

Ministry of Education and Science of Ukraine
**ODESSA NATIONAL ACADEMY OF
FOOD TECHNOLOGIES**

International Competition of
Student Scientific Works

BLACK SEA SCIENCE 2021

PROCEEDINGS



ODESSA, ONAFT 2021

Ministry of Education and Science of Ukraine
Odessa National Academy of Food Technologies

International Competition of Student Scientific Works

BLACK SEA SCIENCE 2021

Proceedings

Odessa, ONAFT 2021

Recommended for print by the Academic Council of
Odessa National Academy of Food Technologies
on April 6, 2021, Protocol No. 13

Editorial board:

Prof. B. Iegorov, D.Sc., Professor, Rector of the Odessa National Academy of Food Technologies, Editor-in-chief

Prof. M. Mardar, D.Sc., Professor, Vice-Rector for Scientific and Pedagogical Work and International Relations, Editor-in-chief

Dr. I. Solonytska, Ph.D., Assoc. Professor, Director of the M.V. Lomonosov Technological Institute of Food Industry, Head of the jury of «Food Science and Technologies»

Dr. Yu. Melnyk, D.Sc., Assoc. Professor, Director of the G.E. Weinstein Institute of Applied Economics and Management, Head of the jury of «Economics and Administration»

Dr. S. Kotlyk, Ph.D., Assoc. Professor, Director of the P.M. Platonov Educational-Scientific Institute of Computer Systems and Technologies “Industry 4.0”, Head of the jury of «Information Technologies, Automation and Robotics»

Prof. B. Kosoy, D.Sc., Professor, Director of the V.S. Martynovsky Institute of Refrigeration, Cryotechnology and Ecoenergetics, Head of the jury of «Power Engineering and Energy Efficiency»

Prof. G. Krusir, D.Sc., Professor, Head of the Department of Ecology and Environmental Protection Technologies, Head of the jury of «Ecology and Environmental Protection»

Dr. V. Kozhevnikova, Ph.D., Assoc. Professor, of the Department of Hotel and Catering Business, ONAFT, Technical Editor

Black Sea Science 2021: Proceedings of the International Competition of Student Scientific Works / Odessa National Academy of Food Technologies; B. Iegorov, M. Mardar (editors-in-chief.) [*et al.*]. – Odessa: ONAFT, 2021. – 731 p.

Proceedings of International Competition of Student Scientific Works «Black Sea Science 2021» contain the works of winners of the competition.

The author of the work is responsible for the accuracy of the information.

Organizing committee:

Prof. Bogdan Iegorov, D.Sc., Rector of Odessa National Academy of Food Technologies, Head of the Committee

Prof. Maryna Mardar, D.Sc., Vice-Rector for Scientific and Pedagogical Work and International Relations of Odessa National Academy of Food Technologies, Deputy Head of the Committee

Prof. Stefan Dragoev, D.Sc., Vice-Rector for Scientific Work and Business Partnerships of University of Food Technologies (Bulgaria)

Prof. Baurzhan Nurakhmetov, D.Sc., First Vice-Rector of Almaty Technological University (Kazakhstan)

Prof. Mircea Bernic, Dr. habil., Vice-Rector for Scientific Work of Technical University of Moldova (Moldova)

Prof. Jacek Wrobel, Dr. habil., Rector of West Pomeranian University of Technology (Poland)

Prof. Michael Zinigrad, D.Sc., Rector of Ariel University (Israel)

Dr. Mei Lehe, Ph.D., Vice-President of Ningbo Institute of Technology, Zhejiang University (China)

Prof. Plamen Kangalov, Ph.D., Vice-Rector for Academic Affairs of “Angel Kanchev” University of Ruse (Bulgaria)

Dr. Alexander Sychev, Ph.D., Assoc. Professor of Sukhoi State Technical University of Gomel (Belarus)

Dr. Hanna Lilishentseva, Ph.D., Assoc. Professor, Head of the Department of Merchandise of Foodstuff of Belarus State Economic University (Belarus)

Prof. Heinz Leuenberger, Ph.D., Professor of the Institute of Ecopreneurship of University of Applied Sciences and Arts (Switzerland)

Prof. Edward Pospiech, Dr. habil., Professor of the Institute of Meat Technology of Poznan University of Life Sciences (Poland)

Prof. Lali Elanidze, Ph.D., Professor of the Faculty of Agrarian Sciences of Iakob Gogebashvili Telavi State University (Georgia)

Dr. V. Kozhevnikova, Ph.D., Senior Lecturer of the Department of Hotel and Catering Business of Odessa National Academy of Food Technologies, Secretary of the Committee

2. ECONOMICS AND **ADMINISTRATION**

IMPROVING THE ACTIVITIES OF PJSC "BOLGRAD WINERY" ON THE BASIS OF INDUSTRIAL DIVERSIFICATION

Author(-s): Dariia Bondarchuk

Advisor(-s): Kateryna Sokoliuk

Odessa National Academy of Food Technologies (Ukraine)

Abstract. During the study, the production and economic activity and financial condition of PJSC "Bolgrad Winery" were analyzed. According to its results, it is proposed to improve the activities of the winery based on the application of the strategy of production diversification. To this end, we analyzed the market of cosmetic products and the possibility of entering it of the studied enterprise. Planned calculations of profits and losses (based on the projected sales and costs of production and promotion of a new product), which outlined the opportunities and risks of this business idea. Possible marketing measures to promote new products are considered.

Key words: entrepreneurship, activity, wine, winemaking, strategy, diversification, cosmetics.

I. INTRODUCTION

In conditions of fierce competition, every company, regardless of its size and type, activity, to successfully operate and meet market demand uses certain marketing tools. At the present stage, there are almost no companies that produce and offer only one type of product. Some companies limit their activities to the production of several groups of goods [1].

The market of alcoholic beverages in Ukraine is characterized as a market of fierce competition, which directly affects the quality of products, their properties, raw materials and technological process. The activity of enterprises producing alcoholic beverages, as a rule, is highly profitable, although it takes place in conditions of fierce competition. Therefore, to stimulate the development of the wine industry in Ukraine, it would be appropriate to introduce innovative development mechanisms using a strategy of diversification [2].

In economic practice, a large number of strategic alternatives for the development and growth of enterprises in market conditions can be offered. One such alternative is diversification. Diversification is a concept that can not be unambiguously defined. Diversification (from the Latin. Diversus - different and facer - to do) - is the simultaneous development of several or many unrelated technological types of production or service, expanding the range of production or services.

Diversification allows companies to "stay afloat" in a difficult economic environment by producing a wide range of products and services. This allows you to "cover" losses from unprofitable products (temporarily, especially for new ones) with profits from other products.

This process is inherent primarily in the transition to new technologies, markets and industries to which the company previously had no relation; in addition, the products (services) of the enterprise must also be completely new, and new financial investments are always provided [3].

II. LITERATURE ANALYSIS

The scientific works of domestic scientists (R. K. Anchurin, A. N. Buzny, V. V. Vlasov, N. K. Mohylyansky, V. E. Tairov, A. V. Shevchenko) describe the improvement of winemaking technology and its impact on economic and cultural development of the state. The authors draw attention to the fact that a significant contribution to the development of winemaking is made by changes in the legislation of the country.

A. V. Buryak, V. O. Vasylenko, O. D. Vytvytska, I. O. Irtysheva, V. O. Hrynyova, V. G. Shmatko and others paid considerable attention to the development of investment and innovation processes in the economy. However, a significant part of the issues related to the study of areas for improving the investment of innovative processes in the wine industry of Ukraine still remains unresolved [4].

A wide range of scientific researches of foreign and domestic scientists is devoted to the study of various aspects of production strategy, among which the works of I. Ansoff, Y. Goncharov, V. Vasylenko, O. Kovtun, M. Koretsky, A. Mishchenko, B. Mizyuk, T. Omelyanenko, M. Porter, A. Sterligova, A. Strickland, A. Thompson, T. Tkachenko, Z. Shershneva, etc. [5, 6, 7].

M. Rybak's author's interpretations offer a general theoretical analysis of a wide range of production strategies from the standpoint of strategic and operational management. At the same time, the tasks of systematization and system-structural analysis of typical production strategies remain relevant [8].

III. OBJECT, SUBJECT, AND METHODS OF RESEARCH

Taking into account the problem, namely the improvement of the winery on the basis of production diversification, the object of study is selected winemaking processes and the results of their activities, and the subject is scientific, theoretical and practical aspects and practical research in the field of industrial diversification.

The purpose of the study is to review possible strategies for improving the activities of PJSC "Bolgrad Winery" based on the analysis and financial indicators.

The methodological basis was the methods of market research, principles and aspects that became the basis for studying the subject of research. They provided for the use of a system of general - scientific and specific methods of economic research. To study the financial condition of the enterprise was used, in particular, the economic and statistical method. A diversification strategy was chosen through analysis and synthesis. A general scientific method was also used for in-depth study, which helped to compare the advantages and disadvantages of each of the strategies.

The working hypothesis was the possibility of increasing the company's profits through the introduction of a new shop for the manufacture of cosmetics.

IV. RESULTS

PJSC Bolgrad Winery is an enterprise engaged in the production of wines and its production under the trademark "Bolgrad". After analyzing the activities of production, there is a need to find effective solutions to improve it.

Full name of the enterprise: Private Joint Stock Company "Bolgrad Winery" [9].

Based on the financial performance of the enterprise, there is a need to improve them through the application of diversification strategies.

Before choosing one of the above strategies, the possibility of using each of them was first assessed (Table 4.1).

Table 4.1. The results of the analysis of strategies by I. Ansoff

Strategy option	Possibility	Description	Sources of growth of the company
Deep penetration strategy	Not possible	The company has a chance to implement this strategy, but it has no prospects due to the high level of competition.	1. There are opportunities for growth in the old market with new products. 2. Expanding the range of products by bringing new products to market. 3. Development of measures to stimulate the frequency of wine purchases.
Market development strategy	Not possible	The company currently does not have the ability to implement this strategy, as it requires significant financial resources.	
Product development strategy	Not possible	The product is quite developed and it is not appropriate to reach the maximum value.	
Diversification strategy	Possible	It is possible to diversify the company's business portfolio.	

As part of the use of the diversification strategy, it is proposed to introduce a new product on a new market, namely the recycling of raw materials for use in the manufacture of cosmetics.

This business idea has two goals:

1. Increasing the profitability of the enterprise by expanding the product range - economic effect;
 2. Transition to waste-free production in the wine industry, namely the use of winemaking waste (grape cake and seeds, in particular) - socio-environmental effect;
- The structure of sales and consumption of the cosmetology industry is dominated by (about 65 - 70% of the total), mainly hair and skin care products. This also applies to the Ukrainian market. Shampoos, paints, hair treatments, toothpastes, face and hand creams are in great demand among cosmetics consumers.

Annual sales of skin care products include [10]:

- facial skin care products - 79%;
- hand creams - 17%;
- skin care products - 4%.

Regarding the production of cosmetic products, in the pharmacy market segment today there are products of 220 foreign and 90 domestic companies. In monetary terms, foreign goods predominate in all categories of goods, convincingly dominating among cosmetics for women (91%), oral care products (97%), cosmetics for men (97%) [11]. Summarizing the above, we can conclude that despite the relatively small market share of cosmetics in the total pharmacy market of Ukraine, the cosmetics market will develop dynamically in the coming years.

To identify prospects in this market, we will conduct a SWOT-analysis (Table 4.2)

Table 4.2. SWOT- analysis of the cosmetics market

	Strengths (S)	Weak sides (W)
	Incomplete market, which allows you to enter it without much effort Absence of a monopolist Low cost of production Quite a large turnover Large and diverse target audience Use of natural ingredients	A large number of imported products Prices are on a par with European ones Strict control of the state
Opportunities (O)	(SO)- strategic decisions	(WO)-стратегічні рішення
Application of the latest technologies Use of available raw materials Use of existing TM Occupying market share Attracting customers with environmentally friendly goods	Improving product quality through new technologies. Positioning the company as a legendary company in the industry. Penetration into new markets.	Reducing the cost of production and its price due to the emergence of new resource- and energy-saving technologies Conducting trainings to increase the level of professionalism and corporate culture. Conducting trainings to increase the level of corporate culture.
Threats (T)	(ST)- strategic decisions	(WT)- strategic decisions
Financial crisis Competition at the international level Solvency of the population at a low level	Attracting investment to implement new projects by developing a business plan. Creation of means for stable price segments (average plus and above).	Launching a project without investment support. Optimization of communication costs. Promotion of goods by means of merchandising.

It is planned to manufacture cosmetics using processed secondary raw materials (grapes) after the production of wine products.

Taking into account the production of wine, it is proposed to use waste, namely: grape seeds and cake.

In particular, grape seed oil is widely used in the manufacture of cosmetics, as it contains vitamins A, B, C, E and organic acids, which allows the oil to have a regenerative, anti-aging effect.

The cake contains biologically active compounds and is also a component for the production of grape seed oil.

The emphasis of production is based on providing waste with further life for the benefit of the population and savings for production. Taking into account the ecological slope, it is planned to pack products in ecological materials or those that can be recycled in later life.

Taking into account all costs and calculations, the products will be directed more to the price segment of average income and high.

To achieve this investment goal, to create a full-fledged production of recycled raw materials for the manufacture of cosmetics, able to compete in the local consumer market, can not do without a well-thought-out marketing system.

PJSC "BVZ" seeks to first conquer the market of ecological products of Odessa and surrounding settlements.

Because, a survey of consumers of cosmetics in Odessa and the region aged 18 to 60 years was conducted and the demand for ecological products of domestic production was identified. This will meet the needs of the middle-income segment.

Consumers who took the survey also emphasized the price-quality compliance, which will be confirmed by quality certificates.

Therefore, the purpose of the advertising campaign is to inform consumers about the products that will soon appear on the counter and persuade them to buy them.

To promote new products, namely cosmetics, subject to restrictions on the advertising of cosmetics, it is proposed to enter into contracts with 50 outlets for the right to use promotional sites. It is recommended to place 2 posters in each store.

This shop is located on the territory of BVZ wine production. It is planned to use 3 warehouses - 25 m². It will be located in a protected area with logistical connections. The administrative and labor team will be located in an office of 20 m², located in close proximity to the production on the territory.

Models of containers for separate types of production are developed (fig. 4.3)



Fig. 4.3. Product packaging

a – hand cream, b – face cream, c – foot cream

Planned productivity - 145 thousand UAN. per month of each product at the beginning of production. Detailed production planning is shown in table 4.4.

Table 4.4. Production planning

Years	Per month (thousand pcs)	In the quarter (thousand pcs)	Per year (thousand pcs)
1-st	145	435	1740
2-nd	155	465	1860
3-d	165	495	1980
4-th	175	525	2100
5- th	185	555	2220

Raw materials will be supplied from the neighboring wine production. The rest of the necessary prescription substances will be purchased through suppliers from domestic manufacturers. Delivery is carried out by the transport company, the cost of delivery is included in the cost of raw materials. Delivery time of any components is on average 5 working days.

Production waste will be sent to recycling plants so as not to harm the environment. This is due to the relevant permits and certificates.

Finished products are packed in cardboard boxes of 100 pieces. The box is accepted as norm-packing. Deliveries to customers are made in volumes multiple of the norm-packaging. Prices and total cost of production are given in table. 4.5

Table 4.5. Prices and total cost per unit of output

m		

Table 4.6. The amount of income from the sale of products (or services), thousand UAH

								Total
Price			75	50	45	65	60	
Months	1	piece	36250	29200	29200	29200	21900	145750
		thousand UAH	2718,75	1460	1314	1898	1314	8704,75
	2	piece	36250	29200	29200	29200	21900	145750
		thousand UAH	2718,75	1460	1314	1898	1314	8704,75
	3	piece	36250	29200	29200	29200	21900	145750
		thousand UAH	2718,75	1460	1314	1898	1314	8704,75
	4	piece	36250	29200	29200	29200	21900	145750
		thousand UAH	2718,75	1460	1314	1898	1314	8704,75

5	piece	36250	29200	29200	29200	21900	145750
	thousand UAH	2718,75	1460	1314	1898	1314	8704,75
6	piece	36250	29200	29200	29200	21900	145750
	thousand UAH	2718,75	1460	1314	1898	1314	8704,75
7	piece	36250	29200	29200	29200	21900	145750
	thousand UAH	2718,75	1460	1314	1898	1314	8704,75
8	piece	36250	29200	29200	29200	21900	145750
	thousand UAH	2718,75	1460	1314	1898	1314	8704,75
9	piece	36250	29200	29200	29200	21900	145750
	thousand UAH	2718,75	1460	1314	1898	1314	8704,75
10	piece	36250	29200	29200	29200	21900	145750
	thousand UAH	2718,75	1460	1314	1898	1314	8704,75
11	piece	36250	29200	29200	29200	21900	145750
	thousand UAH	2718,75	1460	1314	1898	1314	8704,75
12	piece	36250	29200	29200	29200	21900	145750
	thousand UAH	2718,75	1460	1314	1898	1314	8704,75
Total (thousand UAH) 104457							

Thus, the income from sales for the year is 104457 thousand UAH. The price of the goods is set equal to the leader of domestic production of TM "Biocon" and taking into account the cost, environmental friendliness of products.

The next stage of calculations was the plan of profits and losses, in our case, the shop at the enterprise of PJSC "BVZ" (Table 4.7)

Table 4.7. Plan of profits and losses of the enterprise from the activity of the shop, thousand UAH

Indicators	Years					Total per 5 years
	2021p	2022p	2023p	2024p	2025p	
Sales revenue, total	104457	109680	115164	120922	126968	577190,9
VAT, excise duty and other deductions	20891,4	21935,97	23032,8	24184,4	25393,6	115438,2

Net sales revenue	83565,6	87743,88	92131,1	96737,6	101574,5	461752,7
Production costs, total	58495,9	61420,7	64491,8	67716,3	71102,2	323226,9
Gross profit	25069,7	26323,2	27639,3	29021,3	30472,4	138525,8
Tax	-	4738,2	4975,1	5223,8	5485,0	20422,1
Net profit	25069,7	21585,0	22664,2	23797,5	24987,3	118103,7

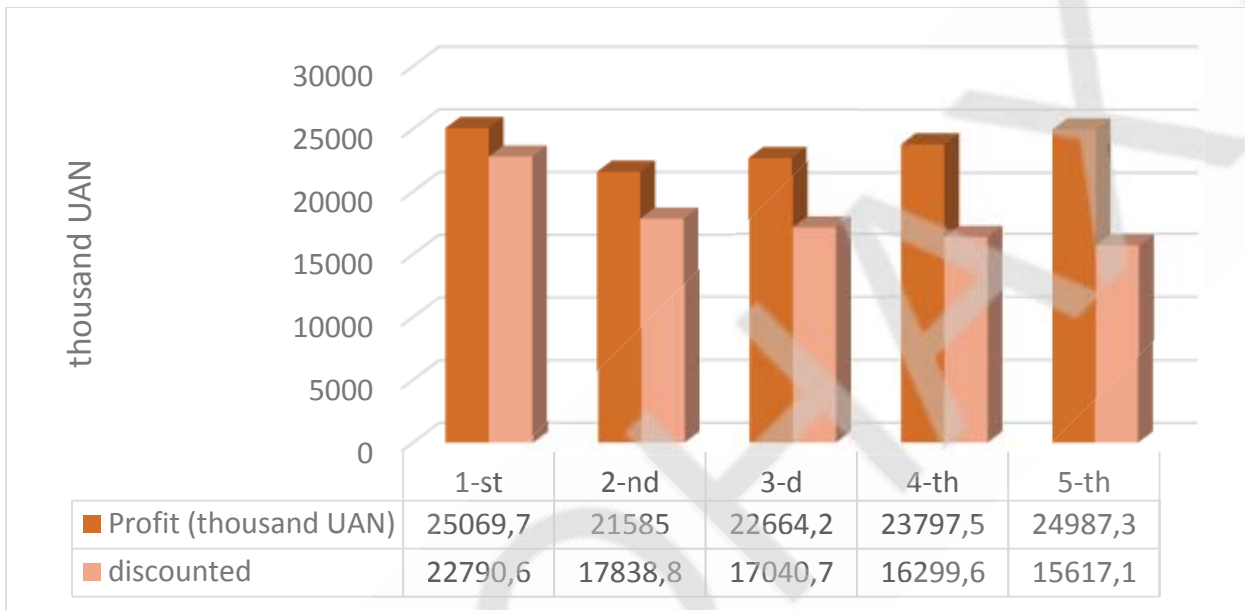


Fig. 4.8. Discounted profit

As a result of calculations we have as a result profit for the first year in the amount of 25069,7 thousand UAH (22790,6 thousand UAH), for the second - 21585,0 thousand UAH (17838,8 thousand UAH), for the third – 22664,2 thousand UAH (17040,7 thousand UAH), for the fourth – 23797,5 thousand UAH (16299,6 thousand UAH), for the fifth – 24987,3 thousand UAH (15617,1 thousand UAH) The total amount of profit for 5 years was 118103,7 thousand UAH and discounted – 89586,8 thousand UAH.

According to the data, there are opportunities to become one of the first companies in Ukraine, which is engaged in recycling of raw materials and production of ecological products. This issue is especially important now, as there is an urgent need to clean up the environment and stop its deterioration.

With rational indicators and high profitability, it becomes possible to enter a new market, namely the international one, which opens new horizons. Today, the prospects are that Europe is recycling waste and materials to be used for sewing clothes and making household items. Recycling natural materials will give another chance to save the environment.

The next possibility is the launch of a new line of cosmetics, which will be subject to DSTU and sanitary norms, which will fill the supermarket shelves and will be in great demand due to people's awareness of the use of ecological products.

V. CONCLUSIONS

As Ukrainian winemakers find themselves in a difficult situation, they need to respond quickly to overcome it and constantly monitor the news around the wine market to find effective solutions. Some of the problems can be solved only through a strict but balanced and well-thought-out state policy, and some - through the implementation of research results in production.

To enter the market, they preferred a diversification strategy, because the product has unique properties that will attract the attention of the consumer. Information about the product should emphasize the features.

High costs can be offset after entering the market by a cost control strategy, as we will have raw materials without special costs, which will help save.

The analysis of the cosmetics market showed that the market is not filled with domestic products, and only importers compete.

With the right selection of marketing strategy and early notification of the consumer about the release of new products, we have the opportunity to take market share.

The calculations show that the proposed project will have a positive impact on the enterprise.

Net income for 5 years of operation of this shop will be 118103,7 thousand UAH, which is an important indicator and indicates the profitability of this shop.

VI. REFERENCES

1. Ambler, T. Practical marketing: a textbook / T. Ambler - St. Petersburg: Peter Publishing House, 2010. - 400 p.
2. Kotler, F. Fundamentals of marketing: a short course: [translated from English] / Philip Kotler. - Moscow [etc.]: Williams, 2012. - 488 p.
3. M. O. Bagorka, Ph.D. Ph.D., Associate Professor of Marketing Diversification as a factor in improving the efficiency of enterprises in modern conditions: Dnepropetrovsk State Agrarian University, 2019, p. 17
4. V. L. Pazyuk, applicant Dynamics of wine market development in Ukraine: Chernivtsi National University, 2014, p. 88
5. O. V. Vasylenko Production (operational) management: textbook. manual / V. O. Vasylenko, T. I. Tkachenko.— 2nd ed., Revised. and ext. - Kyiv: Center for Educational Literature, 2015. - 532 p.
6. O. I. Kovtun Enterprise strategy: textbook. manual Text / O. I. Kovtun. - 3rd type. - Lviv: "New World - 2000", 2007. - 324 p.
7. M. H. Koretsky Strategic Management: textbook. manual / M.Kh. Koretsky, A. O. Degtyar, O. I. Dacius. - Kyiv: Center for Educational Literature, 2017. - 240 p.
8. M. I Rybak, senior lecturer at the Department of Economics and Entrepreneurship Types of production strategies of enterprises: Lviv branch of the European University, 2014, p. 115
9. Official site of PJSC "BVZ". URL: <https://bvz.ua/en/>
10. Domestic manufacturers of cosmetics. URL: <https://infopedia.su/9x618.html>
11. A.S. Maslov, N. V. Chmykhalo Marketing research of the cosmetic market of Ukraine: National University of Pharmacy, Kharkiv, 2015, p.192

DEVELOPMENT OF WAYS TO REDUCE TECHNOLOGICAL RISKS IN THE PRODUCTION OF SEMI-SMOKED SAUSAGE PRODUCTS Author: Aizada Sailau Advisor: Mira Serikkyzy Almaty Technological University (Kazakhstan).....	93
STUDY OF THE CHEMICAL COMPOSITION AND SAFETY OF WILD POULTRY MEAT IN THE REPUBLIC OF KAZAKHSTAN Authors: Aidana Kalbayeva, Guldana Kenes Advisor: Ainur Zheldybayeva Almaty Technological University (Kazakhstan).....	103
2. ECONOMICS AND ADMINISTRATION.....	113
DIGITAL TRANSFORMATION OF BUSINESS IN MODERN CONDITIONS: TRENDS AND PROSPECTS Author: Olga Novikova Advisor: Lyudmila Lobotska Odessa National Academy of Food Technologies (Ukraine).....	114
ASPECTS OF FORMATION AND FINANCIAL ANALYSIS OF THE COMPANY'S EQUITY IN MODERN CONDITIONS Authors: Velychko Olha, Stupnytska Maruna Advisor: Kuprina Natalia Odessa National Academy of Food Technologies (Ukraine).....	128
COMPETITION OF HIGHER EDUCATION INSTITUTIONS IN REGIONAL MARKETS OF EDUCATIONAL SERVICES IN UKRAINE: IS FAIR COMPETITION? Authors: Valeriia Tsema, Anastasiia Petryk Advisor: Inna Shevchenko Kharkiv National Automobile and Highway University (Ukraine).....	145
RECYCLING OF OLD ENGINE VEHICLES TO ELECTRIC CARS Author: Alina Shkvarko Advisor: Olena Menchynska Vinnytsia Institute of Trade and Economics of KNUTE (Ukraine).....	158
IMPROVING THE ACTIVITIES OF PJSC "BOLGRAD WINERY" ON THE BASIS OF INDUSTRIAL DIVERSIFICATION Author: Dariia Bondarchuk Advisor: Kateryna Sokoliuk Odessa National Academy of Food Technologies (Ukraine).....	170