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## IMPLEMENTATION OF MARKETING AND LEGAL TOOLS IN THE PROCESS OF COMMERCIALIZATION FOR INNOVATIVE PRODUCTS IN STRATEGIC MANAGEMENT AND ENTREPRENEURSHIP

**Abstract:** *The subject of the research is the innovative products commercialization process features in strategic management and entrepreneurship marketing and legal aspects. The testing of the used methods and techniques was carried out on the example of the innovative enterprise. The methodical approach of the study is based on the analytic and descriptive approach and is aimed at providing a case study. Thus, the aim of the study is to analyze the marketing and legal component at different stages of the innovative products commercialization process and the adaptation of theoretical and methodological approaches at an empirical level. The study demonstrates which marketing and legal tools and at what stages of commercialization it is advisable to use, and also proves the economic efficiency of the innovative project according to the described methodology. The results of calculations and analysis confirmed the effectiveness of the methodological approaches and enterprise development strategies use.*

**Keywords:** *Commercialization; Innovation; Marketing tools; Legal tools; Innovative products; Consumer; Strategy; Marketing-mix; Patent; Licensing*

### 1. Introduction

Modern enterprises are forced to operate in challenging economic conditions. Crisis economic factors affect the activities of both the B2C and B2B fields. Free and intense competition, oversaturation of consumer goods, rapid change in consumer needs and requests, reforming the financial service market which allows to improve its functioning and increase its positive impact on the development of the national economy (Chmutova et al., 2017; Shkarlet et al., 2019) the threat of loss of economic security and trade secrets, lack of copyright protection, industrial espionage, staff turnover and other

are all factors that require new businesses solutions both in production, distribution and marketing, and in the fight for new consumers. Legislative regulation and promotion of innovation activities at the national level, as well as compliance with international norms and regulations, are an important prerequisite for the effective functioning of the global innovation market.

The innovation process is an important and effective tool for competition in entrepreneurship. Innovation activities, as a rule, require large amounts of funding and, at the same time, are risky. Because it can take a long time for the idea to be generated and implemented before it is implemented in mass

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production and marketing, and the real volume of sales will not recoup the investment.

Quite often, technologies, know-how, innovative ideas, patents, and licenses never find their buyer and remain at the level of development and ideas and subsequently lose their relevance. That is why the use of marketing and legal tools in the process of commercialization is very important in particular in the process of converting the results of intellectual activity into a product and finding the target consumers.

Implementation of the policy to innovative activity stimulation in Ukraine is carried out according to the provisions of Ukrainian Law «On Innovation Activity» (Law of Ukraine № 40-IV). The state innovation policy of the country is aimed at forming the necessary conditions for the effective reproduction, development and using the scientific and technical potential of the country, production and sale of innovative competitive products in foreign and domestic markets. The relations arising in connection with the acquisition and enjoyment of inventions ownership are governed by the Code of Ukraine (Book Four, Intellectual Property Law) (Code of Ukraine № 40-IV) and the Law of Ukraine «On Protection of Rights to Inventions and Utility Models» (Law of Ukraine № 3687-XII). It specifies the legal rules governing the development, implementation and legal protection of new and advanced intellectual property rights and technologies created on their basis. In addition, the legal aspects of the intellectual property protection and copyright are governed by Laws of Ukraine: «On Copyright and Related Rights» (Law of Ukraine № 3792-XII), «On Protection of Rights to Trademarks for Goods and Services» (Law of Ukraine № 3689-XII), «On Protection of Rights to Industrial Designs» Law of Ukraine № 3688-XII), «On Protection of Rights to Indication of Goods Origin» (Law of Ukraine № 752-XIV) and others. In turn, technology transfer activities (transfer of property rights and / or their components under license agreements) are

governed by the Law of Ukraine «On State Regulation of Activity in the Sphere of Transfer of Technologies» (Law of Ukraine № 143-V). It is aimed at ensuring the effective use of the scientific, technical and intellectual potential in Ukraine.

Nowadays, the process of commercialization of innovations is sufficiently enlightened and studied in the scientific literature all over the world with significant differences and ambiguities in understanding its components, stages, evaluation criteria, mechanism, methods, and so on.

Babenko V., Romanenkov Yu., Yakymova L., Nakisko A., Shorikov A., Davydova I., Balan O., Danyliuk O., Horbashevskaya M., Bakulina N. and Samarchenko I. study the different aspects of innovation management and offer practical solutions in various areas of innovative entrepreneurship (Shorikov & Babenko, 2014; Babenko et al., 2019; Babenko, 2019; Davydova et al., 2019; Memon et al., 2017).

Illiashenko et al. (2019a, 2019b) stated that the effectiveness of innovation management depends on the efficiency of the method of created innovations commercialization, which must meet the existing external and internal conditions. The author's approach to the classification of methods of commercialization of innovations by innovator organizations and corresponding innovative strategies of the organization is noteworthy. They supplemented the classification with such criteria as stages of innovation and life cycle of commodity innovation; areas of innovative development and different types innovative strategies.

Kanishchenko et al. (2019) consider the problems of effective commercialization of environmental innovations in the management system of industrial enterprises of Ukraine. The authors characterize the relationship between the socialization of the economic environment of entrepreneurship and the increasing relevance of ensuring environmental protection and environmental safety of production by improving the

management mechanism of using the latest environmental developments.

Kostsyk R. treats intellectual property – invention, industrial design, innovative offers, efficiency models, know-how, etc., as innovative products. However, the process of innovative product commercialization proposes to allocate only from the moment of launch of finished products on the market for the sake of economic profit. It does not take into account the stages of the product innovation cycle. Among the stages of commercialization offered by the author, the marketing orientation/direction is clearly highlighted. It notes the importance of conducting market research, identifying the target market, selecting forms and methods of commercialization, and developing a marketing strategy (Kostsyk, 2012; Kostsyk, 2016). Kovtunenکو (2012) also does not take into account some stages of the innovation cycle in the commercialization process. It offers five main stages, such as evaluation and selection of innovative products for launch, the formation of the necessary financial resources, securing the rights to created products, and organization of innovation production.

Kosenko O. considers that a thoughtful promotion strategy is one of the most important factors for the successful commercialization of innovative products. The high level of competition and the presence of a large number of developments in the innovation market makes it necessary to use the means of promotion in the complex, taking into account the goals and opportunities of the innovative products enterprise-developer (Kosenko & Balysheva, 2013; Kosenko, 2015). Concerning intellectually innovative technologies, the author classifies the process of commercialization as technology transfer.

So, Lipkova and Braga (2016) take into account both marketing and legal instruments in evaluating the capacity of commercialization of innovations (Fuzzy approach with the use of Strategic

Technology Evaluation Program developed). They also include marketing and legal areas in a hierarchical structure for commercial potential assessment. Moreover, the future success of commercialization depends also on the goals of the business, the form of intellectual property, the budget of economic resources, the risks system, related to the specificity of the product, privacy questions, business reputation. They note that it is essential to be aware of some barriers during the commercialization of innovations. Among the difficulties, there are some local issues such as challenges in maintaining intellectual property rights, lack of market standards or regulations, the complexity of meeting regulations or standards; and marketing ones such as weak distribution channels, lack of marketing expertise, low demand for innovative goods or services and a market dominated by established competitors.

Jordan (2014) notices that innovation is the translation of a new method, idea, or product into reality and profit. It is a process of connected stages that accumulates into brand or reputation. Commercialization is the final result of innovations that are used to generate profits that create jobs and accumulate wealth. He examines these processes from the perspective of marketing value through a focus on the needs of individual constituents –investors, regulators, customers, and exit candidates.

According to the authors Yakovlev A., Kosenko O. and Tkachev M. there are two ways to make a profit in the process of intellectual property commercialization: by using property rights to innovate or by transferring these rights to others. On this basis, the authors point out the essential component of the commercialization process - the legal instruments (legal protection and legal defense of the intellectual activity results of the developer). As a violation of intellectual property rights inevitably leads to substantial financial losses for their owners and the national budget (Yakovlev et al., 2013).

Sager L., Melnyk Yu. and Sygyda L. offer 11 stages of the commercialization process, among which the development of marketing strategy stands out. They also offer a mechanism for innovative products commercialization based on the interaction of input and output information flows. This mechanism helps to study the relationships that arise during the transformation of an idea into a product in more detail. If an innovative product meets the needs and demands of consumers, then it will have market success in the face of continuous environmental change (Sager & Sygyda., 2018; Melnyk et al., 2019).

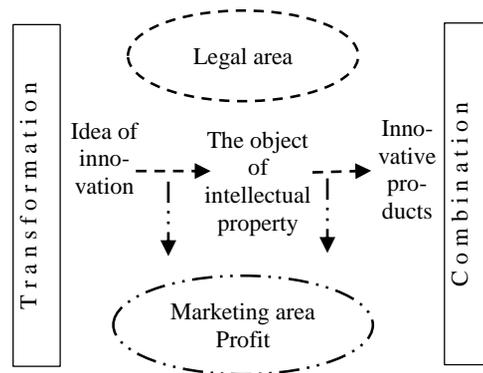
Datta A., Reed R. and Jessup L. categorize commercialization into six broad themes of entrepreneurial activities: sources of innovations, types of innovation, market entry (capabilities and feasibility), protection, development, and deployment (Datta et al., 2013).

Aarikka-Stenroosa et al. (2014) integrate the knowledge on how current research and business has employed the network approach in commercialization, and how contributors external to the innovator firm can facilitate the commercialization of innovations.

Grossa et al. (2018) investigate timescale from invention to widespread commercialisation in energy supply and end use technology technology.

Therefore, by analyzing the literature, it can be noted that the majority of scientists consider the commercialization of innovative products as a process of launching an innovative product on the market. We believe that the idea of creating an innovation that can also be sold cannot be ignored. We summarized the theoretical approaches and highlighted the marketing and legal aspects of the commercialization process (Figure 1).

The legal area is about ensuring the legal framework in the process of transforming the idea of innovation into finished products. Marketing instruments make it possible to find the target consumer and get profit even from selling the innovation idea.



**Figure 1.** Interaction of marketing and legal aspects in the commercialization process

*Source: summarized by the authors*

The legal area is about ensuring the legal framework in the process of transforming the idea of innovation into finished products. Marketing instruments make it possible to find the target consumer and get profit even from selling the innovation idea. Therefore the figure illustrates the process of commercialization through the transformation of innovation from idea to innovative product and the combination of marketing and legal aspects for profit maximization.

## 2. Materials and methods

The study will be carried out in stages according to the algorithm below (Sager & Sygyda., 2018; Melnyk et al., 2019):

Stage 1. Collection and analysis of information.

Stage 2. Analysis of the idea and definition of the innovation essence and strategy of commercialization.

Stage 3. Necessary resources availability assessment.

Stage 4. Filing a patent application.

Stage 5. Selection of the form and priority method of commercialization.

Stage 6. Developing a marketing strategy.

- Stage 7. Accumulation of necessary funds.
- Stage 8. Implementation into production or startup.
- Stage 9. Licensing.
- Stage 10. Commercial production and market entry.
- Stage 11. Assessing the economic effectiveness of commercialization.
- Stage 12. Commercial production deployment.

For analysis of external environment we will use such method as PESTEL analysis. The micro and macro environments can also be analyzed using SWOT, SNW-methods and others. The PESTEL analysis is performed in the form of a table, divided into six segments (Political, Social, Economic, Technological, Environmental and Legal factors). The power of effect ( $P_i$ ) of each individual factor is determined by the formula 1 (Grabovetskyi, 2010; Bilovodska et al., 2019):

$$P_i = V_i \cdot \frac{\sum_{i=1}^m E_i}{m}, \tag{1}$$

$V_i$  – corresponding value;  $E_i$  – an effect on the industry (the expert assessment of the characteristics compliance of factor), points;  $m$  – the number of experts involved, persons;  $i$  – the identifier of factor characteristics.

The corresponding value were calculated on the basis of (Grabovetskyi, 2010; Bilovodska et al., 2019) by the formulas 2, 3:

$$V_i = \frac{\sum_{j=1}^m V_{ij}}{\sum_{i=1}^n \left( \sum_{j=1}^m V_{ij} \right)}, \tag{2}$$

$$V_{ij} = \frac{C_{ij}}{\sum_{i=1}^n C_{ij}}, \tag{3}$$

in which,  $V_i$  – the total corresponding value given by the experts to the factor  $i$ ;  $m$  – number of experts;  $n$  – number of factors;  $V_{ij}$  – rank, set by the expert  $j$  for factor  $i$ ;  $C_{ij}$  – an estimation of the relative corresponding value (in points), set by the expert  $j$  for the factor  $i$ .

The micro-environment of the company could be analyzed through the marketing analysis, which is based on the concept of five competitive forces by Michael Porter. This method is similar to the previous one based on the using of expert assessment method, and weighted average assessment of factors. Factors have a point score ( $E$ ) and specific gravity ( $V$ ) as in formula 1.

The power of the factors influence was calculated by the formula 4:

$$P = \sum_{i=1}^n P_i, \tag{4}$$

in which,  $n$  – the number of studied factors. To determine the consistency of the experts opinions the statistical tools were used (Lemeshko et al., 2011; Yashkina, 2013).

To estimate the availability of the necessary resources for the implementation of the commercialization process, we use a four-component indicator, which helps to choose the right growth strategy that matches existing business resources.

Determining the value of four component indicator is the result of functional dependence (Illiashenko et al., 2007):

$$\bar{S} = \{S_1; S_2; S_3; S_4\}, \tag{5}$$

in which,  $S_1, S_2, S_3, S_4$  - functions of formalized assessments of production resources, financial opportunities, competitiveness of goods and conditions of external enterprise.

The function  $S(x)$  is defined as follows:

$$\begin{cases} S(x) = 1 \\ S(x) = 0 \end{cases}, \tag{6}$$

in which,  $S$  takes the value 1, if all the standard values of the indicators in the group are fulfilled, or the value 0, if at least one of the indicators is unsatisfactory.

Depending on the values of  $S_1, S_2, S_3, S_4$ , we choose the appropriate ones according to the features and characteristics of the growth strategy. Consider the components of a four-component indicator.

### 3. Results and discussion

#### 3.1. Information support of the commercialization process for innovative products

The process of the commercialization of innovative products is very complicated. Marketing factors, as well as the legal basis, play an essential role in this process. Under the proposed methodological approach, we will analyze the stages of the process of commercialization of innovative products on the example of Tetra Pak Ukraine and highlight the key elements of marketing and the necessary regulatory support at each stage.

Leading international companies actively pursue innovation activities. For example, Tetra Pak creates innovative, competitive environmental products that meet the needs of more than 160 countries. The company makes effective use of innovative potential and shows high performance. Unfortunately, in 2016, the company reduced the production capacity of Tetra Pak Ukraine due to the geopolitical situation. But, in the future, there are all the opportunities and resources to resume innovative activities on a full scale and implement successful innovative projects. Let us consider some stages of the commercialization of innovations using the example of a Tetra Pack company (Tetra Pack, 2019; Tetra Pack, 2020).

*Stage 1.* Collecting and analyzing the information needed to complete the commercialization process. The initial stage of commercialization is very important. It is necessary to carry out a detailed analysis of the environment. Innovation activities should be carried out in accordance with the legislative processes of the producer and the consumer countries. All copyright protection requirements must be appropriately maintained.

Next, to evaluate the external marketing environment of Tetra Pak Ukraine, we perform a PESTEL analysis – a market analysis of six groups of macro factors: political, economic, socio-demographic, technological, environmental, and legal.

Each factor has a corresponding value and an effect on the industry, which is expressed by the estimates (Illiashenko et al., 2007):

1. factor has an insignificant impact (influence almost absent);
2. factor has some influence on the activity of the enterprise;
3. factor has a significant impact on the activities of the enterprise.

The results of the PESTEL analysis are represented in Table 1.

As we can see from the table, economic factors and legal factors have the most significant impact. They determine the suitability of setting up a branch in a particular country and determine the economic climate of its business.

The micro-environment of the company could be analyzed through the marketing analysis, which is based on the concept of five competitive forces by Michael Porter. Let us consider the impact of these forces on the Tetra Pak Ukraine company.

**Table 1.** PESTEL analysis of Tetra Pak Ukraine

<b>Political factors</b>	<b>V<sub>i</sub></b>	<b>E<sub>i</sub></b>	<b>P<sub>i</sub></b>	<b>Social factors</b>	<b>V<sub>i</sub></b>	<b>E<sub>i</sub></b>	<b>P<sub>i</sub></b>
Legislation in force in the country	0.1	2	0.2	Demographic situation in the country	0.15	2	0.3
International law	0.15	2	0.3	Mobility of the working population	0.2	3	0.6
Political stability	0.05	1	0.05	Educational level	0.1	2	0.2
Political course	0.2	3	0.6	Consumer protection	0.1	2	0.2
Taxes	0.15	2	0.3	Local formations	0.1	2	0.2
Customs rules	0.2	3	0.6	Company reputation, image	0.15	2	0.3
Financing, grants	0.1	2	0.2	Public Relations	0.2	3	0.6
State regulation of Economy	0.05	1	0.05				
<i>The power of the political factors influence (P)</i>			2.3	<i>The power of the social factors influence (P)</i>			2.4
<b>Economic factors</b>	<b>V<sub>i</sub></b>	<b>E<sub>i</sub></b>	<b>P<sub>i</sub></b>	<b>Technological factors</b>	<b>V<sub>i</sub></b>	<b>E<sub>i</sub></b>	<b>P<sub>i</sub></b>
Economic situation	0.25	3	0.75	The level of science and technology development	0.3	2	0.6
Industry specialization	0.25	3	0.75	Research funding	0.2	3	0.6
Inflation rate	0.1	2	0.2	Change and adaptation of new technologies	0.2	2	0.4
Production specifics	0.1	2	0.2	Production capacity	0.2	2	0.4
The level of sales channels development	0.1	2	0.2	Access to technology, licensing, patents	0.1	2	0.2
International Economic Relations	0.2	3	0.6				
<i>The power of the economic factors influence (P)</i>			2.7	<i>The power of the technological factors influence (P)</i>			2.2
<b>Environmental factors</b>	<b>V<sub>i</sub></b>	<b>E<sub>i</sub></b>	<b>P<sub>i</sub></b>	<b>Legal factors</b>	<b>V<sub>i</sub></b>	<b>E<sub>i</sub></b>	<b>P<sub>i</sub></b>
Support of environmental initiatives by the authorities	0.1	1	0.1	Legislation barriers	0.2	3	0.6
The need for the production of eco-friendly packaging	0.3	3	0.9	Registration of international enterprises branches	0.2	3	0.6
Ecological production				The complexity and inaccuracy of the legislative system	0.3	2	0.6
Environmental management system	0.1	3	0.3	Relationship with European legislation	0.1	2	0.2
Sustainable development	0.2	2	0.4	Intellectual property rights	0.2	3	0.6
The overall production impact on the environment	0.2	2	0.4				
	0.1	3	0.3				
<i>The power of the environmental factors influence (P)</i>			2.4	<i>The power of the legal factors influence (P)</i>			2.6

Source: own calculation

The factors are: the threat of new players (competitors), the influence by the suppliers, buyer influence, threats from substitutes, competition from direct opponents. The threat of new competitors in the food packaging industry is quite high because the attractiveness of the industry is increasing, barriers to entry are low, and the market does not require high financial costs. For Tetra Pak, new competitors are a weak threat, as Tetra Pak is a world-known brand, and the company does not save on marketing

programs (Table 2).

As we can see, at this stage the impact of this factor is quite small, although it may have a threat in the future.

The impact by the suppliers cannot be regulated by the company, as the head office fully coordinates the supply of goods.

This impact is quite significant, as there is no evident loyalty of the buyer to a particular brand. Besides, Ukrainian manufacturers are quite sensitive to legislation and packaging price changes (Table 3).

**Table 2.** The calculation of the influence of the new competitors development factor

Element	Value	Effect	The power of effect
1. Capital costs of entry into the industry	0.4	5	2
2. Resistance exerted by existing firms	0.25	1	0.25
3. Limited distribution and supply channels	0.1	2	0.2
4. Saving on the scale of existing competitors production	0.25	9	2.25
Total	1.0		4.7

Source: own calculation

**Table 3.** Calculation of the buyers impact threat factor

Element	Value	Effect	The power of effect
1. The number of consumers and the number of their purchases	0.3	6	1.8
2. Number and size of product suppliers	0.2	8	1.6
3. Availability of substitute products and transition costs	0.5	10	5.0
Total	1.0		8.4

Source: own calculation

The threat concerning substitutes is also high. Tetra Pak's substitute products include the packaging that competing companies produce at the same time as the products and the appearance of a brand new eco-friendly packaging film that is gaining popularity in the world and may soon reach Ukraine (Table 4).

**Table 4.** Calculation of threat factor by substitute goods

Element	Value	Effect	The power of effect
1. The degree of correspondence of the price and characteristics of substitute services and basic goods	0.4	7	2.8
2. The willingness of manufacturers to switch to substitute products	0,6	8	4.8
Total	1.0		7.6

Source: own calculation

The most popular competitors for Tetra Pak are Elopak, Germany's SIG Combiblock, and product packaging made by food companies. Tetra Pak remains the leader in sales. Calculation of threat factor by existing competitors (Table 5).

**Table 5.** Calculation of threat factor by existing competitors

Element	Value	Effect	The power of effect
1. The "height" of the industry's entry barriers, the number, and size of competitors in the industry	0.4	4	1.6
2. Industry and product maturity	0.25	7	1.75
3. The degree of brand commitment	0.15	8	1.2
4. Buyer influence levers and availability of substitutes	0.2	9	1.8
Total	1.0		6.35

Source: own calculation

Therefore, the most significant influence is the commitment on the part of the main consumers, that is, food companies that use Tetra Pak packaging. Therefore it may be stated that Tetra Pak should use a cost-control strategy to continue applying the best packaging production practices. Moreover, at the same time, be able to satisfy existing customers as they are sensitive to changes in the price of packaging.

As a conclusion of the assessment of the enterprise marketing environment, it can be said that although the economic environment is not stable and has a negative impact on the company's activity in Ukraine, Tetra Pak's head office still conducts its business here.

Consequently, it is possible to make a general conclusion that the economic influence and internal situation of the main partners (consumers) of Tetra Pak products have the greatest influence on the activity of the enterprise.

Stage 2. Defining the essence of innovation as an object of commercialization. Innovative products can be implemented depending on the form (material or immaterial), the specificity and essence of innovative products (product or process innovation) in the following markets:

- intellectual property market;
- industrial market;
- product market.

In the process of converting an idea to a finished product, innovation as an object of commercialization migrates through all three types of markets.

Types of innovative products as an object of commercialization:

- Intellectual property market: innovative idea, result of scientific and technological activity, startup, ownership of innovation, etc.
- Industrial market: innovative technologies, product innovations for industrial purposes, process innovations, resource innovations and more.
- Product market: product innovation of consumer purpose (goods, works, services, ways of consumption).

On this basis, we propose a set of strategic alternatives (Figure 2) for the commercialization of innovative products.

		Commercialization		
		Zero level	First level	Double
Market	Intellectual property objects	Scientific commercialization strategy	Rapid commercialization strategy	Deep commercialization strategy
	Industrial	“Alienation” commercialization strategy	<i>Internal commercialization strategy: organizational and industrial commercialization</i>	<i>Developmental commercialization strategy</i>
	Product	Not applicable	Diffuse commercialization strategy	Competitive commercialization strategy

Figure 2. Strategic alternatives to mercialization of innovative products (Thomas & Coleman, 2011)

Source: based on (Melnyk et al., 2019)

It should be noted that to the factors that determine the features of commercialization strategies for innovative products, it is advisable to include the type of innovative products, the specifics of the entity, the type of target audience, the type of expected effect of commercialization, the result of innovation, etc. Let's take a closer look at the essence of the proposed strategies for the Tetra Pak Ukraine.

Internal commercialization strategy involves the creation of an innovative idea in the enterprise and its implementation in production or organizational processes,

which allows gaining both commercial and non-commercial effect. Process innovation uses an organizational commercialization strategy that aims to improve organizational and management processes, improve the internal climate and internal communications, improve productivity, and improve working conditions. For product innovation – the strategy of industrial commercialization involves the introduction of innovations in its own production. The strategic concept is to increase the innovation potential of the enterprise.

The strategy of developing commercialization is the creation of innovative products for industrial purposes on the basis of both material (resources, technological lines, etc.) and immaterial (acquired patents, technologies, etc.) innovative products. Such a strategy requires considerable financial investment, and characterized by a high-risk level, but also involves high profits (for example, a venture business). The strategic concept is to create a competitive economy (Melnyk et al., 2019).

With the help of the morphological map method, the idea of a new product - a packaging for water called "Tetra W" - was generated for an enterprise that would be competitive in modern conditions and take into account all the company's capabilities in quality and manufacturing. We define the main objectives of the innovation project:

- take into account the capabilities of the enterprise to develop its own B2B trading network in view of the company's international partners;
- to design a new product in such a way that it would be interesting for the majority of the target audience (mainly the same international companies);
- have high-quality packaging to meet all environmental and industrial standards;
- make the product easily recognizable and competitive.

### **3.2. Resources and marketing strategy of the commercialization process for innovative products**

*Stage 3.* Assessing the availability of the necessary resources to carry out the commercialization process. The choice of strategy for the commercialization of innovative products depends on many factors. However, the process of commercialization certainly involves maximizing production and sales. And this, in turn, implies the availability of appropriate production

resources of the enterprise, financial capabilities, competitiveness of goods and environmental conditions, including compliance with legal requirements. The deployment of mass production in the process of commercialization is essentially the path to enterprise growth strategy. Therefore, the commercialization requires similar resources that are needed to implement the growth strategy.

The resources of the company, which are necessary for the implementation of growth and commercialization strategies, can be divided into 4 groups: production resources (production reserves, personnel, etc.), financial resources (availability of working capital, financial stability, etc.), marketing (availability of professional marketers, marketing budget volumes, etc.) and market (external opportunities) (Illiashenko et al., 2007).

Based on such a methodology, each economic entity may, when promoting its products, determine the type of growth strategy that is appropriate to the internal and external environment of the enterprise. Analysis of typical indicators of economic activity of the enterprise and its external environment simplifies the procedure for choosing an adequate growth and commercialization strategy. We calculate a four-component indicator on the example of Tetra Pak Ukraine (Table 6).

Therefore, the four-component indicator for Tetra Pak Ukraine has the following form:  $S(1; 1; 1; 1)$ , as all its components meet the standards. It demonstrates the sustainable state of the enterprise, and assumes the implementation of any growth strategy, and accordingly, the availability of resources to commercialize innovative products. So, the company has all the conditions for implementing a strategy of intensive growth, which involves increasing output, expanding existing market boundaries, and entering new ones.

**Table 6.** Calculation of the four component indicator of Tetra Pak Ukraine

Indicator	Optimality conditions	Four component indicator
<i>Production components</i>		
Production Capacity Index	$I_{PC} < 1$	S <sub>1</sub> =1
Integral load coefficient	$C_{INT} < 1$	
Profitability of innovation product	$P_i > P$	
<i>Financial components</i>		
Liquidity coefficient	$C_L = 2-3$	S <sub>2</sub> =1
Autonomy coefficient	$C_A > 0,5$	
Maneuvering coefficient	$C_m = 0,3-0,6$	
<i>Marketing components</i>		
Product competitiveness coefficient	$CPC \rightarrow 0$	S <sub>3</sub> =1
The level of environmental friendliness of products	$0,33 < L \leq 1$	
Budget Performance Score	$dBM \rightarrow 1$	
<i>Market components</i>		
Market capacity	$MC \rightarrow \max$	S <sub>4</sub> =1
Risk coefficient	$C_R \rightarrow \min$	
Intensity of competition Herfindahl-Hirschman Index	$I_c < 0,18$	

Source: own calculation

*Stage 4.* Filing a patent application. The rules for applying and submission the invention and utility model are governed by the Law of Ukraine «On Protection of Rights to Inventions and Utility Models», Paris Convention for the Protection of Industrial Property (Convention № 995\_123), Patent Cooperation Treaty (Treaty № 895\_001) which defines the requirements for the application documents for the invention (secret invention) and the utility model application (secret utility model).

The patent is granted by the state executive authority for intellectual property; for example, in Ukraine, such organizations are State Department of Intellectual Power and Ukrpatent, in the United States – the United States Patent and Trademark Office. International regulation is carried out by the World Intellectual Property Organization, the United International Bureaux for the Protection of Intellectual Property and others. Tetra Pak has more than 5,000 patents. The company effectively uses patents in the process of commercialization (Tetra Pack, 2019; Tetra Pack, 2020).

*Stage 5.* The choice of form and priority method of commercialization. The formation of a strategy for the commercialization of innovative products is mostly determined by the type of innovative products and the conditioned market relations by the accompanying set of tools, methods, and technologies.

As product innovation can take many forms - from idea to industrial equipment, consumer product, or organizational innovation, this will determine the main actors and strategy of commercialization. According to these features, we propose to consider three ways of commercialization: 1) zero-level commercialization; 2) commercialization of the first level; 3) double commercialization (Sager & Sygyda, 2018; Melnyk et al., 2019). Tetra Pak practices commercialization of the first level which involves own innovative developments (the results of innovation, ideas of innovation) in business. Innovative products as an object of commercialization take the form of process or product innovations but can also be realized through the transfer of the rights for these innovations (full or partial).

The results of innovative activities bring the company to the market of innovative products, where you can earn significant profits if you produce and promote competitive products and expand the range of your target consumers. These results are embodied in the production of a consumer product or product innovation, innovative resources, innovative technologies, etc. Ways to commercialize both process and product innovations through the realization of innovation rights, the sale of patents, technologies, know-how, etc., should also be identified.

*Stage 6.* Development of marketing strategy. Market success of commercialization depends on the marketing strategy. The work of the company is not possible without activities aimed at the implementation of marketing functions. They are implemented using 4P, which includes product, price, place and promotion measures and instruments. Therefore, more detail on each component.

**Product:** creation of new or modification of existing goods; improving the technical level and quality of products and its control; deciding on the removal of goods from production; product modernization and additional accessories.

**Price:** obtaining the desired profit; setting prices for existing and new products; increase of part of the enterprise market.

**Place:** setting up and maintaining contact with potential buyers; maintenance; advising potential consumers before purchasing the product; products demonstration to the buyer; search for potential intermediaries (for more details see (Bilovodska et al., 2017; Bilovodska et al., 2019).

**Promotion:** determination of the purpose and tasks of promotion; formation of means of influence on consumers; availability of budget for the promotion of goods; creation and support of the company's image in accordance with global principles; comprehensive information to potential consumers about the company's products and activities.

*Stage 7.* Accumulation of necessary financial resources. First, it is necessary to check the adequacy of the financial resources in Stage 3 of the commercialization algorithm (S2). Then, to evaluate the effectiveness of the innovative product line of production of eco-friendly packaging for water "Tetra W" we use the following indicators of net present value (NPV), profitability index (PI), payback period (PP) and internal rate of return (IRR) (Thomas & Coleman, 2011).

Tetra Pak has recently been making a lot of efforts to develop eco-friendly innovations. The profitability of eco-friendly innovations is generally high enough due to global greening trends. Therefore, proper planning of the commercialization mechanism will make it possible to make effective use of available resources or to attract them in the case of absence.

### **3.3. Effectiveness of commercialization and commercial production deployment**

*Stage 8.* Introducing innovation within an existing business or startup. Assessing the market prospects of new products, it should be said that new products can be implemented within the existing business, provided that a high level of innovation potential. As previous studies show: the intellectual component is above average; the information component corresponds to the average value (it is necessary to improve the quality of the information coming to it); analyzing the interface component, we can say that all market entities with which the company cooperates are interested in its innovation activity; the research component characterizes the research works activity results, which are sufficient for the production of new eco-oriented innovative products. Therefore, the intellectual potential of the enterprise is quite high so that it can be effectively used in the process of commercialization of an eco-oriented innovation project.

When introducing an innovation into an existing business, it can become intellectual property and/or copyright. At this stage, such a tool as test marketing is important. Subsequent production and marketing efficiency depends on it.

*Stage 9.* Licensing. The goal of innovation activities of organizations can be not only entering the market with new products and services, improving already mastered products, increasing the efficiency of applied technologies, but also making profit from the sale of innovations themselves.

Regulating the licensing peculiarities in economic activities is carried out according to the requirements of Ukrainian Law «On licensing of economic activities» (Law of Ukraine № 222-VIII).

One of the main forms of granting the right to use innovations to other business entities and technology transfer is licensing. Licensing is one of the main forms of trade and transfer of innovation. Licensing should be carried out in accordance with applicable law.

*Stage 10.* Initiation of commercial production and entry into the market. If all the previous stages have been completed successfully, then we proceed to commercial production and entry into the market.

*Stage 11.* Assessing the economic effectiveness of commercialization. The main task in the implementation of the commercialization strategy is to create the right conditions before applying the strategy (stages 1-10).

The main stages in implementing the strategy are (Illiashenko et al., 2007):

1. Studying the state of the environment and setting goals when developing strategies (stage 1). Before setting a goal, you need to determine whether it meets the purpose of the enterprise. For Tetra Pak, the state of the external environment is favorable.
2. The decision on the efficient use of resources (stage 3, 7). The chosen type of innovation and commercialization strategy (stage 2) requires the determination of the

resources amount, as well as the methods of commercialization (stage 5). The Directorate at this company decides on the feasibility of investing in certain objects and areas of strategies.

3. Formation of enterprise culture in accordance with the chosen strategy

At this stage, the corporate culture is being implemented, following the Swedish traditions, but also taking into account Ukrainian local features.

4. Involvement of senior management in strategy implementation.

The strategy is implemented by middle management of Tetra Pak (heads of departments, factories in the regions, factories, etc.).

5. Creating a system for monitoring the implementation of the strategy.

The enterprise proposes to introduce a vertical control system, that is, the working units report to middle management on the tasks, they, in turn, compile the data and answer to senior management.

6. Creating an incentive system for successful strategy implementation.

For successful implementation of the strategy, responsible persons will be charged premium payments and promotions.

7. The analysis of the chosen strategy implementation effectiveness is mainly carried out in the form of accuracy and sufficiency accounting analysis in the selection of the main factors strategy that determines the feasibility of the strategy. This analysis is the final stage.

To determine the chosen strategy effectiveness at Tetra Pack Ukraine, we will analyze using, for example, a Springgate model, which allows us to determine the effectiveness of the strategy based on the existing risk conditions or Professor Lipziz methodology (Thomas & Coleman, 2011).

*Stage 12.* Commercial production deployment. At this stage, the role of marketing tools continues to increase. It is necessary to maximize sales markets,

increase production and sales in order to get the maximum effect from the commercialization of innovative products. The effect of innovation is at high risk since new products or substitute products may appear. Especially important is the use of marketing communications tools and development of distribution channels.

#### 4. Conclusion

Thus, as a result of the study, we analyzed the main stages of the commercialization process and substantiated the importance and necessity of using marketing and legal tools. So, the main marketing tools that can be used are marketing instruments for analysis of the micro and macro environment such as SWOT, SNW, PESTEL, competitive analysis and others; criteria for matching innovation to market needs; marketing-mix tools; marketing of innovation; trial marketing, marketing growth strategies; strategic analysis tools; marketing of services; marketing of intellectual products, etc.

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Each stage of the commercialization process must take place in the appropriate legal field. Innovation activities are carried out within the framework of compliance with the legislation of the country that founded the innovation. And commercial activity must also take into account the peculiarities of regulations of the consumer of innovation, as well as international law relating to patent activity, licensing and transfer of innovation.

The interaction of marketing and legal tools speeds up the process of commercialization, thereby increasing profits from innovation. Subsequent research and development may be aimed at developing mechanisms for implementing individual instruments and evaluating their effectiveness.

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