do not affect this business.

First, we will analyze the influence of political and legal factors on the macro-environment (Table 2.4). See the preliminary table in Appendix 3 (Table 3.1).

1. The need for dual-use goods to comply with NATO standards

Dual-use goods fall under NATO international standards. The Law of Ukraine on amendments to the Constitution of Ukraine (on the state strategic course to gain full Ukraine membership in the European Union and the North Atlantic Treaty Organization) and the order of the Cabinet of Ministers on approval of the defense industry strategy for Ukraine by 2028 both envisage the implementation of NATO standards in the defense industry.

Although compliance with NATO standards is not for the product import into the EU, it is often a prerequisite for selling products in the EU. In addition, the EU has a regulation that obliges all organizations involved in the development and production of dual-use goods to comply with the requirements of the NATO Standardization Agreement (STANAG 2345; 4193; 4691; 5066).

This factor is defined as an opportunity for Ukrspetstechnika. It affects the supply, as the company will be able to search for customers abroad and export products, as its security systems will meet international standards. The current evaluation in both segments is 7.

2. Export control of dual-use goods

An essential aspect of interstate cooperation between different countries in the uncontrolled distribution of dual-use goods prevention is the participation in international export control regimes. Export control is mandatory for this group of

Table 2.4

Final assessment of political and legal factors of the macro-environment

№	Factor	Evaluation criteria			Current evaluation		How to overcome threats or use possibilities
		Low (0,0-3,3)	Medium (3,4-6,6)	High (6,7-10,0)	Italy	Poland	
Market threats							
1.	The need to obtain an export license	no expiration date	valid for a certain period of time	valid for one export operation	9	9	developing the innovation marketing strategy
2.	Export control of dual-use goods	standard export procedure	a number of additional procedures	many additional procedures	7	7	developing the innovation marketing strategy
3.	The lack of automated information systems in the Ukrainian export control	do exist	under development	do not exist	5	5	improving public relations strategy
4.	Acceleration of recognizing Ukraine as a candidate for EU accession	receiving a candidate status within a year	receiving a candidate status within half a year	receiving a candidate status within two months	4	4	developing the innovation marketing strategy
Market opportunities							
1.	The need for dual-use goods to comply with NATO standards	do not comply	partially comply	fully comply	6,5	6,5	entering the international AgriTech market
2.	Dependence on the government defense contracts	mostly manufacture for commercial and other sectors	manufacture for defense contracts and some other sectors	manufact-ure only for defense contracts	5	7	developing the innovation marketing strategy

Source: developed based on the author's research

products, regulated by EU law, and has a direct effect throughout the EU (Halaka, Hryshutkin, Kondratov, & Perepelytsya, 2013). The EU export control regime includes:

- common rules on exports and imports: in the EU, the crucial piece of legislation on export control of dual-use items is Council Regulation (EC) №

428/2009 (The Council of the European Union, 2009). It is also called EU Dual-Use Regulation;

- Lists of Dual-Use Goods: the Regulation mentioned above establishes lists of specific types of dual-use items for which a company must obtain a license before export (referred to in the Regulation as a 'permit'). According to Annex 1 of the Regulation, radar equipment is in Category 6A008 (Radar systems, equipment, and assemblies);
- customs control (Vlasenko, 2018);
- consultations mechanism including online one in the form of automated information systems for export control.

This factor is defined as a threat for Ukrspetstechnika and affects the supply, as it creates restrictions on the possibility of free export-import operations. The current evaluation in both segments is 7.

3. The need to obtain an export license

Article 3 of Council Regulation (EC) № 428/2009 states that exports of such goods from the EU, listed in Annex 1, require an export license. The responsibility for making decisions on the issuance of such permits rests with the national export control authorities of the EU Member States. However, no license is required if the product is in Annex 1 and the company exports to the EU (Minotti, 2016).

However, on October 19, 2018, the Unified List of Dual-Use Goods entered into force in Ukraine, introduced to harmonize national legislation with the norms and standards of the European Union (Cabinet of Ministers of Ukraine, 2019). Now Ukrainian businesses that intend to make international transfers of dual-use goods must obtain an export license from the State Service of Export Control.

This factor is defined as a threat to Ukrspetstechnika and affects the supply, as it requires additional costs for registration and issuance of documents. The current evaluation in both segments is 9.

4. The lack of automated information systems in the Ukrainian export control

The leading position of the EU in the export control for dual-use goods is supported by building automated information systems. The latter facilitates the

activities of regulatory authorities and the issuance of international certificates and creates electronic services to verify whether the product is subject to export authorization.

We define this factor as a threat to Ukrspetstechnika. The factor affects the supply, as it imposes a long period of application consideration for registration and obtaining a permit to export products. The current evaluation in both segments is 5.

5. Dependence on the government defense contracts

For the companies that produce radar equipment, the government establishes what product positions and in which quantities they have to manufacture next year to fulfill the country's defense needs. Previously, due to COVID-19, some governments have put restrictions that decreased the demand for new defense agreements. However, now defense spending is increasing due to the economic recovery. Namely, Poland plans to 'increase defense spending to 3% of GDP from 2023' (Popescu, 2022. A supreme boost to its defense budget has also been announced in Italy (Lanzavecchia, 2022).

Thus, the factor affects the supply and is defined as an opportunity for Ukrspetstechnika since it provides limited abilities for competitors to work with the AgriTech market due to the fixed load of production capacity. In response, the company needs to develop an innovation marketing strategy. According to the information mentioned above, the current evaluation in Italian and Polish segments differs.

6. Acceleration of recognizing Ukraine as a candidate for EU accession

At the beginning of April, European Parliament President Roberta Metsola and the Chairman of the Ukrainian Parliament Verkhovna Rada Ruslan Stefanchuk held a joint briefing. Metsola assured Ukraine of gaining a candidate for EU accession officially and quickly. In addition, they will assist the country in rebuilding after the war (Censor.NET, 2022a).

This factor is an opportunity for Ukrspetstechnika, as Ukraine will receive full membership of the EU single market (Censor.NET, 2022b). Moreover, after Ukraine accedes to the EU, the export procedure will become simpler and faster. The

company should develop an innovation marketing strategy to take advantage of this opportunity.

Next, we will analyze the influence of economic factors on the macro-environment (Table 2.5). See the preliminary table in Appendix 3 (Table 3.2).

1. The elasticity of demand in the AgriTech market

According to the classification of industrial goods and services, massive security systems refer to capital assets and fundamental equipment. Its prime characteristics are the high cost and long service life. Therefore, the demand for these products is inelastic (Dunne and Sköns, 2009). However, in the agricultural industry, lower price offers can be valuable criteria for choosing a manufacturer of security systems due to the lack of funds from potential customers.

This factor is an opportunity for Ukrspetstechnika, as its radar security systems cost less than competitors. Responding to this factor, the company needs to develop a positioning strategy and innovation marketing strategy in the AgriTech market.

2. A significant number of solvent farms

In 2020 the average economic dimension for Italian farms was 45,000 euros (Research Center for Agricultural Policies and Bioeconomy [CREA], 2021). In 2021, about 6.5% of the total number of Polish farms had an income of more than 50,000 euros (European Commission, 2021).

However, given the world economic downturn due to the COVID-19, this situation may change significantly. On the other hand, the population needs food, so agricultural holdings will likely remain solvent. Therefore, this factor is defined as an opportunity for Ukrspetstechnika and affects demand. The company should develop an innovation marketing strategy for the AgriTech market in response to its actions.

3. Unavailability of loans for small businesses

Due to high-interest rates, private companies rarely take out loans (Rozhkova, 2020). Thus, the owner has to buy expensive machinery and equipment at his own expense. For instance, in Italy, banks limit their loans for the agricultural sector to 1.4% in 2020 (CREA, 2021). Therefore, for Ukrspetstechnika, this factor is defined as a threat. It affects the demand, as it requires significant efforts to convince

Table 2.5

Final assessment of economic factors of the macro-environment

№	Factor	Evaluation criteria			Current evaluation		How to overcome threats or use possibilities
		Low (0,0-3,3)	Medium (3,4-6,6)	High (6,7-10,0)	Italy	Poland	
Market threats							
1.	Unavailability of loans for small businesses	can easily take a loan to pay for the purchase	can take a loan to pay for the purchase	no possibility to take a loan	7	7	developing the innovation marketing strategies
2.	Increasing demand for lightweight and compact security systems	less than two months for product adaptation	from two months and up to half a year for product adaptation	more than half a year for product adaptation	4	4	performing product innovations
Market opportunities							
1.	The elasticity of demand in the AgriTech market	pricing methods do not affect demand	pricing methods can partially affect demand	pricing methods affect demand	8	7	developing the innovation marketing strategies
2.	A significant number of solvent farms	< 10% of the total number of farms	10-25% of the total number of farms	> 25% of the total number of farms	7	6	developing the innovation marketing strategies
3.	Increasing demand for lightweight and compact security systems	1-3%	4-7%	> 7%	5	4	developing the innovation marketing strategies
4.	Possible global food crisis	no additional sowing	possible additional sowing	high probability of additional sowing	3	5	developing the innovation marketing strategies
5.	Recover of European countries' economies from COVID-19	recover of less than 3%	recover of 3-6,5%	recover of more than 6,5%	4	3,5	entering the international AgriTech market

Source: developed based on the author's research

company owners of the payback of radar security system purchases. As a reaction to the action of the factor, the company should develop an innovation marketing strategy.

4. Increasing demand for lightweight and compact security systems

Dual-use goods requirements for military applications include high operational efficiency, user-friendly advanced systems, compatibility to operate under various platforms, and a wide frequency band, which increases the complexity of the design. At the same time, the demand for lightweight and compact security systems (for commercial use) is growing (Fortune Business Insights [FBI], 2019).

On the one hand, this factor is an opportunity for Ukrspetstechnika and influences the demand since the product adaptation is needed to offer the agricultural industry new security systems. On the other hand, the company may face some problems with quick product adaptation. In this case, the factor influences the supply.

5. Recover of European countries' economies from COVID-19

In 2021 a substantial carryover effect had underpinned the Italian GDP rebound of 5.2%, followed by further growth of 2.6% in 2022 (Financial Times, 2022). At the same time, the Polish economy grew by 3.3% in 2021, but this rebound was weaker than previously anticipated (3.5%), reflecting the uncertainty surrounding the emergence of new strains of COVID-19 (The First News, 2022).

This factor has a positive impact on Ukrspetstechnika. However, it has not so much influence on the agricultural sector because, as noted above, farms continue to operate smoothly. Thus, responding to the action of this factor, Ukrspetstechnika can start entering the international AgriTech market.

6. Possible global food crisis

Ukraine is one of the largest exporters of grain and oil globally. However, carrying out a sowing campaign during the war is extremely difficult, sometimes impossible.

Firstly, this year, the area for sowing is reduced by about 20% due to mining by the enemy. Secondly, there is a labor deficit, as many agricultural workers went to defend the country. However, even if not all workers went to war, in some regions,

they are afraid to go out into the fields as active hostilities continue. Thirdly, there is a fuel problem. Ukraine received up to 75% of its diesel fuel from Belarus and Russia, which have already shut down their supplies. The available power source went to the needs of the army. Finally, grain is not exported at this time because the ports are blocked (Dykun, 2022). In this regard, the head of the UN World Food Program, David Beasley, said that the war in Ukraine is creating a catastrophe that affects global food and grain supplies (Nicas, 2022).

At the same time, this factor is an opportunity for Ukrspetstechnika, as additional sowing can be carried out in neighboring countries. It, in turn, will create a need to protect those fields. Therefore, the company needs to develop an innovation marketing strategy.

The current evaluation in the Polish segment is higher than in the Italian one, provided that Poland shares a border with Ukraine and its potential can be used for field sowing.

Next, we will analyze the influence of social factors (Table 2.6). See the preliminary table in Appendix 3 (Table 3.3).

1. Level of loyalty to domestic manufacturers

Different countries have various attitudes to foreign companies and their products. It could influence preferences on the purchase when the client chooses between national and foreign manufacturers. It could be a significant factor in the industrial goods market where each client is valuable. So, the factor is defined as a threat and affects the demand. To overcome it, Ukrspetstechnika should develop an innovation marketing strategy.

2. The importance of existing business relationships and reputation in the market

Given the specifics of radar security systems, we can say that purchase decisions by customers are durable and complex. Consequently, reputation can play a significant role in this process. In addition, customers tend to cooperate with companies from which they have previously purchased these products, as they may require mutual compatibility. Therefore, it is common to provide further orders from previous contracts. Thus, this factor affects demand and is a problem for

Table 2.6

Final assessment of social factors of the macro-environment

№	Factor	Evaluation criteria			Current evaluation		How to overcome threats or use possibilities
		Low (0,0-3,3)	Medium (3,4-6,6)	High (6,7-10,0)	Italy	Poland	
Market threats							
1.	Level of loyalty to domestic manufacturers	no significant preferences	clients may work with manufacturers from similar cultures	clients prefer to work only with domestic manufacturers	4,5	3,0	developing the innovation marketing strategy
2.	The importance of existing business relationships and reputation in the market	rely on some criteria when choosing a company	rely on recommendations and some criteria	acquiring new clients only through recommendations	4,5	4,5	developing the innovation marketing strategy
Market opportunities							
1.	Strengthening of the 'Made in Ukraine' brand	not willing to buy Ukrainian products	may give preference to Ukrainian products	much willingness to buy Ukrainian products	10	7	improving public relations strategy, entering the international AgriTech market
2.	The confidence increase in Ukrainian dual-use goods	will not buy Ukrainian security systems	may prefer to purchase Ukrainian security systems	prefer to purchase Ukrainian security systems	8	8	developing the innovation marketing strategy
3.	Level of harvest thievery	a few cases during one year	some cases during one year	many cases during the year	8	6	developing the innovation marketing strategy

Source: developed based on the author's research

Ukrspetstechnika, as competitors may already have an established base of regular customers and might receive new orders through recommendations.

3. Level of harvest thievery

Theft of crops is one of the problems faced in the agricultural sector. For example, according to Italian law, the theft of an unharvested crop is aggravated thievery. Thus, olives and pistachios are among the most stolen items in Italy

(Lecceprima, 2021; Venezia Today, 2020). This factor affects the demand and is defined as an opportunity, as some time is needed to establish a base of customers and start receiving new orders through recommendations. To use this opportunity, Ukrspetstechnika should develop an innovation marketing strategy.

4. Strengthening of the 'Made in Ukraine' brand

So far, the whole world has learned about Ukraine, given the Russian invasion of Ukraine. Many countries are willing to support Ukraine, including purchasing goods from Ukrainian manufacturers. Moreover, the image of the whole state is strengthening (Amica, 2022), which, in turn, is being transferred to products. Thus, 'Made in Ukraine' becomes a mark of quality. Today, 'Made in Ukraine' is a seal of courage, bravery, and courage (Segodnja, 2022).

Thus, the factor affects demand and is defined as an opportunity for Ukrspetstechnika since the company is a Ukrainian manufacturer. To use this opportunity, the company should improve its public relations strategy, develop an innovation marketing strategy and enter the international AgriTech market. So, since Poland is already helping Ukraine by accepting refugees, the Italian segment is more willing to help Ukraine by purchasing goods made in Ukraine (Amica, 2022). It explains the difference in current evaluations.

5. The confidence increase in Ukrainian dual-use goods

Ukrspetstechnika, apart from other products, produces radar equipment used for the border and air military surveillance. This product is a dual-use good and can also be used for civilian purposes. So, we offer Ukrspetstechnika to perform a product innovation and present it as a security system for the agricultural sector. Since the mentioned equipment has already effectively shown itself on the battlefield, it is additional evidence of the security system's effectiveness. The factor is defined as an opportunity and affects the demand. So, Ukrspetstechnika should develop an innovation marketing strategy.

Next, we will analyze the influence of technological factors on the macro-environment (Table 2.7). See the preliminary table in Appendix 3 (Table 3.4).

Table 2.7

Final assessment of technological factors of the macro-environment

№	Factor	Evaluation criteria			Current evaluation		How to overcome threats or use possibilities
		Low (0,0-3,3)	Medium (3,4-6,6)	High (6,7-10,0)	Italy	Poland	
Market threats							
1.	Advancement in surveillance technologies	no advancement in such technologies	increased investments in such technologies	state funding of such technologies	6	3	performing product innovations
Market opportunities							
1.	Advancement in border surveillance systems	no advancement in such technologies	increased investments in such technologies	state funding of such technologies	8	2	developing the innovation marketing strategy
2.	The tendency to create universal dual-use security systems	an only military segment of radar security systems appliance	some additional areas of radar security systems appliance	many additional areas of radar security systems appliance	7	4	developing the innovation marketing strategy

Source: developed based on the author's research

1. The tendency to create universal dual-use security systems

There is a tendency to use radar equipment to perform various functions: in the military segment, for homeland security, in the commercial, and others, based on the radar applications (FBI, 2019). For instance, short-range radar technology can be used to protect both the state border and apple orchards. Another example: a single system solves the problem of both control over the sovereignty of the country's airspace and management of civil aviation air traffic. So, the factor is defined as an opportunity for Ukrspetstechnika and affects demand. The company will perform an innovation marketing strategy to present radar security systems as a new way of farm perimeter surveillance.

2. Advancement in border surveillance systems

Border surveillance systems have evolved with time and are still undergoing some advancement. Portable ground surveillance radars for border security have enabled various countries to secure their borders more efficiently. According to an

article by Hautala (2019) published in CNET, the US government is considering a spending bill worth USD 100 million to fund the installation of the border surveillance systems.

Thus, this factor affects the supply and is defined as an opportunity, as competitors will potentially pay more attention to the border surveillance segment. To use this opportunity, Ukrspetstechnika should develop an innovation marketing strategy.

3. Advancement in surveillance technologies

There is an increasing demand from defense forces for technologically-advanced warfare systems. Research is conducted on technologies such as quantum radars and how they can be used for surveillance. According to an article by Lei (2018) published in China Daily, quantum radars transmit subatomic particles instead of radio waves when searching for targets. Therefore the investments are expected to significantly contribute to the growth of the surveillance radars market during the forecast period.

The factor affects both the supply and demand and is defined as a threat, as competitors will have more competitive advantages in terms of the level of technology. To overcome it, Ukrspetstechnika should also improve product characteristics by implementing the achievements of STP.

Next, the influence significance of each group of macro and microenvironmental factors in the Italian and Polish AgriTech markets was determined (total level of importance = 1). We distributed the weights depending on the number of factors in a particular group, their weight within each group, and the solution's complexity or problem implementation (Table 2.8).

From the given table, we can see that political and legal, and social factors of the macro-environment have the most significant influence, considering the rising awareness of Ukraine and the peculiarities of the dual-use goods export procedure. At the same time, technological factors are the least important. Customers' influence is the most important in the micro-environment.

Table 2.8

The importance of the influence of each group of macro- and micro-environment factors

Factor	Weight
Macro-environment	
Political and legal	0,35
Economic	0,25
Social	0,30
Technological	0,10
Total	**1,00**
Micro-environment	
Competitors	0,35
Customers	0,50
Suppliers	0,15
Total	**1,00**

Source: developed based on the author's research

To compile the final tables of market threats and opportunities, we applied weights to each group of factors, the total amount of which is 1. The factors whose weighted score is more than 1.4 we considered important ones (Tables 2.9, 2.10).

Table 2.9

Table of threats in the AgriTech market

№	Factor	W	Evaluation criteria			Italy		Poland	
			Low (0,0-3,3)	Medium (3,4-6,6)	High (6,7-10,0)	CE	WE	CE	WE
1.	The threat of substitute products	0,50	in segment 2	in segment 1, 4	in segment 3	7,0	3,50	8,5	4,25
2.	The need to obtain an export license	0,35	no expiration date	valid for a certain period of time	valid for one export operation	9,0	3,15	9,0	3,15
3.	The threat of new entrants	0,35	in segment 3	in segment 1, 2	in segment 4	7,0	2,45	8,0	2,80
4.	Export control of dual-use goods	0,35	standard export procedure	a number of additional procedures	many additional procedures	7,0	2,45	7,0	2,45
5.	Bargaining power of customers	0,5	in segment 4	in segment 2, 3	in segment 1	5,0	2,50	4,5	2,25

Continuation of table 2.9

№	Factor	W	Evaluation criteria			Italy		Poland	
			Low (0,0-3,3)	Medium (3,4-6,6)	High (6,7-10,0)	CE	WE	CE	WE
6.	Unavailability of loans for small businesses	0,25	can easily take a loan to pay for the purchase	can possibly take a loan to pay for the purchase	no possibili-ties to take a loan	7,0	1,75	7,0	1,75
7.	The lack of automated information systems in the Ukrainian export control	0,35	do exist	under develop-ment	do not exist	5,0	1,75	5,0	1,75

Source: developed based on the author's research

Table 2.9 reveals that major market threats to Ukrspetstechnika come both from macro and micro factors. In particular, the existence of substitute products causes the most substantial negative influence on the company since the radar security system satisfies the need for territory monitoring. However, this need can also be satisfied by hiring security guards or installing technical devices (e.g., video surveillance cameras, motion sensors, etc.).

Table 2.10

Table of opportunities in the AgriTech market

№	Factor	W	Evaluation criteria			Italy		Poland	
			Low (0,0-3,3)	Medium (3,4-6,6)	High (6,7-10,0)	CE	WE	CE	WE
1.	Strengthe-ning of the 'Made in Ukraine' brand	0,30	not willing to buy Ukrainian products	may give preference to Ukrainian products	big willingness to buy Ukrainian products	10,0	3,00	7,0	2,10
2.	The confidence increase in Ukrainian dual-use goods	0,30	will not buy Ukrainian security systems	may prefer to buy Ukrainian security systems	prefer to buy Ukrainian security systems	8,0	2,40	8,0	2,40
3.	The need for dual-use goods to comply with NATO standards	0,35	do not comply	partially comply	fully comply	6,5	2,28	6,5	2,28

Continuation of table 2.10

№	Factor	W	Evaluation criteria			Italy		Poland	
			Low (0,0-3,3)	Medium (3,4-6,6)	High (6,7-10,0)	CE	WE	CE	WE
4.	Level of harvest thievery	0,30	a few cases during the year	some cases during the year	many cases during the year	8,0	2,40	6,0	1,80
5.	Dependence on the government defense contracts	0,35	produce primarily for commercial and other sectors	produce for defense contracts and some other sectors	produce only for defense contracts	5,0	1,75	7,0	2,45
6.	The elasticity of demand in the AgriTech market	0,25	pricing methods do not affect demand	pricing methods can partially affect demand	pricing methods affect demand	8,0	2,00	7,0	1,75
7.	A significant number of solvent farms	0,25	< 10% of the total number of farms	10-25% of the total number of farms	> 25% of the total number of farms	7,0	1,75	6,0	1,50

Source: developed based on the author's research

Table 2.10 shows that the most significant market opportunities for Ukrspetstechnika are coming from social factors. So far, the whole world has learned about Ukraine because of the war. Many states wish to support the country.

Thus, the security systems market poses one more threat than an opportunity. The sum of market opportunities in the Italian AgriTech market (15.58 points) is more than in the Polish one (14.28). Moreover, the sum of market threats in the Polish segment (18.40 points) is more than in the Italian one (17.55 points). So, the Italian AgriTech market is more attractive and promising for Ukrspetstechnika than the Polish one.

2.3. Ukrspetstechnika's competitive and portfolio analysis

To identify companies that are the closest competitors for Ukrspetstechnika in the attractive segments, we will build strategic group maps for each one (Kochkina, 2019). Since the price of enterprises' products operating in the studied market is not subject to disclosure, a comparison by this criterion is impossible. The differentiation

parameters will be the width of the product line of competing radar security systems manufacturers and the object recognition range by the product (Table 2.11).

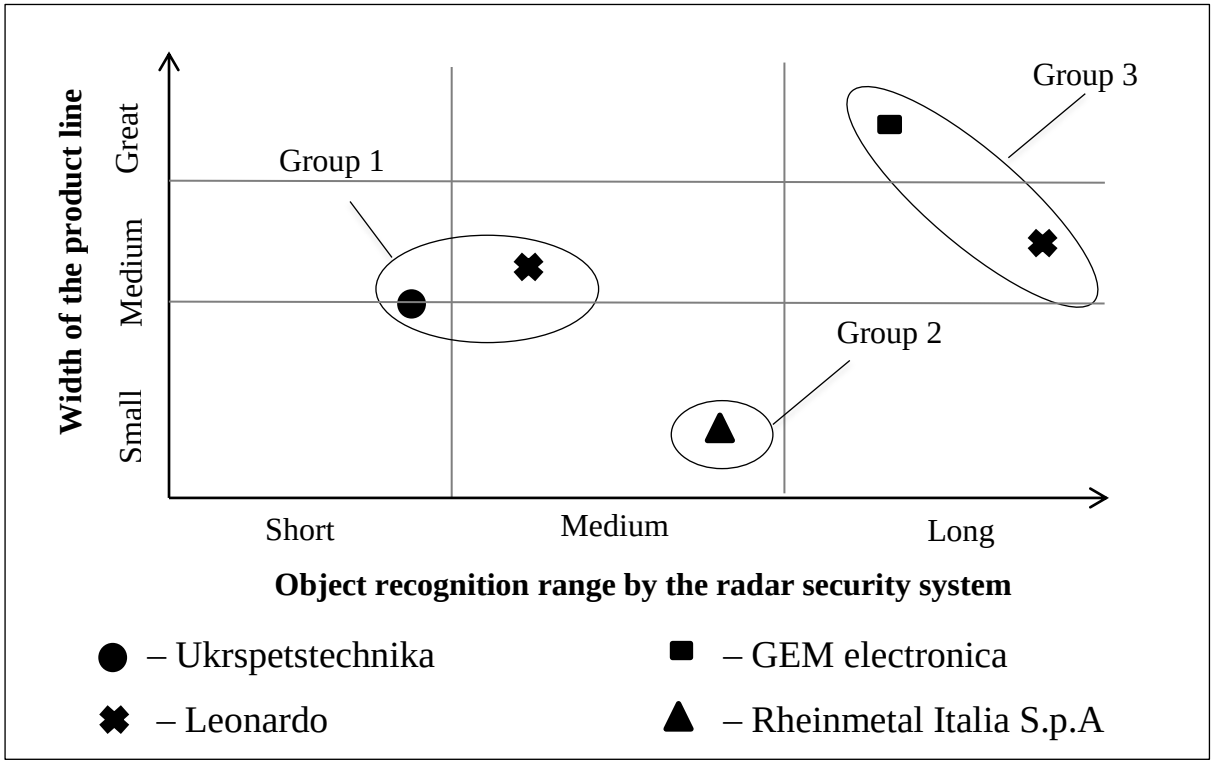
Table 2.11

Standardization of differentiation parameters of radar security system manufacturers in Italy and Poland

Parameter	Parameter value	Description of each parameter value
Width of the product line	Small	The company has less than one product
	Medium	The company has 2-3 products
	Great	The company has more than three products
Object recognition range by the radar security system	Short	Operates at a distance of < 20 km
	Medium	Operates at a distance of 20-40 km
	Long	Operates at a distance of > 40 km

Source: developed based on the author's research

After determining the values of each differentiation parameter, we built several strategic group maps for each of the two attractive AgriTech markets. Three strategic groups were identified in the Italian segment (Picture 2.7).



Picture 2.7. **Strategic group map in the Italian Agritech market by the width of the product line and object recognition range by the radar security system**

Source: developed based on the author's research

Group 1 includes two companies – Ukrspetstechnika and Leonardo. These manufacturers have a medium width of the product line with radar security systems that can detect objects at short to medium range. Moreover, this object recognition range is the most suitable for surveilling agricultural lands. As mentioned in Chapter 1, the latter rarely has such an area for efficient use of long-range radar security systems.

Only one company forms group 2 – Rheinmetal Italia S.p.A, which has a narrow product line and produces medium-range radar security systems. Group 3 includes GEM electronica and Leonardo. They both manufacture long-range security systems and have a relatively broad product line.

Thus, the main competitor for Ukrspetstechnika in the Italian segment is Leonardo, as manufacturers are in one strategic group. Determining this competitive position of Ukrspetstechnika is the basis for assessing its advantages and disadvantages and creating competitive advantages.

We analyzed the company's strengths and weaknesses profile compared to Leonardo in a table form (Kochkina, 2019). We developed a set of key parameters; each got a current evaluation from 1 to 10, where 10 is the highest score (Table 2.12).

The table reveals that Ukrspetstechnika loses to Leonardo in most positions because the Italian market of radar security systems is more developed. The weaknesses are the experience in the market, exporting, and reputation. It is important to note that these parameters have relatively high weights compared with other criteria. At the same time, the strengths of Ukrspetstechnika are product uniqueness and price level. These parameters have one of the highest weights, which in some way balances the situation in which the company has only one strength less compared to weaknesses compared to its key competitor in Italy.

There is an interesting situation in the Polish AgriTech market. Firstly, it has fewer radar security systems manufacturers than the Italian AgriTech market. Secondly, most companies do not even have a corporate website, so it disables finding the information about their activities.

Table 2.12

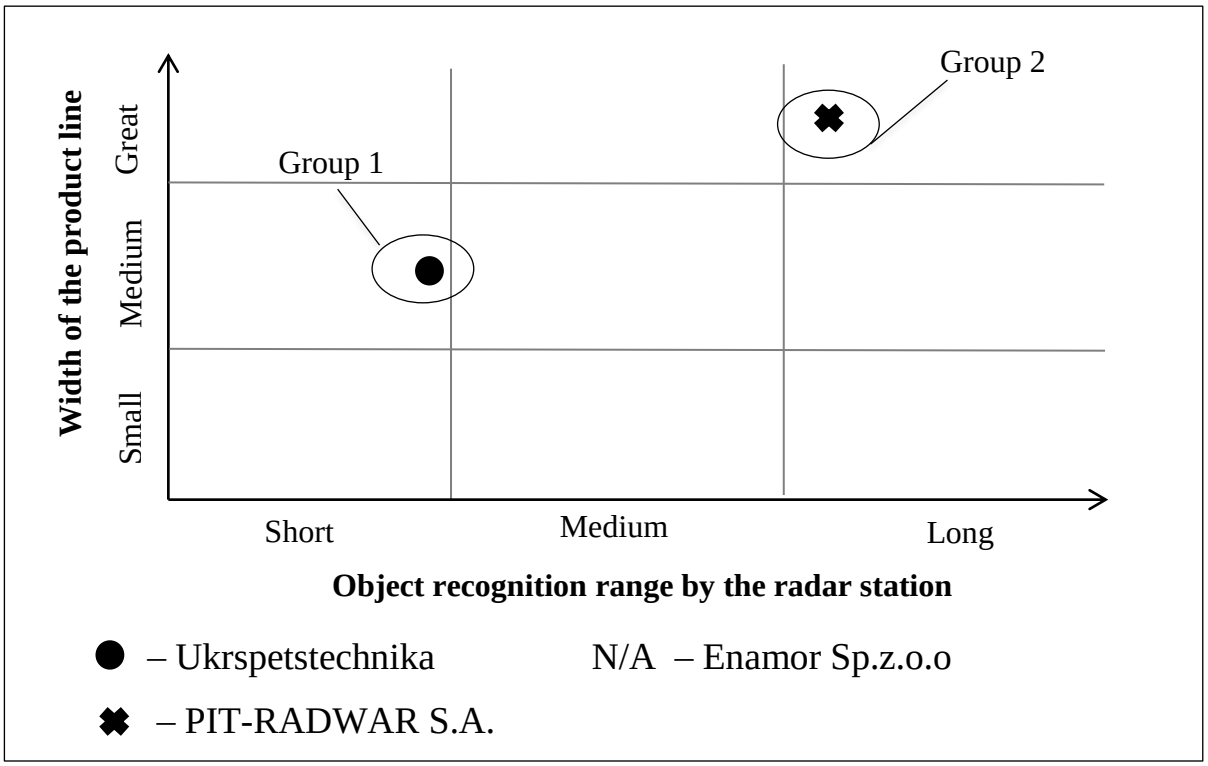
Profile of Ukrspetstechnika strengths and weaknesses in comparison to the main Italian competitor

Parameter	W	Evaluation criteria			Current evaluation										
		Low (0,0-3,3)	Medium (3,4-6,6)	High (6,7-10,0)	0	1	2	3	4	5	6	7	8	9	10
Product uniqueness	0,10	> 2 product-analogs	1-2 product-analogs	no product-analogs											
Experience in exporting	0,08	< 5 years	5-15 years	> 15 years											
Reputation in the market	0,10	known only in the local market	certain fame abroad	a world-renowned company											
Staff qualifications	0,06	< 70% of highly qualified employees	70-90% of highly qualified employees	> 90% of highly qualified employees											
Width of the product line	0,05	one product	2-3 products	> 3 products											
Experience in the market	0,09	< 10 years	10-25 years	> 25 years											
The effectiveness of product promotion	0,07	one promotion tool	2-3 promotion tools	all promotion tools											
Availability of effective sales channels	0,07	one sales channel	2-3 sales channels	> 3 sales channels											
Personnel training	0,04	less than once a year	several times per year	many times per year											
The level of technology	0,12	obsolete	mix	the latest											
Using the achievements of STP	0,09	with a significant delay	gradual	immediate											
Price level	0,13	higher	the same	lower											
Total	**1,00**														

Comment: Ukrspetstechnika Leonardo

Source: developed based on the author's research

According to the criteria width of the product line and the object recognition range by the radar security systems, we identified two strategic groups in the Polish segment. Picture 2.8 represents them.



Picture. 2.8. **Strategic group map in the Polish Agritech market by the width of the product line and object recognition range by the radar security system**

Source: developed based on the author's research

Group 1 includes only Ukrspetstechnika. The same situation is with group 2 as it is formed only by PIT-RADWAR S.A. This company has a broad product line and manufactures only long-range radar security systems. Thus, there are no main competitors for Ukrspetstechnika in the Polish AgriTech market. However, we determined that Enamor Sp.z.o.o, as Ukrspetstechnika, is engaged in perimeter surveillance, but no more information about this company is freely available. Therefore, it disables building a profile of Ukrspetstechnika's strengths and weaknesses in the Polish segment.

One of the most popular tools that allow analyzing possible strategies of enterprise behavior in a market environment is a SWOT analysis (Piercy & Giles,

1989). It will summarize the results of the performed analysis to identify, select and assess the factors of the macro- and micro-environment that affect the activities of Ukrspetstechnika in the studied AgriTech markets. We took the information for strengths and weaknesses from a profile of Ukrspetstechnika's strengths and weaknesses. At the same time, we summarized the data for threats and opportunities from the final tables, defined in paragraph 2.2 (Table 2.13).

Table 2.13

SWOT-analysis for Ukrspetstechnika in the Italian AgriTech market

Strengths	**Weaknesses**
• product uniqueness; • lower price level.	• less experience in export activities; • less reputation in the market; • less experience in the market.
Market opportunities	**Market threats**
• strengthening of the 'Made in Ukraine' brand; • the confidence increase in Ukrainian dual-use goods; • the need for dual-use goods to comply with NATO standards; • level of harvest thievery; • dependence on the government defense contracts; • the elasticity of demand in the AgriTech market; • a significant number of solvent farms.	• the threat of substitute products; • the need to obtain an export license; • the threat of new entrants; • export control of dual-use goods; • bargaining power of customers; • unavailability of loans for small businesses; • the lack of automated information systems in the Ukrainian export control.

Source: developed based on the author's research

The table shows that substitute products have the most significant negative influence on the AgriTech market since the radar security system responds to the need for territorial surveillance. However, hiring officers or installing technical equipment (for example, video surveillance cameras, motion detectors) can also satisfy this need. At the same time, social factors create the most substantial market opportunity for Ukrspetstechnika since many countries want to support Ukraine due to the war.

It is important to note that we identified one less strength than the weaknesses for Ukrspetstechnika. It is because the Italian AgriTech market is more developed. The strengths of Ukrspetstechnika are product uniqueness and price level. It is important to note that these parameters have the highest weights compared to other

criteria. Thus, based on the SWOT analysis, we determined the general features of the Agritech market and its attractiveness for Ukrspetstechnika.

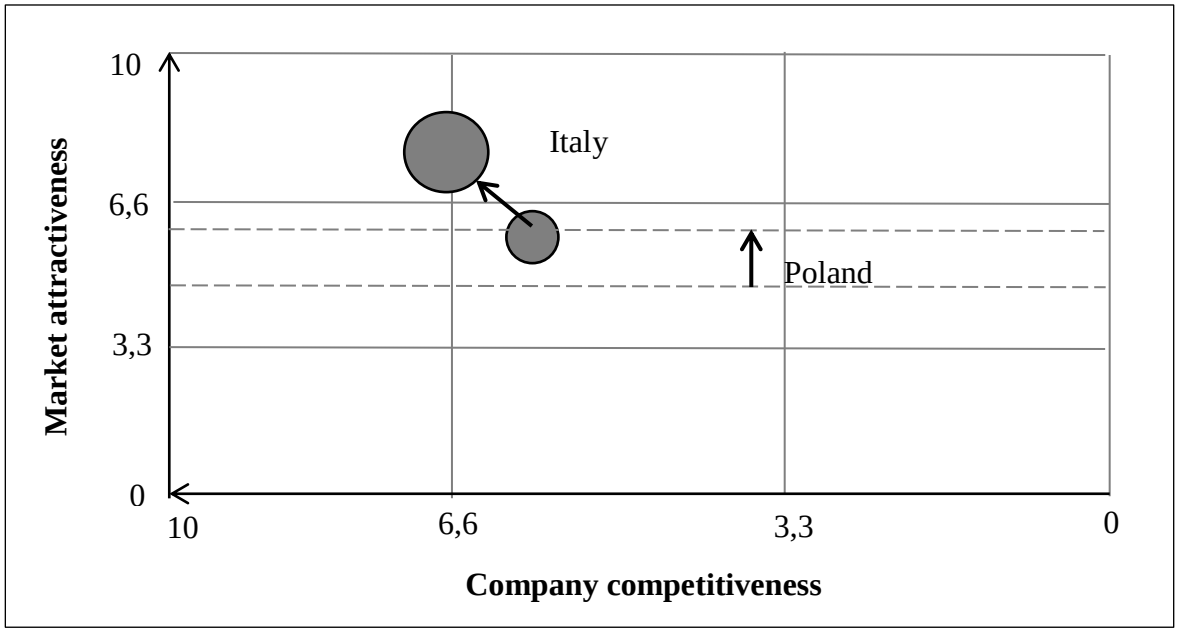
Next, we will choose the target segment using portfolio analysis. Optimization of the company's business portfolio is a principal component of the strategic marketing management system (Kochkina, 2019). A business portfolio is effective if it allows reconciling the strengths and weaknesses of the company with threats and opportunities from the external market environment. Portfolio analysis is used to optimize the company's business portfolio. In this study, we used the DPM matrix as one of the portfolio analysis instruments.

The basis for building the matrix DPM is SWOT analysis: a company's strengths and weaknesses determine its competitive position in the market, and factors of market threats and opportunities form the attractiveness of this market. Therefore, we need to transfer assessments of the SWOT matrix to the estimates of the two-dimensional DPM matrix (Kochkina, 2019). For this purpose, we built two auxiliary tables (Appendix 4).

As a result, we received current and future integrated assessments of the attractiveness of market segments and competitiveness of Ukrspetstechnika in them. It allows selecting the most promising market segments, taking into account changes in the company's position in the DPM matrix (Picture 2.9).

The matrix shows that both segments have a positive trend. The attractiveness of the Italian AgriTech market has a higher increase than the Polish one. The company can visibly strengthen its competitive position in the Italian segment – from 5.94 to 6.82. In the Polish AgriTech market, as already mentioned, information about the key competitors is not available.

Thus, we can conclude that the Italian segment is more attractive. It demonstrates growth trends, which require Ukrspetstechnika to strengthen its competitive positions and selectively develop by investing in increased productivity and differentiation. The strategy in this AgriTech market should be 'proceed with care.' In perspective, Ukrspetstechnika can shift to 'try harder,' as the segment is developing rapidly and will need investments in the growth. Further, the company



Picture 2.9. **DPM matrix for Ukrspetstechnika**

Source: developed based on the author's research

can move to a 'position defense' strategy that requires a concentration of efforts to maintain influence in the new segment. However, as the market becomes saturated, its growth rate may decrease, so the company should direct significant investments to develop and maintain high growth rates.

Thus, this paragraph conducted a competitive analysis of the company and its products in the Italian and Polish AgriTech markets. In particular, we evaluated current market attractiveness and company competitiveness in the segments and performed a five-year forecast. Next, we applied an analytical approach, building a DPM matrix. Through portfolio analysis, we determined that the target segment for Ukrspetstechnika is the Italian AgriTech market.

Chapter 2 Conclusions

Chapter 2 analyzed the competitive positions of Ukrspetstechnika security systems manufacturer in the Italian AgriTech market. We made the following conclusions.

Using a filter model to segment the global security systems market, we defined that the most attractive industry is agriculture, and the most promising countries are Italy and Poland. They have many agricultural holdings with large areas. Given these

two segments, we analyzed the factors of the micro-environment. As a result, we found that substitute products pose the greatest threat to Ukrspetstechnika since the company will offer its security systems as an innovative territory surveillance method.

We carried out the analysis of macroenvironmental opportunities and threats. We revealed that, apart from micro factors, political and legal factors create one of the most substantial market threats to Ukrspetstechnika. It is because radar security systems are dual-use goods that fall under export control. Most market opportunities come from social factors since many countries wish to support Ukraine due to the war. As a result of comparing the aggregated influence of market opportunities and threats in both segments, we determined that the Italian one is more attractive for Ukrspetstechnika than the Polish segment.

We carried out the competitive and portfolio analysis. By analyzing the competitive positions of Ukrspetstechnika in Italy, we distinguished one main competitor. The company's weaknesses, compared to it, are the experience in the market, exporting, and reputation; the strengths are product uniqueness and price level. At the same time, we did not define strategic competitors for Ukrspetstechnika in the Polish Agritech market due to the lack of data on the activities of such companies in the public domain. To choose the target segment, we constructed the DPM matrix as a tool for portfolio analysis. The Italian segment was revealed as the more promising one, demonstrating growth trends.

CHAPTER 3
INNOVATION MARKETING STRATEGY FOR UKRSPETSTECHNIKA SECURITY SYSTEMS MANUFACTURER IN THE ITALIAN AGRITECH MARKET

3.1. Recommendations for product innovations

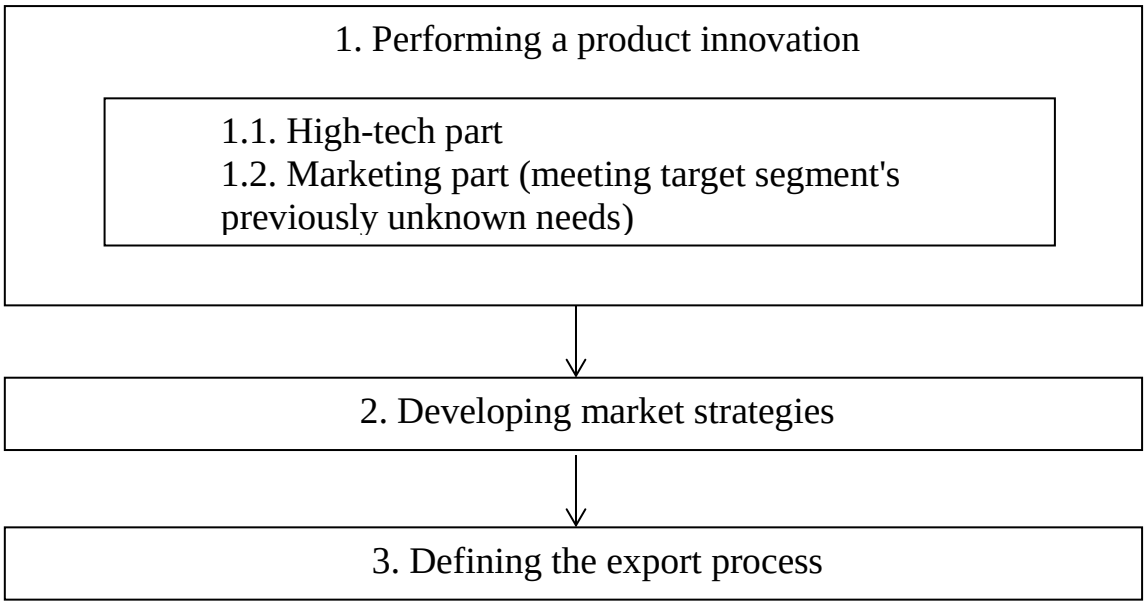
The second chapter revealed the competitive positions of Ukrainian security systems manufacturers in the Italian AgriTech market. Its conclusions will be the basis for developing recommendations for Ukrspetstechnika's product innovation in the target segment.

As mentioned in Chapter 1, product innovation is a part of an innovation marketing strategy. The latter incorporates several phases to perform. We performed the first one in the second chapter.

The second phase involves the innovation activities organization based on research and development. Then there is the development of marketing strategies for the company and export process planning. The final phase involves strategy realization and results audit. However, consideration of these ending stages is not among the tasks of this study.

An important task of innovative marketing is to establish a dialogue between the various functional stages involved in the innovation process. World experience shows that successful innovation development and implementation occurs in manufacturers that consistently perform all marketing and innovation activities phases. Thus, we created a scheme that reflects the proposed plan of organizing an innovation marketing strategy for Ukrspetstechnika (Picture 3.1).

Let us consider each stage in more detail. The first one includes performing product innovation. Prygara (as cited in Starostina et al., 2017) stated that product innovations are the result of innovative activities aimed at transforming the appearance and consumer characteristics of existing products or services or creating new products or services. The author defines two product novation types. The radar security system pertains to the second one – a product that meets fundamentally novel



Picture 3.1. **The logic of organizing an innovation marketing strategy for Ukrspetstechnika**

Source: developed based on the author's research

needs and contains progressive changes that distinguish them from existing products. These changes reflect modifications in design and appearance. The novelty criterion is the satisfaction of previously unknown needs.

In addition, Prygara (as cited in Starostina et al., 2017) defines five product novelty degrees. According to them, the radar security system relates to the partial change in consumer properties due to changes in some technical characteristics, but without fundamental changes in technology. It also alters the way of meeting the need for agricultural area surveillance.

Therefore, we believe that product innovation development consists of technical and marketing components. The first one reflects the organization of innovation activities based on R&D. The second one focuses on innovation's potential consumers. As already mentioned, the novelty criterion for the second type of product novation is the contentment of previously unrevealed needs. In particular, Ukrspetstechnika will offer radar security systems for surveillance of large agricultural areas. The second part also involves defining the market behavior strategies for the company.

Let us consider the technical part of the product innovation development for Ukrspetstechnika. It includes changes in some technical characteristics and the design of the existing product to meet previously unknown needs. However, we will describe these modifications relatively briefly, given that the company produces dual-use goods and has restrictions on the public disclosure of certain information about its products.

Initially, Ukrspetstechnika developed the product for specific purposes: to provide security for critical infrastructure facilities, both military and civilian. Therefore, its functionality and technical characteristics had increased requirements, and they were calculated based on the tasks set. To use the radar security system for the agricultural land monitoring, we recommend changing some of the device functions and specifications due to the following reasons:

- the detection range is much less than 3 km;
- there is no need to identify water surface objects of moving targets;
- no intentions to use the device in extreme conditions;
- the use of the device is intended only in a stationary version.

Therefore, there is a need to make design, hardware, and software changes to the device. Let us consider the recommended changes in detail.

Reducing the detection range is possible by reducing the power of the transceiver unit. Such a change in the technical characteristics will reduce power consumption. Moreover, usually on agricultural lands, there are many small-sized objects (birds, small animals, etc.), and the response of the security system to their movement is impractical. Since it indeed happens at high emitting power, we advise reducing the power of the transceiver unit for this reason as well. In addition, reducing the number of identified objects will increase the information processing speed.

Worth noting that although the dependence between the emitting power and the object detection range has a fourth-degree equation, the principal power consumption of the device falls on the support-swivel mechanism. Therefore, the cost of operation connected with energy consumption will reduce by only about 10%. At the same

time, design changes linked to the decrease in the emitting power will improve the device's reliability and optimize its weight and size characteristics.

Since Italian agricultural areas are not directly adjacent to large water areas, there is no need to detect water surface objects during land monitoring. Therefore, we recommend changing the software and specific user interface for controlling and processing information.

Extreme operating conditions of the security system imply its use with a possible critical impact on external factors. For example, a direct hit of heavy objects in the device body, the product falling from a height, a vehicle running over the device, etc. Using the radar security system for agricultural land eliminates the impact of such factors. Therefore, to reduce the cost and weight of the device, we recommend replacing the body material with a thinner one. At the same time, all other characteristics connected with the influence of environmental factors (operating temperature range, moisture protection, and wind resistance) will remain unchanged. The resistance to vibrations in the security system will also remain unchanged. In addition, reducing the device weight will cut power consumption and decrease the requirements for the support-swivel mechanism and the installation support.

The current version of the radar security system is available in two variants: portable with a mounting system and stationary, which can be placed on a tripod or mounted on particular support. Both options have a specific protected display on the body, which shows the results of information processing, and headphones to which an audio signal is transmitted. Also, both device variants enable transferring information to the central security point. These options were developed to unify and expand the scope of use for specific purposes. Since agricultural land monitoring supposes utilizing only a stationary variant, the display and headphones lose their functional objective. We also recommend changing the software, namely removing the part responsible for displaying information on a protected display located on the device body. These changes will reduce the security system cost and increase operational reliability.

Summarizing the recommendations on the technical part of the product innovation, we advise Ukrspetstechnika to:

- reduce the detection range by decreasing the power of the transceiver unit;
- remove the detection of water surface targets;
- change the device material to more lightweight maintaining all the main technical characteristics connected with the influence of external factors, including environmental factors (except for extreme ones);
- exclude from the radar security system set the protected display on the body and headphones as they are not necessary for the expected operating conditions;
- make appropriate changes to the software and user interface.

The offered changes will correspond to the conditions and purposes of using the security system for agricultural area monitoring. Design, hardware, and software changes will also reduce the product cost, decrease weight, cut energy consumption, reduce the cost of the product life cycle, and increase the reliability of its operation.

To better show how this innovation changes the territory surveillance, we have provided additional information in Appendices 4 and 5. They reveal the advantages and differences of radar security systems from conventional security systems.

Next, we consider the marketing part of product innovation development. We have already described the need that will be satisfied by the innovation. So we will focus more on defining the profile of the potential client.

Based on the results of the market attractiveness performed in the previous chapter, we chose concentrated marketing as a coverage strategy. It means the one marketing mix for entering the Italian AgriTech market. Thus, Ukrspetstechnika will have a one-segment specialization form: the company will offer one product for one segment. Moreover, there are a limited number of potential clients in the Agritech market. Therefore, we can observe an extreme case: a specific market strategy development for each client individually.

To segment the potential clients and define the target ones, we built the Shapiro-Bonoma model (Bonoma and Shapiro, 1983). It is based on the principle of nested

matrices: a gradual transition from more general criteria to the most specific features of the organization (Table 3.1).

Table 3.1

Segmentation of the potential clients in the Italian AgriTech market

Segmentation criterion	Value
Emporographics	
Company size	*Small*: net income of up to 8 million euros; the average number of employees - up to 50 people.
	Medium: net income from 8 to 40 million euros; the average number of employees is 50-250 people.
	Large: net income over 40 million euros; the average number of employees is over 250 people.
Ownership	*State-owned:* formation of defense orders.
	Privately-owned: not limited to state formalities.
Operating variables	
User-nonuser status	User: repurchase to replace the security method.
	Non-user: buys a product for the first time and is unfamiliar with it.
Customer capabilities	*Medium availability of financial resources*: could make a prepayment of 50% of the total cost of purchase.
	High availability of financial resources: could make a prepayment of 75% of the total cost of purchase.
Purchasing approaches	
Supply organization	Purchase directly from the manufacturer of the security system.
Purchasing policies	*The behavior of wide choice:* a high degree of risk; ignorance of the product; the need for a significant amount of information. Procurement to solve new problems. High level of purchasing decisions.
	The behavior of limited choice: low risk; awareness of the product; purchase from a proven and reliable supplier based on a long-term contract.
Availability of a decision-making unit	*Establish a temporary procurement committee*, which includes employees of the company, each of which has a role and performs specific functions.
Purchasing criteria	*Price*
	Manufacturer
	Object recognition range and other technical characteristics
	After-sales service
	Terms and conditions of delivery
Situational factors	
Size of order	*Purchase of one radar station.*
	Purchase of several radar stations.
Personal characteristics	
Risk perceptions	*Prone to risk:* the desire to be one of the first to try a new solution to monitor and protect a large area.
	Not prone to risk

Source: developed based on the author's research (company size based on Law of Ukraine on accounting and financial reporting, 2018)

Next, we describe the profile of the potential target client. They are small and medium-sized privately-owned companies with high availability of financial resources. They are both users and non-users, characterized by the behavior of a wide choice, and create a decision-making unit for the security systems selection, which they purchase directly from a manufacturer. The primary purchasing criteria are price, object recognition range, and other technical characteristics. Owners are prone to risk.

Radar security system positioning on the selected target segment involves the creation of a unique image of the product to consolidate it in the minds of potential clients. It will also help Ukrspetstechnika distance itself from competitors, securing a unique position in the market.

There is a favorable situation in the Italian AgriTech market. Namely, Ukrspetstechnika will enter a new segment by creating innovation. The company will use a fundamentally new idea of positioning, which any other competitors have not yet used. Therefore, Ukrspetstechnika can use the positioning strategy without a market leader expecting to take such a position. In our opinion, the company will be most appropriate to implement the positioning based on problem-solving. Thus, Ukrspetstechnika will offer agricultural holdings its radar security system to satisfy the need for surveillance of huge adjacent territories. Moreover, as innovation is an object of intellectual property, it protects Ukrspetstechnika from possible copying by competitors.

Worth noting, the basis of successful positioning is the development of a unique selling proposition, which allows differentiating the product from competitors so that this difference has a high value for consumers. So, the offer’s uniqueness will base on product innovation. Namely, the two substantial advantages over competitors will appear. They are a lower price and shorter range of object recognition. The latter is applicable for agricultural holdings of different squares – not only for big ones.

Perceptual maps allow analyzing the similarity between market product offers in the context of subjective perception of product attributes. Nevertheless, since there are no competitors in the target segment yet, building a perceptual map to present the

position of Ukrspetstechnika and its main competitor in the Italian market is not possible.

Thus, we considered the first step of developing the product innovation for Ukrspetstechnika. It included technical and marketing parts. At the same time, as was already mentioned, the plan of action also includes developing market strategies and tactical steps for exporting radar security systems to the Italian market. The following paragraph will consider this part.

3.2. Managing the company's entrance to the Italian market

The dynamics and specifics of the national markets development and the possible benefits of international activities determine the marketing activities planning in the business environment. Meanwhile, many circumstances are forcing companies to look closely at foreign markets and search for ways to international cooperation. In particular, the Ukrainian economy can export both high-tech and traditional products, including raw materials. Ukrainian entrepreneurs can have the most significant effect in foreign markets by promoting high-tech products. The latter, i.e., are radar security systems.

According to the organization of innovation marketing strategy for Ukrspetstechnika, we will consider the second and the third stages. First, we will develop competitive and growth strategies for Ukrspetstechnika as part of market strategies. They will base on the company's competitive positions defined in the previous chapter.

So, firstly, we will choose a basic strategy of competition by Porter (1985), as one of the most popular approaches to competition is based on his matrix. Porter divided competitive strategies into two indicators: the scope of market coverage and the source of competitive advantage. According to the performed analysis in the previous chapter, the most relevant competitive strategy for Ukrspetstechnika will be a differentiation focus. It is based on two choices – niche market and differentiation.

The first parameter reflects the strategy of market coverage: focusing on the narrow segment by the methods of concentrated marketing. The second parameter

characterizes the specifics of the company's competitiveness. Namely, Ukrspetstechnika offers the market an innovation, achieving the product's uniqueness from the consumer's point of view. Thus, the company will focus on differentiation.

Within the differentiation focus, the Ukrspetstechnika product line has consumer characteristics that meet the specific needs of a narrow segment. Namely, short object range recognition suits surveilling agricultural territories of different sizes better than medium or long-range radar equipment.

Another approach to the formation of competitive strategies belongs to Kotler (1984). The main criterion for choosing the company's competitive strategy is the available market share and the resources needed to maintain or increase it. According to this approach, the most relevant competitive behavior strategy for Ukrspetstechnika will be a market invader as a specific type of market challenger strategy (Starostina, Kravchenko, Prygara, & Yarosh-Dmytrenko, 2018). Sometimes this strategy is singled out as a separate one. The essence of the market invader strategy lies in the fact that the company's market position is uncertain at the beginning of active actions, and its market share may be zero.

Market invader strategy is acceptable for Ukrspetstechnika as the company diversifies its activities into a new market. Among the types of market invader strategy, Ukrspetstechnika might choose to bring a new product (by performing a product innovation) to a new market.

Next, to maintain a position in a growing market, a company needs to demonstrate the same or higher growth rates. At the same time, the faster the market expands, the more effort the company has to make. For this purpose, we can choose one of the growth strategies by Ansoff (1988). It may involve working within the industry or going beyond it.

According to the Ansoff matrix, we recommend Ukrspetstechnika choose a diversification strategy in the Italian AgriTech market. It is based on the development of new segments for new products. The necessary prerequisites for such strategy application are the strength of the competitive position in the base market that enables it to spread successful experience in new markets. It works for Ukrspetstechnika as it

is a market leader in the Ukrainian market of radar equipment. At the same time, new markets must have high growth rates, low barriers to entry, and unmet demand in an industry where the company has a UTP. According to the analysis performed in Chapter 2, the Italian AgriTech market has such characteristics.

Since Ukrspetstechnika enters the Italian market, we need to define the method for the foreign market entering as a way of international cooperation. In our opinion, it can appear in the form of a joint venture or through direct exports, which will involve the company in the market through exclusive distributors. We made these conclusions in the light of the research conducted in the second chapter and the recommendations on marketing strategies provided in paragraph 3.1.

Next, we will define the process of exporting radar security systems as the final stage of organizing an innovation marketing strategy for Ukrspetstechnika. We performed it in the context of the commercial activities analysis in the EU common market. However, the company's product is a dual-use good, i.e., it can have legal commercial and civilian use but can also have military purposes for the development, production, and use of military goods. Therefore, the export procedure has specific features. To outline all the subtleties of the process, we constructed Picture 3.2 with step-by-step actions.

According to Picture 3.2, steps 1-3 are preparatory: they need to be carried out only once, after which future export operations will take place only starting from step 4. Worth noting that steps 1 (partially), 2, 3 (partly) we have already considered in paragraph 2.2 among the political and legal factors of the macro-environment. Therefore, we are to consider in more detail the other steps.

In step 1, in addition to STANAG, the international standard ISO 9000:2000 is indicated. Thus, for the sale of dual-use goods, one of their quality indicators is a certificate of the enterprise management systems complying with the requirements of this standard. At least 80-90% of companies in EU countries have such certificates (European Commission, 2020).

According to step 2, radar security systems are subject to an export license even after a product innovation. There are requirements for accreditation of a manufacturer

STEP OF DUAL-USE GOODS EXPORT (on the example of the radar security system)
STEP 1 OBTAIN A CERTIFICATE OF COMPLIANCE WITH CERTAIN INTERNATIONAL STANDARDS (THESE CERTIFICATES ARE NOT REQUIRED FOR THE IMPORT OF PRODUCTS INTO THE EU, BUT THEY ARE AN IMPORTANT PART OF CONCLUDING A CONTRACT WITH THE CUSTOMER): • ISO 9000:2000 – a series of international standards that contain requirements for quality management systems of organizations and enterprises; • STANAG 2345 – standards for evaluation and control of personnel exposure to radiofrequency fields; • STANAG 5066 – standards for profile for high frequency radio data and communication; • STANAG 4193 – standards for technical characteristics of the IFF Mk XIIA system part III: installed system characteristics; • STANAG 4691 – standards for multi-hop IP networking with legacy UHF radios: mobile ad hoc relay line of sight networking (MARLIN).
STEP 2 CHECK IN THE COMMON LISTS OF DUAL-USE GOODS WHETHER THE PRODUCT IS SUBJECT TO THE NEED TO OBTAIN AN EXPORT LICENSE
STEP 3 REGISTER COMPANY AS A SUBJECT OF INTERNATIONAL TRANSFERS This procedure takes place in the State Export Control. Registration is a one-time requirement.
STEP 4 OBTAIN AN OBLIGATION FROM THE IMPORTER FOR THE IMPOSSIBILITY OF TRANSFERRING GOODS TO THIRD PARTIES OTHER THAN END-USERS WITHOUT THE EXPORTER'S APPROPRIATE WRITTEN PERMISSION These obligations must be duly formalized in the competent authority of the importing State for each transaction separately and must have legal force.
STEP 5 OBTAIN AN EXPORT LICENSE It is necessary to obtain a license for each contract separately
STEP 6 CARRY OUT CUSTOMS CLEARANCE OF GOODS FOR EXPORT, PROVIDING THE NECESSARY DOCUMENTS: contract, invoice, transport consignment note, customs declaration (indicating the details of the export license), the original, and a copy of the export license.
STEP 7 PASS CUSTOMS CHECKS AT THE POINT OF ENTRY INTO THE EU AND PRESENT A COPY OF THE EXPORT LICENSE

Picture 3.2. **The process of exporting radar security systems to EU countries**

Source: developed based on the author's research

who wants to supply dual-use goods to the EU market. Therefore, in step 3, licensing is embodied in the procedure of legal entities' registration as subjects of international transfers. Thus, the exporter must submit the application documents containing the following comprehensive information:

- the purpose of use and transportation of goods;
- end-user;
- country of destination;
- e-export opportunities;
- assurances or circumstances of the importer that guarantee the goods will be used only for peaceful purposes related to the production and distribution of weapons.

The impossibility of transferring goods to third parties other than end-users without the appropriate written permission of the exporter must also be confirmed (step 4). Further, the State Export Control of Ukraine carries out:

- identification of goods (establishment of the name and description of goods included in the lists of goods subject to state export control);
- registration of subjects and issuance of relevant registration certificates.

Finally, the State Export Control of Ukraine conducts an examination. Based on these results, the company receives a permit, an opinion on international transfers, or an international import certificate (step 5).

Steps 6 and 7 correspond to the customs clearance procedure (Khaustov, 2016). So, at customs registration of goods for export, together with other documents necessary for customs clearance, the company needs to provide:

- customs declaration, which indicates the details of the State Export Control permit;
- at the request of the customs authority carrying out customs clearance, the State Export Control permit original (export license). The reverse side of the original indicates the date of customs clearance, the number of the customs declaration, and the name and quantity of goods.

The applicant receives back the export license copy with the marks of the official of the customs clearance. The customs office of registration will store the original of the export license.

At the checkpoint across the customs border of Ukraine, you have to provide the customs authority with the relevant sheet of the executed customs declaration in conjunction with a copy of the export license with customs clearance records. At the point of entry into the territory of the EU (at the border in Eastern Europe) is necessary to provide a copy of the export license and enter in column 44 SAD details of the export license from the customs declaration.

Thus, in this paragraph, we chose competitive and growth strategies for Ukrspetstechnika as parts of market strategies. We also defined the export process for radar security systems and their peculiarities. These were the final stages of developing an innovation marketing strategy for the company. Next, we need to assess the economic efficiency of the proposed actions.

3.3. Economic efficiency of the innovation marketing strategy

Analysis of the feasibility and profitability of recommended marketing measures implementation is a crucial part of their assessment. An indicator of this is the ROMI (Hagley, 2015) of innovation marketing strategy for Ukrspetstechnika in the target segment.

Firstly, we need to determine the expected revenue and marketing expenses. Worth noting that predicting the number of new customers the company will receive is quite challenging. Therefore, we propose considering two scenarios for calculating the expected revenue – optimistic and unfavorable.

In the unfavorable scenario, we assume that the innovation marketing strategy will attract only one client who will purchase one security system. In the optimistic one, two clients will be involved: one will buy one security system, and the second will make a complex purchase of five security systems.

To determine the total costs for the innovation marketing strategy implementation, firstly, we will calculate the number of funds required from

Ukrspetstechnika at each stage of the innovation marketing strategy process, shown in Pictures 3.1 and 3.2. Since companies manufacturing dual-use goods cannot disclose the product's price, we offer to introduce a conditional 'unit' instead of the usual currency. Table 3.2 reveals the corresponding calculations.

Table 3.2

Expenses at each stage of the innovation marketing strategy process for Ukrspetstechnika

№ of stage	**Item of expenditure**	**The number of expenses**
1.1.	Creating an experimental sample and payments for the following work of specialists: – design work; – change in the technological cards, lists of purchased products and components; – modification of the software; – product cost recalculation.	Payment for specialists – 48.68 units Cost of the experimental sample – 1300 units Total – 1312.16 units
1.2.	Searching for intermediaries, distributors, making contacts, conducting negotiations	50.40 units
2.	Developing marketing strategies	-
3.	Preparation of products and documents, obtaining permits, exporting security systems	6.36 units (for each export operation)
Total expenses		**1405.44 units**

Source: developed based on the author's research

Let us give an explanation of the calculations and substantiate the conclusions. We will start from stage 1.1.

1.1. Based on the proposed changes in hardware and software, the cost of product modernization includes design work; change in the technological cards, lists of purchased products and components; modification of the software; recalculation of the product cost. We will consider each of them in more detail.

Design work involves changing the product structure, choosing a new body material, recalculating the loads on the slewing device and tripod (due to a decrease in the weight of the security system), and developing new drawings in a specific program. We determined the number of expenses based on the hourly wage of a design engineer (0.28 units, including the unified social tax) and the assumption that the work will take about 80 hours. That is, Ukrspetstechnika will spend 22.4 units.

Changing the technological cards and lists of purchased products and components involves calculating the labor intensity of manufacturing the product and counting the number of materials, purchased products, and components according to the executed modifications. Data and calculation results are entered into special forms in Excel and Word programs. The amount of expenses depends on the hourly pay of two specialists. The first is a process engineer (0.25 units, including the unified social tax). We assume that the assumption that his work will take about 30 hours. The second is the first category engineer (0.19 units, including the unified social tax). His work will approximately take 8 hours. In total, the company will spend: 7.5 + 1.52 = 9.02 units.

The amount of expenses for the software modification depends on the hourly pay of a software engineer (0.34 units, including the unified social tax) and the assumption that the work will take around 15 hours. So, Ukrspetstechnika will spend 5.1 units.

The lead economist will carry out the product cost recalculation in the Excel program based on the data provided by the process engineer and engineer of the first category. Since the device has different configurations depending on the customer's needs, the economist needs to prepare several options for the product cost. We suppose that this work will take about 32 hours. Considering that the hourly wage of the lead economist is 0.38 units (including the unified social tax) and the experimental sample costs 1300 units, in total, Ukrspetstechnika will spend 1312.16 units.

Summarizing the results, since some work will be carried out in parallel, we expect this stage to take 3.5 weeks. The estimated amount of expenses is 48.68 units.

Stage 1.2 involves searching for intermediaries, and distributors, making contacts, and conducting negotiations. The amount of expenses for this work depends on the hourly wage of the Deputy Chairman of the Board for Commerce (0.42 units, including the unified social tax). We assume that this stage may take about three weeks of working 8 hours a day, so 120 hours in total. Therefore, the company will spend 50.4 units.

Stage 2 involves developing market strategies for Ukrspetstechnika in the Italian AgriTech market. Since we have already done it in the previous paragraph, the stage does not require expenses.

The last but not least stage includes preparing the products and documents, obtaining permits, and exporting security systems. We calculated the required expenses according to the steps reflected in picture 3.2. Let us consider it more detailed.

The company's products are already complying with NATO standards, and Ukrspetstechnika has already registered as a subject of international transfers. Therefore, these steps do not require any expenses.

To obtain an export license, the company has to prepare some documents (including an obligation from the importer for the impossibility of transferring security systems to third parties) and obtain an expert opinion from the Chamber of Commerce and Industry of Ukraine. It costs 1.02 units. The registration for a license obtaining is done automatically by applying to the Unified State Portal of Administrative Services. It costs 0.22 units. The Deputy Head of the export control department in Ukrspetstechnika will be responsible for this step. The amount of expenses depends on his hourly wage of 0.19 units. We assume that this step will take around 8 hours of work for each export operation. In total, the company will spend: 1.02 + 0.22 + 1.52 = 2.76 units.

The number of expenses in step 6 consists of 3 units for the state customs declaration and 0.6 units for customs duty. Product delivery will be carried out by Incoterms 2010. Specific conditions will be determined resulting from negotiations between Ukrspetstechnika and the importer and reflected in the contract. Summarizing the results, the estimated number of expenses in stage 3 is 6.36 units.

As mentioned earlier, to calculate the effectiveness of the innovation marketing strategy, we will consider two scenarios. Firstly, the unfavorable scenario: one client will purchase one security system with a basic set. Then the revenue will be 1000 units. Secondly, the optimistic scenario: two clients will be involved. One will buy one security system with a complete set, and the second will make a complex

purchase of five security systems with a basic set. In this case, the revenue from each customer will be 1300 units and 5000 units (5 goods for 1000 units), respectively. Then in total, it will be 6300 units.

Next, we will calculate the rate of return on marketing investment for each scenario. The following formula will be used (Hagley, 2015):

$$ROMI = \frac{Revenue - Marketing\ expenses}{Marketing\ expenses} \times 100\% \quad (3.1)$$

Firstly, we will perform calculations for the unfavorable scenario. The rate will be:

$$ROMI = \frac{1000 - 1405.44}{1405.44} \times 100\% = -28.85\%$$

Thus, under the unfavorable scenario, Ukrspetstechnika will make an unprofitable investment. It, in turn, can lead to losses.

Next, we will calculate the rate of return on marketing investments according to formula 3.1 for the optimistic scenario:

$$ROMI = \frac{6300 - 1405.44}{1405.44} \times 100\% = 348\%$$

Thus, under the optimistic scenario, the company will make a profitable investment and receive a return of three-and-a-half times. However, it is also crucial to understand the needed level of income from sales to reach a break-even point considering the calculated number of expenses for innovation marketing strategy. Namely, we need to determine the minimum amount of products that the company needs to sell to cover the costs of the innovation marketing strategy. We offer to call this scenario a ‘zero’ one and mark the corresponding income as ‘x’. Then, the calculation will look like this:

$$\frac{x - 1405.44}{1405.44} \times 100\% = 0\%$$

Having carried out the necessary mathematical transformations, we obtain that Ukrspetstechnika needs to receive an income of approximately 1405.44 units to reach a break-even point from the innovation marketing strategy. Thus, we can draw the following conclusion from assessing the economic efficiency of innovation marketing

strategy. The company needs to sell either two security systems with a basic set worth 1000 units each or two security systems with a complete set worth 1300 units. As can be seen, even under such conditions, Ukrspetstechnika will already receive a profit. Also, the company can sell one security system with a complete set and offer the client an after-sales service contract. The latter's cost will cover the missing part of the revenue to reach the break-even point.

Thus, in this paragraph, we calculated the economic effectiveness of the innovation marketing strategy. We considered the optimistic and unfavorable scenarios and identified the revenue needed for the company to reach the break-even point.

Chapter 3 Conclusions

In chapter 3, we developed the innovation marketing strategy for Ukrspetstechnika security system manufacturer in the Italian AgriTech market As a result, we provided the company with the following recommendations.

We specified three stages of the process of organizing an innovation marketing strategy for Ukrspetstechnika. The first one is divided into two sub-stages according to the essence of the product innovation. As a result, we offered technical changes to match the conditions and purposes of using the radar security system for agricultural area monitoring. We also defined the potential client profile for the company and selected concentrated marketing as a market coverage strategy. As Ukrspetstechnika enters a new segment, we recommend using the positioning strategy without a market leader expecting to take such a position. We proposed implementing positioning based on the way of solving the problem.

We considered features of the other two stages of organizing an innovation marketing strategy for Ukrspetstechnika. Firstly, we developed market strategies for the company in the Italian AgriTech market. Among the basic strategies of the competition, we recommended using the differentiation focus since radar security systems have characteristics that meet the specific needs of a narrow segment. Among strategies of competitive behavior, we proposed a market invader one. Next,

we recommended implementing a diversification strategy as a growth strategy since Ukrspetstechnika creates new segments for new products. Finally, we revealed the steps for exporting radar security systems to EU countries.

Finally, we evaluated the effectiveness of the proposed measures. As a result, to reach the break-even point of the innovation marketing strategy, Ukrspetstechnika has to obtain an income of 1405.44 units.

CONCLUSIONS

In the master thesis, we performed theoretical substantiation and development of practical recommendations on the product innovations of Ukrspetstechnika (the Ukrainian security systems manufacturer) for the Italian AgriTech market under accelerated reconstruction of Ukraine in the post-war conditions.

We determined the theoretical basis of innovation marketing strategy in the market of high-tech products by uncovering the essence of the innovation concept. As a result, we revealed that innovation is a strategic outcome of creative and innovative actions targeted at transforming a specific management object to realize the economic objectives of business entities and the potential for social, environmental, or other impacts. Scientific and technological novelty, the ability to materialize for use in manufacturing or other activities, and the ability to be commercialized are all characteristics of innovation. We also defined distinct features of innovation marketing in the market of high-tech products. However, due to the enormous effect of changing business environment, not all creative solutions guarantee success. So, efforts to adopt and distribute innovation will have a good, cost-effective effect if efficient marketing activities are used together with an innovation marketing strategy.

We identified factors of the international business environment influencing the market activity of companies dealing with security systems in the AgriTech market. We performed the analysis on the example of the Ukrspetstechnika security system manufacturer. So, using a filter model to segment the global security systems market, we discovered that agriculture is the most appealing industry for the product application, and Italy and Poland are the most promising countries. We determined that, among micro factors of the business environment, substitute products pose the most substantial threat to Ukrspetstechnika since the company intends to market the radar security system as a cutting-edge technique of area monitoring. In addition, we analyzed the macroenvironmental opportunities and threats. We revealed that political and legal factors pose one of the most substantial challenges to Ukrspetstechnika since its products are dual-use goods, subject to export control. At

the same time, since many countries would like to support Ukraine due to the war, considerable market opportunities stem from social factors. After assessing the overall influence of market opportunities and threats in both segments, we found that the Italian AgriTech market is more appealing to Ukrspetstechnika than the Polish one.

We determined the competitive positions of Ukrspetstechnika security systems manufacturer in the Italian and Polish AgriTech markets and chose the target one using portfolio analysis. We identified one key competitor for Ukrspetstechnika in the Italian AgriTech market. We revealed that the company's weaknesses are its experience in exporting, reputation, and market experience, whereas product uniqueness and price level are its strengths. At the same time, we did not define strategic competitors in the Polish AgriTech market due to the lack of publicly available data on the activity of such companies. Finally, to choose the target segment, we constructed the DPM matrix and revealed that the Italian AgriTech market is more attractive and promising than the Polish one.

We provided guidelines for developing the innovation marketing strategy for Ukrspetstechnika in the Italian AgriTech market. We divided them into three stages. The first one, in turn, is also split into two sub-stages – technical and marketing ones. We highlighted the tactical actions of their implementation and gave specific recommendations with examples. The second stage included developing market strategies, so we recommended the competitive and growth ones for the company. Eventually, we defined the steps for the process of exporting radar security systems to EU countries.

Finally, we evaluated the effectiveness of the proposed measures within three scenarios: unfavorable, optimistic, and zero. As a result, we discovered that Ukrspetstechnika needs to earn 1405.44 units to reach the break-even point of the innovation marketing strategy. It means selling either two security systems with a basic set worth 1000 units each or two security systems with a complete set worth 1300 units, based on the recalculated price of the new product. Furthermore, even in such circumstances, Ukrspetstechnika will already make a profit.

REFERENCES

Altshuler, A. and Behn, R.D., 1997. *Innovation in American Government: Challenges, Opportunities, and Dilemmas.* Washington: Brookings Institution Press.

Amica, 2022. *5 brand di moda ucraini da scoprire* [5 Ukrainian fashion brands to discover]. Available at: <https://www.amica.it/2022/03/15/moda-ucraina-guerra-russia-brand/> [Accessed 12 April 2022].

Andrew, J.P., Sirkin, H.L. and Butman, J., 2007. *Payback: Reaping the Rewards of Innovation*. Brighton: Harvard Business Review Press.

Ansoff, I.H., 1988. *The New Corporate Strategy*. New York: Wiley.

Azgal'dov, G.G. and Kostin, A.V., 2008. Intellektual'naja sobstvennost', innovacii i kvalimetrija [Intellectual property, innovations and qualimetry]. *Jekonomicheskie strategii*, vol. 2, pp.162-169.

Balabanov, I.T., 2001. *Innovacionnyj menedzhment. Uchebnik dlja vuzov* [Innovative management. Textbook for universities]. St. Petersburg: lPiter.

Bezdudnyj, F.F., Smirnova, G.A. and Nechaeva, O.D., 1998. Sushhnost' ponjatija "innovacija" i ego klassifikacija [The essence of the concept of "innovation" and its classification]. *Innovacii*, no. 2, pp. 3-13.

Bonoma T.V. and Shapiro B.P., 1983. *Segmenting the Industrial Market*. Lexington: Lexington Books.

Brad, S., 2007. Comprehensive Innovation and its Implications on New High-Tech Product Development. *Informatica Economică*, no. 2 (42), pp. 18-25. Available at: <https://www.researchgate.net/publication/26589147> [Accessed 21 March 2022].

Bright, J.R., 1969. Some management lessons from technological innovation research. *Long Range Planning*, vol. 2, issue 1, pp. 36-41. doi: 10.1016/0024-6301(69)90022-3.

Cabinet of Ministers of Ukraine, 2018. *Pro skhvalennya Stratehiyi rozvytku oboronno-promyslovoho kompleksu Ukrayiny na period do 2028 roku* [On

approval of the Strategy for the development of the defense-industrial complex of Ukraine for the period up to 2028]. Available at: <https://zakon.rada.gov.ua/laws/show/442-2018-p> [Accessed 15 March 2021].

Cabinet of Ministers of Ukraine, 2019. *Pro zatverdzhennya Poryadku zdiysnennya derzhavnoho kontrolyu za mizhnarodnymy peredachamy tovariv podviynoho vykorystannya* [On approval of the Procedure for state control over international transfers of dual-use goods]. Available at: <https://zakon.rada.gov.ua/laws/show/86-2004-п#n234> [Accessed 18 March 2021].

Censor.NET, 2022a. *Ukraine will be recognized as candidate for EU accession officially and quickly - President of European Parliament Metsola*. Available at: <https://m.censor.net/en/news/3330662/ukraine_will_be_recognized_as_candidate_for_eu_accession_officially_and_quickly_president_of_european> [Accessed 7 April 2022].

Censor.NET, 2022b. *Ukraine will become a full member of EU Single Market - Podoliak*. Available at: <https://m.censor.net/en/news/3329642/ukraine_will_become_a_full_member_of_eu_single_market_podoliak> [Accessed 8 April 2022].

Damanpour, F. and Gopalakrishnan, S., 2001. The Dynamics of the Adaptation of Product and Process Innovations in Organizations. *Journal of Management Studies*, vol. 38, pp. 35-65. doi: 10.1111/1467-6486.00227.

Danylenko, Yu.A., 2018. Kharakterystyky ta klasyfikatsii innovatsii ta innovatsiinoho protsesu [Characteristics and classification of innovation and innovation process]. *Nauka innov.*, no. 14(3), pp. 15-30. doi: 0.15407/scin14.03.015.

Davlyatova, G.M. and Kurpayanidi, K., 2020. Marketing as the main factor in introducing innovative products to the market. *ACADEMICIA: An International Multidisciplinary Research Journal*, vol. 10, issue 5, pp. 430-437. doi: 10.5958/2249-7137.2020.00229.3

Dodgson, M. and Gann, D., 2010. *Innovation: A Very Short Introduction*. Oxford: Oxford University Press.

Drucker, P.F., 2002. *Innovation and Entrepreneurship*. London: Routledge. doi: 10.4324/9781315747453.

Dundon, E., 2002. *The Seeds of Innovation: Cultivating the Synergy that Fosters New Ideas.* New York: AMACOM.

Dunne, J.P., Sköns, E., 2009. *The Military Industrial Complex*. Available at: <https://core.ac.uk/download/pdf/7170012.pdf> [Accessed 20 March 2021].

Dykun, A., 2022. Yakshcho Ukraina ne zasiietsia, na svit chekaie hlobalna prodovolcha kryza [If Ukraine does not sow, the world will face a global food crisis]. *Ekonomichna Pravda*. Available at: <https://www.epravda.com.ua/columns/2022/03/15/684039/index.amp> [Accessed 8 April 2022].

Ermakova, Zh.A., Belotcerkovetskaya, N.V. and Ivanchenko, O.P., 2014. Soderzhanie i sootnoshenie ponjatij: marketing innovacij, innovacionnyj marketing, marketingovye innovacii [Content and value concepts: innovation, innovative marketing, marketing innovation]. *Innovacii*, no. 6 (188), pp. 49-54.

European Commission, 2019. *Farms and farmland in the European Union.* Available at: <https://ec.europa.eu/eurostat/statistics-explained/pdfscache/1191.pdf> [Accessed 18 February]

European Commission, 2020. Import into the EU. Available at: <https://ec.europa.eu/trade/import-and-export-rules/import-into-eu/> [Accessed 2 March 2021].

European Commission, 2021. *Statistical Factsheet: Poland.* Available at: <https://ec.europa.eu/info/sites/info/files/food-farming-fisheries/farming/documents /agri-statistical-factsheet-pl_en.pdf> [Accessed 30 March 2021].

Fagerberg, J., 2004. *Innovation: A Guide to the Literature*. Oxford: Oxford Business Press.

Fathutdinov, R.A., 2008. *Innovacionnyj menedzhment. Uchebnik dlja vuzov* [Innovation management: Textbook for universities]. 6th ed. St. Petersburg: Piter.

Financial Times, 2022. *Italy's economy bounces back after pandemic.* Available at: <https://amp.ft.com/content/04987ba4-1ac8-4fd6-b44a-2b83895f6256> [Accessed 9 April 2022].

Flores, B.E. and Whybark, D.C., 1987. Implementing multiple criteria ABC analysis. *Journal of Operations Management,* vol. 7, no. 1-2, pp. 79–85.

Fortune Business Insights, 2019. *Surveillance Radars Market: Forecast 2020-2028.* Available at: <https://www.fortunebusinessinsights.com/segmentation/surveillance-radars-market-104290> [Accessed 4 April 2021].

Grinev, V.F., 2004. *Tovarno-innovacionnaja politika predprijatija: Uchebnoe posobie* [Commodity-innovative policy of the enterprise: Textbook]. Kyiv: MAUP.

Grizovska, L.A. and Romanova, A.V., 2018. Marketynh innovatsii yak instrument uspishnoho biznesu [Marketing of innovations as an instrument of successful business]. *Economy and Society,* issue 16, pp. 301-307.

Halaka, S.P., Hryshutkin, O.M., Kondratov S.I., Perepelytsya, H.M., 2013. *Eksportnyy kontrol' v systemi mizhnarodnoyi bezpeky: navch. posib.* [Export control in the system of international security: textbook manual], Kyiv: KVITS.

Haustein, H. and Maier, H., 1985. In*novation and Efficiency: Strategies for a Turbulent World*. Berlin, Boston: De Gruyter. doi: 10.1515/9783112528860.

Hautala, L., 2019. Spending bill has $100 million for border surveillance tech. *CNET*. Available at: <https://www.cnet.com/tech/tech-industry/spending-bill-has-100-million-dollars-for-border-surveillance-tech/> [Accessed 30 January 2021].

Holding Company Ukrspetstechnika, 2022. *Home page.* Available at: <http://ust.com.ua/en/> [Accessed 27 April 2022].

Honcharova, N.P., 2009. Marketynhova innovatsiina diialnist [Marketing innovation activity]. In: A.O. Starostina, ed. *Marketynh: pidruchnyk* [Marketing: textbook].Kyiv: Znannia, pp.426-460.

Hotjasheva, O.M., 2006. *Innovacionnyj menedzhment* [Innovation management]. 2nd ed. St. Petersburg: Piter.

Il'enkova, S.D., 1997. *Innovacionnyj menedzhment. Uchebnik dlja vuzov* [Innovative management. Textbook for universities]. Moscow: UNITI.

Illiashenko, S.M. ed, 2008. *Marketynh innovatsii i innovatsii v marketynhu: monohrafiia* [Marketing innovations and innovations in marketing: monograph]. Sumy: Universytetska knyha.

Ivanova, K.Yu., 2021. Innovation: dialectics of development. *Forum Prava*, 71 (Suppl), pp. t15-t19. doi: 10.5281/zenodo.5075671

Kanagal, N.B., 2015. Innovation and product innovation in marketing strategy. *Journal of Management and Marketing Research*, vol. 18, pp. 1-25. Available at: <https://www.aabri.com/manuscripts/152209.pdf> [Accessed 13 February 2022].

Kanishchenko, O.L., 2004. *Mizhnarodnyi marketynh. Teoriia i hospodarski sytautsii* [International marketing. Theory and economic situations]. Kyiv: Kondor.

Karvetska, D.D., 2021. Spetsyfika priamykh prodazhiv na korporatyvnomu sehmenti rynku radiolokatsiinoi tekhniky Ukrainy [Direct sales specifics in the corporate segment of the Ukrainian market of radar equipment]. In: Kyiv National University named after T. Shevchenko, Shevchenko's spring 2021. Economy. On the path to sustainable development, Proceedings of the 19th International Scientific and Practical Conference, Kyiv, March 18-19 2021. Kyiv, pp. 193-194. Available at: <http://econom.univ.kiev.ua/wp-content/uploads/2021/02/Збірник-тез-2_compressed.pdf> [Accessed 29 April 2022]

Khaustov, V.V., 2016. Eksportnyi kontrol u systemi netaryfnoho rehuliuvannia zovnishnoi torhivli produktsiieiu viiskovoho pryznachennia i podviinoho

vykorystannia [Export control in the system of non-tariff regulation of foreign trade in military and dual-use goods]. *Ekonomichni nauky*, no. 17, pp.24-27.

Khorakian, A., 2011. *Developing a Conceptual Framework for Integrating Risk Management in the Innovation Project*. Stirling: University of Stirling.

Kochkina, N.Y., 2019. *Upravlinnya marketynhom: navch. posibnyk* [Marketing Management: textbook manual]. Kyiv: "SPE" Interservice.

Komarist, O.I. and Aldokhina, N.I., 2012. Zmist marketynhu innovatsii u diialnosti pidpryiemstva [The content of innovation marketing in the enterprise]. *Naukovi pratsi Poltavskoi derzhavnoi ahrarnoi akademii. Seriia: Ekonomichni nauky*, issue 4, vol. 1, pp. 146-150.

Kondrat'ev, N.D., 1993. *Selected works* [Izbrannye sochineniya]. Moscow: Economics.

Kotler, P., 1984. *Marketing Essentials*. Englewood Cliffs, N.J.: Prentice-Hall.

Kovalchuk, S.V. ed., 2013. *Marketynhovi innovatsii v ekonomitsi i biznesi: monohrafiia* [Marketing innovations in economics and business: monograph]. Khmelnytskyi: TOV "Polihrafist-2".

Kovaljov, G.D., 1999. *Osnovy upravlenija innovacijami. Uchebnik dlja vuzov* [Fundamentals of innovation management. Textbook for universities]. Moscow: UNITI.

Kuchko, E.E., 2008. Sistematizacija podhodov k klassifikacii innovacij [Systematization of approaches to the classification of innovations]. *Sociologija*, vol. 8, pp. 61-70.

Kuharskaja, N.A. and Novoshinskaja, L.V., 2016. *Marketing innovacij: Uchebnoe posobie* [Innovation marketing: Tutorial]. Odessa: Atlant VOI SOIU.

Lanzavecchia, O., 2022. Italian Parliament votes to raise defence budget to 2% of GDP. *Decode39.* Available at: <https://decode39.com/3052/italy-defence-budget-2-gdp-vote/> [Accessed 28 March 2022].

Lavrinenko, Yu.M., 2010. Teoretychni aspekty vyznachennia sutnosti innovatsii [Theoretical aspects of defining the essence of innovation]. *Visnyk Zaporizkoho natsionalnoho universytetu*, no. 2 (6), pp. 191-195. Available at:

<https://web.znu.edu.ua/herald/issues/2010/Vest_Ek6-2-2010-PDF/191-195.pdf> [Accessed 15 February 2022].

Law of Ukraine on accounting and financial reporting in Ukraine 2018. *Vidomosti Verkhovnoi Rady*, no. 40, pp. 365-366.

Law of Ukraine on amendments to the Constitution of Ukraine (on the strategic course of the state to gain full membership of Ukraine in the European Union and the North Atlantic Treaty Organization) 2019. *Vidomosti Verkhovnoi Rady*, no. 9, pp. 50-51.

Law of Ukraine on innovative activity 2002. *Holos Ukrainy*, 9 Aug. pp. 10-12.

Law, J. ed., 2016. *A Dictionary of Business and Management*. Oxford: Oxford University Press.

Lecceprima, 2021. *Sfuma il furto di quintali di pomodori da una serra, ma è allarme nelle campagne* [The theft of tons of tomatoes from a greenhouse fades, but it is alarm in the countryside]. Available at: <https://www.lecceprima.it/cronaca/porto-cesareo-leverano-tentato-furto-quintali-pomodori-serra-13-febbraio-2021.html> [Accessed 5 April 2021].

Lei, Z., 2018. Quantum radar tech to counter stealth. *China Daily*. Available at: <https://www.chinadaily.com.cn/a/201809/25/WS5ba96f86a310c4cc775e7d08.html> [Accessed 30 January 2021].

Lowder, S.K., Sánchez, M.V. and Bertini, R., 2019. *Farms, family farms, farmland distribution and farm labour: What do we know today?* Rome: Food and Agriculture Organization of the United Nations. Available at: <http://www.fao.org/3/ca7036en/ca7036en.pdf> [Accessed 17 February 2021].

Marchenko, O.I. and Saienko, Y.P., 2016. Ohliad pidkhodiv do vyznachennia poniattia "innovatsiia" [Review of approaches to the definition of "innovation"]. *Naukovyi visnyk Uzhhorodskoho natsionalnoho universytetu. Seriia: Mizhnarodni ekonomichni vidnosyny ta svitove hospodarstvo*, issue 10 (2), pp. 17-21

MarketsAndMarkets, 2020. *Surveillance Radars Market - Global Forecast to 2025*. Available at: <https://www.marketsandmarkets.com/Market-Reports/security-surveillance-radar-market-35330984.html> [Accessed 16 February 2021].

Medinskij, V.G. and Sharshukova, L.G., 2007. *Innovacionnoe predprinimatel'stvo: Uchebnoe posobie* [Innovative Entrepreneurship: Textbook]. Moscow: INFRA-M.

Minotti, A., 2016. *Dual Use and Arms Control, EU Regulation and Italian Law*. Available at: <https://www.difesa.it/SGD-DNA/Staff/DT/TERRARM/News/Documents/Simposio_22_24_novembre_2016/24_novembre/Minotti.pdf> [Accessed 21 March 2021].

Mohr, J. J. and Shooshtari, N.H., 2003. Introduction to the special issue: Marketing of high-technology products and innovations. *Journal of Marketing Theory and Practice*, vol. 11, no. 3, pp. 1-12. Available at: <http://www.jstor.org/stable/23232653> [Accessed 10 February 2022].

Mykytyuk, P.P. ed., 2015. *Innovatsijnyj rozvytok pidpryiemstva* [Innovative development of the enterprise]. Ternopil: PP "Prynter Inform".

Nagachevska, T. and Prygara, O., 2018. Model' innovacionnogo razvitija sovremennogo predprijatija [Model of Innovative development of a modern enterprise]. *Ekonomika*, no. 5 (200), pp.33-41. doi: 10.17721/1728-2667.2018/200-5/5.

Nagachevska, T., 2000. Suchasni tendentsii upravlinnia innovatsiiamy v mizhnarodnii ekonomitsi [Modern Trends in Management of Innovations in the International Economy]. *Bulletin of Taras Shevchenko National University of Kyiv. Economics,* issue 43, pp. 6-10.

Nicas, J., 2022. Ukraine War Threatens to Cause a Global Food Crisis. *The New York Times*. Available at: <https://www.nytimes.com/2022/03/20/world/americas/ukraine-war-global-food-crisis.html?referringSource=articleShare> [Accessed 11 April 2022].

Noori, H., 1990. *Managing the dynamics of new technology: issues in manufacturing management*. London: Prentice Hall.

Pavlenko, I.A., 2007. *Innovatsiine pidpryiemnytstvo u transformatsiinii ekonomitsi Ukrainy: Monohrafiia* [Innovative entrepreneurship in the transformational economy of Ukraine: Monograph]. Kyiv: KNEU.

Piercy, N. and Giles, W., 1989. Making SWOT Analysis Work. *Journal of Marketing Intelligence & Planning*, vol. 7, issue 5/6, pp. 5-7.

Polehenka, M.A., 2016. Etymolohiia terminu "innovatsii" yak ekonomichnoi katehorii [The etymology of the term "innovation" as an economic category]. *Ahrosvit*, no. 21, pp. 57-61.

Popescu, A.R., 2022. Poland to increase defence spending to 3% of GDP from 2023. *Janes*. Available at: <https://www.janes.com/amp/poland-to-increase-defence-spending-to-3-of-gdp-from-2023/ZnlJK3dHVU9mZ28xajRJVkc5dVI5VFp1cVMwPQ2> [Accessed 27 March 2022].

Porter, M.E., 1979. How Competitive Forces Shape Strategy. *Harvard Business Review*, no. 57 (2), pp. 137–145.

Porter, M.E., 1985. *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Harvard Business Review.

Prygara, O. and Yarosh-Dmitrenko, L., 2013. Innovation strategy of an industrial enterprise: Marketing Aspect. *European Applied Sciences*, vol. 4, issue 2, pp. 114-115.

Purchase, S. and Volery, T., 2020. Marketing innovation: a systematic review. *Journal of Marketing Management*, vol. 36, no. 5, pp. 763-793. doi: 10.1080/0267257X.2020.1774631.

Reguia, C., 2014. *Product Innovation and the Competitive Advantage*. 3rd ed. Paris: OECD.

Research Centre for Agricultural Policies and Bioeconomy, 2020. *Italian agriculture in figures.* Rome: CREA. Available at: <https://www.mapa.gob.es/es/ministerio/ministerio-exterior/europa/cuentasagricultura2019_tcm30-507754.pdf> [Accessed 22 March 2021].

Rogers, E.M., 2003. *Diffusion of Innovations*. 5th ed. New York: Free Press.

Rozhkova, K., 2020. Kinets epokhy vysokykh stavok. Chy dostatno tsoho dlia kredytuvannia [The end of the era of high interest rates. Is this enough for lending"]. *Ekonomichna Pravda*. Available at: <https://www.epravda.com.ua/columns/2020/02/12/656951/> [Accessed 2 April 2021].

Santo, B., 1990. Innovation as a tool for economic development [Innovacio a gazdasag fejlestesenek eszkoze]. Translated from Hungarian by S. Zavjalov. Moscow: Progress.

Schumpeter, J.A., 1974. *Theory of Economic Development*. New York: Oxford University Press.

Segodnja, 2022. *Made in Ukraine: Ruslan Bahynskyi pryzval podderzhat brendы konkurentov* [Made in Ukraine: Ruslan Bahynskyi called to support competitors' brands]. Available at: <https://lifestyle.segodnya.ua/amp-lifestyle/made-in-ukraine-ruslan-baginskiy-prizval-ukraincev-podderzhat-nashi-brendy-1610446.html> [Accessed 13 April 2022].

Shajtan, B.I., 2005. Innovacii v APK i rol' sluzhby sel'skohozjajstvennogo konsul'tirovanija [Agribusiness innovation and the role of agricultural advisory services]. In: *Innovative activity in agro-industrial complex: experience and problems*, Proceedings of the International Scientific and Practical Conference, Moscow, January 13-14 2005. Moscow, pp. 206-213.

Shchepkina, N.M., 2010. *Strategy of innovative development of enterprises of metallurgical industry*. Abstract of Ph.D. dissertation. Mariupol.

Shestakov, D.Y., 2018. Understanding innovation: process, project and product-centric views. *Efektyvna ekonomika*, no. 12. doi: 10.32702/2307-2105-2018.12.209

Skoet, J., Lowder, S.K. and Raney, T., 2016. The Number, Size, and Distribution of Farms, Smallholder Farms, and Family Farms Worldwide. *World Development*, no. 87, pp. 16–29.

Sokolov, D.D., Titov, A.B. and Shabanova, M.M., 1997. *Predposylki analiza i formirovanija innovacionnoj politiki* [Prerequisites for analysis and formation of innovation policy]. St. Petersburg: GUEF.

Starostina, A., Sitnicki, M.W., Petrovsky, M., Kravchenko, V. and Pimenova, O., 2021. Marketing research in a transition economy of the turbulent worlds. *Amazonia Investiga*, vol. 10(46), pp. 51-70. doi: 10.34069/AI/2021.46.10.5.

Starostina, A.O. ed., 2017. *Marketynh: terminolohichnyi slovnyk* [Marketing: a glossary]. Kyiv: NVP "Interservis".

Starostina, A.O., 2012. *Marketynhovi doslidzhennya natsional'nykh i mizhnarodnykh rynkiv: pidruchnyk* [Marketing research of national and international markets: a textbook]. Kyiv: LLC "Lazarit-Polygraph".

Starostina, A.O., Kravchenko, V.A., & Nagachevska, T.V., 2019. *7 skhodynok pidhotovky uspishnoi dysertatsii* [7 steps of dissertation preparation]. 2nd ed. Kyiv: NVP "Interservis".

Sumets, A., 2006. Innovacii v dejatel'nosti predprijatija [Innovations in the activity of the enterprise]. *Marketing i reklama*, no. 11, pp. 28-33.

Teodorescu, G. and Vladut, G., 2016. Integral Innovation. *Romanian Review Precision Mechanics, Optics & Mechatronics*, vol. 50, pp. 66-71.

The Council of the European Union, 2009. *Council Regulation (EC) No 428/2009.* Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009R0428> [Accessed 17 March 2021].

The First News, 2022. *EC poised to approve Poland's recovery plan soon, says minister*. Available at: <https://www.thefirstnews.com/article/ec-poised-to-approve-polands-recovery-plan-soon-says-minister-29016> [Accessed 10 April 2022].

Tucker, R B., 2008. *Driving Growth Through Innovation: How Leading Firms Are Transforming Their Futures*. 2nd ed. Oakland: Berrett-Koehler Publishers

Twiss, B., 1980. *Managing technological innovation*. 2nd ed. London: Longman Publishing Group.

Ulwick, A., 2005. What Customers Want: Using Outcome0Driven Innovation to Create Breakthrough Products and Services. 1st ed. New York: McGraw-Hill Education.

Valenta, F., 1985. *Upravlenie innovacijami* [Innovation Management]. Moscow: Progress.

Vázquez, R., Santos, M.L. and Alvarez, L. I., 2001. Market orientation, innovation and competitive strategies in industrial firms. *Journal of Strategic Marketing*, vol. 9, issue 1, pp. 69-90. doi: 10.1080/09652540123013.

Venezia Today, 2020. *Maxi furto di asparagi: rubato il raccolto a un giovane agricoltore* [Maxi theft of asparagus: harvest stolen from a young farmer]. Available at: <https://www.veneziatoday.it/cronaca/furto-asparagi-mirano.html> [Accessed 6 April 2021].

Vlasenko, A., 2018. Kontrol′ za tovaramy viys′kovoho pryznachennya [Control over military goods]. *Visnuk*. Available at: <http://www.visnuk.com.ua/uk/publication/100007726-kontrol-za-tovarami-viyskovogo-priznachennya> [Accessed 19 March 2021].

Zhurylo, V.V. and Kochkina, N.Yu., 2011. Marketynhovi komunikatsii na rynku vysokykh tekhnolohii [Marketing communications in the high-technology market]. *Visnyk Khmelnytskoho natsionalnoho universytetu*, no. 6, vol. 2, pp. 136-141.

Zhurylo, V.V., 2008. Marketynhova diialnist u protsesi komertsializatsii innovatsiinykh tekhnolohii [Marketing activities in the process of commercialization of innovative technologies]. *Ekonosichnyi visnyk NTUU "KPI": zbirnyk naukovykh prats*, no. 5, pp. 292-296.

APPENDICES

Appendix 1

Competition analysis using the Five Forces model by Porter

Table 1.1

Assessment of the competitive rivalry within the global radar security systems market

Parameter	Evaluation criteria			Current evaluations	
	High (10,0 – 6,7)	Medium (6,6 – 3,4)	Low (3,3 – 0,0)	Italian segment	Polish segment
Market growth rates	Stagnation or decline	Slows down (4-9%)	High (> 10%)	3,0	3,5
Number of companies	More than 7	3-7	Less than 3	6	3
The level of product differentiation in the market	Standardized product	Standardized by key features, differs in additional benefits	Significant difference	5,5	4
Mobility barriers	Hard to move within the market	Some investments / changes are required	Easy to move within the market	2	4,5
Total				16,5	15,5
0,0 – 13,2	Low level of the competitive rivalry within the industry				
13,3 - 26,4	Medium level of the competitive rivalry within the industry				
26,5 - 40,0	High level of the competitive rivalry within the industry				

Source: developed based on the author's research

Table 1.2

Assessment of the threat of new entrants in the global radar security systems market

Parameter	**Evaluation criteria**			**Current evaluations**	
	High (10,0 – 6,7)	Medium (6,6 – 3,4)	Low (3,3 – 0,0)	Italian segment	Polish segment
Economies of scale in the production of goods	No opportunities	Only a few companies have opportunities	Significant opportunities	5	5
Strong brands with a high level of consumer loyalty	No	1-2	More than 2	4	6,5
Product differentiation	Low level	There are market niches	All possible niches are occupied	6	3,5
The level of investment and costs to enter the industry	Payback period < 6 months	Payback period 6-12 months	Payback period > 12 months	0	0,5
Government policy	No restrictions	Limits the industry, but not significantly	Fully regulates the industry and sets restrictions	4	4
The willingness of existing players to lower prices	Will not lower prices	Large companies can lower prices	Will lower prices if there is a cheaper offer	6,5	4
Total				25,5	23,5
0 - 19,8	Low level of threat of entry of new entrants				
19,9 - 39,6	Medium level of threat of entry of new entrants				
39,7 - 60,0	High level of threat of entry of new entrants				

Source: developed based on the author's research

Table 1.3

Assessment of the threat of substitute products in the global radar security systems market

Parameter	**Evaluation criteria**			**Current evaluations**	
	High (10,0 – 6,7)	Medium (6,6 – 3,4)	Low (3,3 – 0,0)	Italian segment	Polish segment
Substitute products 'price / quality'	Exist and have a high market share	Exist and have a small market share	Do not exist	7	8,5
Total				7	8,5
0 - 3,3	Low level of threat of substitute products				
3,4 - 6,6	Medium level of threat of substitute products				
6,7 - 10,0	High level of threat of substitute products				

Source: developed based on the author's research

Appendix 2

ABC-analysis of Ukrspetstechnika's suppliers

The components include electronic components, various devices, appliances, hardware products, etc. Reliability and reputation are the base for relations with this group of suppliers. The main criteria for their selection are the quality of the products offered, the breadth of the range, and compliance with specific technical characteristics (Table 2.1).

Table 2.1

ABC-analysis of components suppliers

№	Company	Share in the number of purchases	Group
1.	LLC "TD AvtoKrAZ"	25,6%	A
2.	LLC "INTERCARGOTRAK"	14,9%	A
3.	LLC "BUSINESSONICA"	10,1%	A
4.	LLC "UKR Research Institute of Computer Technologies"	6,3%	B
5.	MADEK LLC	6,1%	B
6.	SE "RES Research Institute"	5,9%	B
7.	CHIMMASHEXPORT LLC	5,0%	B
8.	SEA Electronics Ukraine LLC	4,2%	B
9.	Promtechnika LLC	4,1%	B
10.	LLC "Myt"	3,4%	B
11.	PE SCIENTIFIC AND TECHNOLOGICAL CENTER "REDUCER"	1,8%	C
12.	"Ltava" Plant	0,9%	C
13.	NAVI-TEK LLC	0,8%	C
14.	ALTERA KYIV LLC	0,7%	C
15.	Alcon-Service LLC	0,7%	C
16.	LLC "EVOKOM.YUA"	0,7%	C
17.	Elsis LLC	0,7%	C
18.	Incomtech-Project LLC	0,6%	C
19.	Other	7,6%	C
Total		**100%**	\\

Source: developed based on the author's research

Thus, only three suppliers account for about half of the total amount of purchases of components of Ukrspetstechnika, whereas another seven belong to group B. However, this distribution of suppliers does not mean their importance to the company since the components have different costs, and Ukrspetstechnika buys them in different quantities.

On the other hand, the company should reduce the number of suppliers belonging to group C and focus on integrated procurement from larger suppliers. It will help optimize the production process. However, Ukrspetstechnika also purchases quite rare components available only from a limited number of suppliers. It can also explain a significant number of companies in group C.

Materials include cable products, ferrous and non-ferrous metals, chemical products, etc. The main criteria for selecting such suppliers, in addition to those mentioned above, are the location in Kyiv (Table 2.2).

Table 2.2

ABC-analysis of materials suppliers

№	Company	Share in the number of purchases	Group
1.	ENERGOSOYUZ-DP LLC	38,3%	A
2.	METAL-A TRADE LLC	19,3%	A
3.	LLC "UKRAINIAN INDUSTRIAL PROJECT"	9,4%	A
4.	Metal Holding Trade LLC	7,2%	A
5.	Arsenal Instrument LLC	3,3%	B
6.	LLC TD "Ukrainian color hire"	2,4%	B
7.	EUROZTRADE GROUP OF COMPANIES LLC	2,1%	B
8.	LLC "IS GROUP LTD"	2,0%	B
9.	SALIX LLC	1,9%	B
10.	Storozhuk LLC	1,4%	B
11.	LLC "ALUMINUM"	1,3%	B
12.	ARGO METAL LLC	1,2%	B
13.	LISTEKHPOSTAVKA LLC	1,0%	C
14.	LLC "Company STALEVAR"	0,8%	C
15.	Coronel LLC	0,8%	C
16.	IMPERA GROUP LLC	0,7%	C
17.	LLC "OptExpress"	0,7%	C
18.	PE VKF "Isolitservice"	0,6%	C
19.	Other	5,6%	C
Total		**100%**	\\

Source: developed based on the author’s research

Thus, only four suppliers account for about 75% of the total number of materials purchases. The other eight belong to group B. So, it would be appropriate to consider reducing the number of companies in group C and making a complex purchase of materials.

Ukrspetstechnika also requires providing certain industrial services for the production of radar equipment. It includes galvanic coating, cutting, painting of

metal, and printing of accompanying documentation. The main criteria for selecting these suppliers are the ability to provide a specific type of service in the required amount and the geographical location in Kyiv (Table 2.3).

Table 2.3

ABC-analysis of service providers

№	Company	Share in the number of purchases	Group
1.	SE "GALVANOTEHNIKA"	52,7%	A
2.	LLC "MR"	24,4%	A
3.	OJSC Korolev Meridian	16,6%	A
4.	Nova Grafika LLC	5,9%	A
5.	Other	0,3%	C
Total		**100%**	\\

Source: developed based on the author's research

Thus, we identified only groups A and C in this procurement type. In other words, there is only one company for each service required in the production process, which Ukrspetstechnika orders from suppliers. Therefore, we recommend the company find additional industrial services suppliers for group B to diversify risks.

Appendix 3

Preliminary assessments of macroenvironmental factors

Table 3.1

Preliminary assessment of political and legal factors of the macro-environment

№	Factor	Factor description	Opportunity / Threat	Demand / Supply
1.	The need for dual-use goods to comply with NATO standards	Not required for the import of products, but often a prerequisite for the sale of products in the EU	opportunity	supply
2.	Export control of dual-use goods	Restrictions on the possibility of free export-import operations	threat	supply
3.	The need to obtain an export license	Additional costs for registration and issuance of documents	threat	supply
4.	The lack of automated information systems in the Ukrainian export control	The long period of consideration of applications for registration and obtaining a permit to export products	threat	supply
5.	Dependence on the government defense contracts	Limited opportunities for competitors to work with the AgriTech market due to the fixed load of production capacity	opportunity	demand
6.	Acceleration of recognizing Ukraine as a candidate for EU accession	Ukraine will receive full membership of the EU single market. After the accession to the EU, the export procedure will become simpler and faster.	opportunity	supply

Source: developed based on the author's research

Table 3.2

Preliminary assessment of economic factors of the macro-environment

№	Factor	Factor description	Opportunity / Threat	Demand / Supply
1.	The elasticity of demand in the AgriTech market	Lower price offers can be valuable criteria for choosing a manufacturer due to the lack of funds from potential customers	opportunity	demand
2.	A significant number of solvent farms	Many clients that can afford to buy a radar security system	opportunity	demand
3.	Unavailability of loans for small businesses	Significant efforts to convince company owners of the payback of radar security system purchase	threat	demand
4.	Increasing demand for lightweight and compact security systems	Possibilities to enter the AgriTech market, but there is a need for quick product innovation	opportunity / threat	demand / supply
5.	Recover of European countries' economies from COVID-19	Recovering of potential customers funds	opportunity	demand
6.	Possible global food crisis	The war in Ukraine affects global food and grain supplies. So, additional sowing can be carried out in neighboring countries. It may create a need for field protection.	opportunity	demand

Source: developed based on the author's research

Table 3.3

Preliminary assessment of social factors of the macro-environment

№	Factor	Factor description	Opportunity / Threat	Demand / Supply
1.	The importance of existing business relationships and reputation in the market	Establishing a base of customers and starting receiving new orders through recommendations require some time	threat	demand
2.	Level of loyalty to domestic manufacturers	The influence of preferences on the purchase	threat	demand
3.	Level of harvest thievery	The possibility of acquiring a significant number of potential clients who need surveillance tools	opportunity	demand
4.	Strengthening of the 'Made in Ukraine' brand	Countries willing to support Ukraine due to the Russian invasion and buy Ukrainian products	opportunity	demand
5.	The confidence increase in Ukrainian dual-use goods	The company's radar equipment has already shown itself on the battlefield in a great way	opportunity	demand

Source: developed based on the author's research

Table 3.4

Preliminary assessment of technological factors of the macro-environment

№	Factor	Factor description	Opportunity / Threat	Demand / Supply
1.	The tendency to create universal dual-use security systems	The ability to promote products in new markets and meet the diverse needs of customers	opportunity	demand
2.	Advancement in border surveillance systems	Competitors will potentially pay more attention to this segment	opportunity	supply
3.	Advancement in surveillance technologies	Competitors will have more competitive advantages in terms of the level of technology	threat	supply / demand

Source: developed based on the author's research

Appendix 4

Transfer of SWOT matrix estimates into DPM

Table 4.1

Market attractiveness for the DPM matrix

Factor	W	Evaluation criteria			Italy				Poland			
		Low (0,0-3,3)	Medium (3,4-6,6)	High (6,7-10,0)	Now		Future		Now		Future	
					CE	WE	CE	WE	CE	WE	CE	WE
The threat of substitute products	0,09	in segment 3	in segment 1, 4	in segment 2	3,0	0,27	6,0	0,54	1,5	0,14	3,5	0,32
The need to obtain an export license	0,08	valid for one export operation	valid for a certain period of time	no expiration date	1,0	0,08	3,0	0,24	1,0	0,08	3,0	0,24
The threat of new entrants	0,08	in segment 4	in segment 1, 2	in segment 3	3,0	0,54	5,0	0,40	2,0	0,16	5,5	0,44
Export control of dual-use goods	0,08	many additional procedures	a number of additional procedures	standard export procedure	3,0	0,24	7,0	0,56	3,0	0,24	6,5	0,52
Bargaining power of customers	0,09	in segment 1	in segment 2, 3	in segment 4	5,0	0,45	7,5	0,68	5,5	0,50	8,0	0,72
Unavailability of loans for small businesses	0,05	no possibilities to take a loan	can possibly take a loan to pay for the purchase	can easily take a loan to pay for the purchase	3,0	0,15	5,5	0,28	3,0	0,15	3,5	0,18
The lack of automated information systems in the Ukrainian export control	0,08	do not exist	under development	do exist	5,0	0,40	7,5	0,60	5,0	0,40	7,5	0,60
Strengthening of the ‘Made in Ukraine’ brand	0,06	not willing to buy Ukrainian products	may give preference to Ukrainian products	big willingness to buy Ukrainian products	10,0	0,60	10,0	0,6	7,0	0,42	6,5	0,39

Continuation of Table 4.1

Factor	W	Evaluation criteria			Italy				Poland			
		Low (0,0-3,3)	Medium (3,4-6,6)	High (6,7-10,0)	Now		Future		Now		Future	
					CE	WE	CE	WE	CE	WE	CE	WE
The confidence increase in Ukrainian dual-use goods	0,06	will not buy Ukrainian security systems	may prefer to buy Ukrainian security systems	prefer to buy Ukrainian security systems	8,0	0,48	8,5	0,51	8,0	0,48	8,5	0,51
The need for dual-use goods to comply with NATO standards	0,08	do not comply	partially comply	fully comply	6,5	0,52	9,0	0,72	6,5	0,52	9,0	0,72
Level of harvest thievery	0,06	a few cases during the year	some cases during the year	many cases during the year	8,0	0,48	7,5	0,45	6,0	0,36	5,5	0,33
Dependence on the government defense contracts	0,08	produce mostly for commercial and other sectors	produce for defense contracts and some other sectors	produce only for defense contracts	5,0	0,40	6,5	0,52	7,0	0,56	6,0	0,48
The elasticity of demand in the AgriTech market	0,05	pricing methods do not affect demand	pricing methods can partially affect demand	pricing methods affect demand	8,0	0,40	7,5	0,38	7,0	0,35	7,5	0,38
A significant number of solvent farms	0,05	< 10% of the total number of farms	10-25% of the total number of farms	> 25% of the total number of farms	7,0	0,35	8,5	0,43	6,0	0,30	6,5	0,33
Total	**1,00**	-	-	-	-	**5,36**	-	**6,90**	-	**4,66**	-	**6,15**

Source: developed based on the author's research

Table 4.2

Company competitiveness for the DPM matrix

Factor	W	Evaluation criteria			Italy				Poland			
		Low (0,0-3,3)	Medium (3,4-6,6)	High (6,7-10,0)	Now		Future		Now		Future	
					CE	WE	CE	WE	CE	WE	CE	WE
Product uniqueness	0,10	> 2 product-analogs	1-2 product-analogs	no product-analogs	9,5	0,95	9,5	0,95	N/A	N/A	N/A	N/A
Experience in exporting	0,08	< 5 years	5-15 years	> 15 years	4,5	0,36	5,0	0,40	N/A	N/A	N/A	N/A
Reputation in the market	0,10	known only in the local market	certain fame abroad	a world-renowned company	3,5	0,35	6,0	0,60	N/A	N/A	N/A	N/A
Staff qualifications	0,06	< 70% of highly qualified employees	70-90% of highly qualified employees	> 90% of highly qualified employees	9,0	0,54	9,0	0,54	N/A	N/A	N/A	N/A
Width of the product line	0,05	one product	2-3 products	> 3 products	5,0	0,25	5,5	0,28	N/A	N/A	N/A	N/A
Experience in the market	0,09	< 10 years	10-25 years	> 25 years	6,5	0,59	7,0	0,63	N/A	N/A	N/A	N/A
The effectiveness of product promotion	0,07	one promotion tool	2-3 promotion tools	all promotion tools	3,5	0,25	5,5	0,39	N/A	N/A	N/A	N/A
Availability of effective sales channels	0,07	one sales channel	2-3 sales channels	> 3 sales channels	5,0	0,35	6,0	0,42	N/A	N/A	N/A	N/A
Personnel training	0,04	less than once a year	several times per year	many times per year	8,5	0,34	8,5	0,34	N/A	N/A	N/A	N/A
The level of technology	0,12	obsolete	mix	the latest	6,5	0,78	7,0	0,84	N/A	N/A	N/A	N/A
Using the achievements of STP	0,09	with a significant delay	gradual	immediate	6,0	0,54	6,5	0,59	N/A	N/A	N/A	N/A
Price level	0,13	higher	the same	lower	5,0	0,65	6,5	0,85	N/A	N/A	N/A	N/A
Total	**1,00**	**-**	**-**	**-**	**-**	**5,94**	**-**	**6,82**	**-**	**N/A**	**-**	**N/A**

Source: developed based on the author's research

Appendix 5

Radar security systems specifics (in commercial proposal form)

We represent Ukrspetstechnika, which produces a wide range of complex electronic and other special equipment. We are pleased to present a new way of large agricultural area surveilling.

What we offer

We offer you a security system that works on radio signal technology. It is portable ground equipment, installed on a support-swivel mechanism, designed to automatically detect and recognize ground moving objects: people and equipment. This radar security system can monitor the area under any weather conditions. They are specially designed for open-air surveillance.

How it works

The object is detected and identified automatically; the object marks are displayed on your central security point monitor. The data show the range, azimuth, speed, and signs (human or transport) concerning the map. It is possible to choose the area of increased attention.

Therefore, there is no need to switch between many cameras. Moreover, when the object enters the viewing area, the radar security system emits an alarm signal (including an audible one) to the central security control panel. Therefore, inconspicuous interference with the territory is excluded.

Technical details

Object detection:	
– azimuth	360°
– range	up to 1 km
Rotation speed:	4-20°/s
Power consumption:	27 W/h
Weight (including support-swivel mechanism):	12 kg
Uninterrupted operation in the following weather conditions:	
– operating temperature:	–30° … +50°C
– humidity:	up to 100%
– wind speed:	up to 25 m/s

Advantages

High economic efficiency. A radar security system's life cycle is ten years. The cost of this cycle includes electricity and scheduled battery replacement once a year (provided powering the radar security system from the mains).

High-quality standards. The radar security system has passed all relevant tests as dual-use good. Its quality meets NATO quality standards requirements, confirmed by the relevant certificates.

Independence from lighting levels and weather conditions. Monitoring with a radio signal allows surveilling round-the-clock under various weather conditions: rain, snow, or fog.

Ability to monitor both the perimeter and the entire area. The object recognition range, which is about 3 km, enables one to choose the angle and direction of view to observe the desirable part of the agricultural area. Choosing the increased attention area is also possible.

Installing only two radar security systems on opposite corners of the territory or one in the center is enough. Thus, instead of using multiple video cameras and the need for an operator to distribute attention between many windows on the surveillance monitor, just one or two windows on the operator's monitor require attention. It will increase the efficiency and timeliness of unauthorized entry detection.

Connectivity with other devices. It means integrating into existing systems, for example, connecting to existing equipment used for surveillance.

No impact on plants, human and animal health. The radar security system is safe, as evidenced by the relevant certificates.

What you get:

- round-the-clock security (24 hours a day the territory will be safe);
- uninterrupted work in any weather conditions;
- immediate response (software provides an audible signal when the object enters the viewing area, which immediately attracts attention in the central security point);

– warranty period of 18 months from the date of delivery.

We also provide after-sales service: for a fee for each visit of our specialists or by concluding a service agreement for the entire equipment life cycle.

Why trust us

Ukrspetstechnika has existed on the Ukrainian market for 25 years and is one of the leading companies in the radar technology field. We have many years of experience working with state customers (the Ministry of Defense, the State Border Guard Service of Ukraine, and others) and with private clients. Among our projects is the protection of solar and hydroelectric power plants and the protection of open warehouses and adjacent areas.

Today, we have about 185 agricultural lands, which are successfully cared for with the help of our devices, and three satisfied customers (by the way, among them is your biggest competitor).

The company has all the necessary certificates for the quality of production, components, and materials. The company also has its service of technical control and product quality.

Sincerely grateful for the attention. Hope for fruitful cooperation.

Appendix 6

Advantages and benefits of radar security system for enterprises operating in the AgriTech market

Table 6.1

Advantages and benefits of radar security system use

The objective advantage for the consumer	Consumer benefit
Possibility of charging from the mains	No need to change the battery
Energy efficiency	Less money spent on electricity
Resistance to weather conditions and independence from lighting levels	Round-the-clock effective surveillance; no blurred picture on the supervision screen
High economic efficiency	The equipment will last a long time, and the purchase cost will pay off faster
Free training on using the radar security system	Saving employees time to understand how the equipment works; savings on repairs, as the training will cover the most common mistakes in the use
Compliance with international quality standards	The equipment will last for many years
Ability to connect to other devices	No need to buy accessories or replace existing ones: the laptop can connect to the radar security system, and it is ready for the usual way of using
It has the function of an audible signal when an unauthorized object enters the surveillance zone	Instant detection of unauthorized intrusion into the territory, even if the security guard fell asleep
Possibility of choosing the angle and direction of view	No need to switch between cameras to monitor different area zones. It is also possible to zoom in on the terrain map
Automatic detection of territory intrusion	Absence of human influence; instant detection of unauthorized intrusion into the territory; timely call of security or police
Full coverage of the surveillance area	No need to switch between cameras, as only one or two terrain map windows are on the screen. Timely detection of unauthorized intrusion into the territory
Uninterrupted operation	Will not fail at ‘that very moment’

Source: developed based on the author’s research