



## PRODUCTION RESERVES

## USING COMBINED RESONANCE ON LOW SOUND FREQUENCIES FOR CULTIVATION OF MICROORGANISMS

page 4–7

The possibility of increasing the productivity and quality of the cultivation of microorganisms in liquid media by the sound wave irradiation below the cutoff frequency is studied.

The possibilities of the combined resonance of the working mixture of the interconnected chambers are shown and some results for determining the sound beam direction are given.

The results can be used in microbiology for improving the cultivation of microorganisms in liquid media, in particular in the manufacture of biologically active fluids and vaccines.

Artificial formation of low-frequency circular vibrations in the connected camera material allows without additional complications facilitating the design for the cultivation of microorganisms to intensify the energy state of the working fluid, getting rid of the passive energy zones and intensifying the mass transfer and aeration that will increase the productivity and quality of manufacturing the product. The practical implementation is the creation of combined resonance as the equality of the frame circumference and the length of the circumferential (longitudinal) wave in the camera material.

**Keywords:** combined resonance, wave coincidence, cutoff frequency, radiation angle.

## References

1. Samoilov J. K., Pivovarov, V. I., Ivanov, V. A., Alekseev, A. V. (07 May 1992). *Device for microorganisms cultivation*. USSR Patent No. 1731801.
2. Danilina, A. N., Danilov, A. V., Alexandrova, I. V., Skladnev, A. A., Romazanov, V. S., Tukov, I. A. (20 Dec. 1984). *Installation for microorganism cultivation*. USSR Patent No. 3226238/30-15.
3. Tryvaylo, M. S., Mel'nick, V. M., Karachun, V. V., Fesenko, S. V. (03 Apr. 2012). *Installation for microorganism cultivation*. Ukrainian Patent No. 75093. Available: <http://uapatents.com/5-75093-ustanovka-dlya-kultivuvannya-mikroorganizmiv.html>.
4. Karachun, V. V. (25 Apr. 2012). *Installation for microorganism cultivation*. Ukrainian Patent No. 69337. Available: <http://uapatents.com/4-69337-ustanovka-dlya-kultivuvannya-mikroorganizmiv.html>.
5. Zaborov, V. I. (1969). *Theory insulation walling*. Moscow, USSR: Publishing House of the literature on construction, 185.
6. Cremer, L. (1942). Theory of sound insulation of thin walls at oblique incidence. *Acoust. Journal*, 7, 3–7.
7. Shenderov, E. L. (1972). *Wave of hydroacoustic*. Leningrad, USSR: Shipbuilding, 352.
8. Gjosele, K. (1960). *For structure-borne sound propagation in Wohnbauten*. Structure-borne sound in buildings. Berlin, 24–24
9. Heckl, M. (1960). The sound insulation of single homogeneous walls of finite area. *Acustica*, 10, 17–21.
10. Junger, M. C., Smith, P. W. (1955). Letter to the editor. *Acustica*, Vol. 5, № 1, 43–46.

## RESEARCH OF EFFECTIVE COMBINATION OF WIND TURBINES AND SOLAR PANELS AS AN AUXILIARY SOURCE OF ELECTRICAL ENERGY

page 7–10

This paper presents the analysis of the cost-effectiveness and possible financial savings by using different types of electrical energy sources, such as solar panels and wind turbines – the most popular alternative energy sources. These studies are relevant, since today it is very popular to use alternative types of electrical power generators. The study was carried out by the example of a house, which was located in the city, according to the current price of electricity and the price of purchase and installation of the needed equipment in June 2014. The percentage of interests, payback period and cost-effectiveness by combining these types of generators was determined. The conclusions were made. It was found that the use of additional electrical energy sources was economically inefficient because of too long payback periods of installations.

**Keywords:** wind turbine, solar panel, generator, electrical energy, current, energy.

## References

1. Chumakov, V. (2006). Pod solnechnoi kryshei. *Vokruh sveta*, № 10(2793). Available: <http://www.vokrugsveta.ru/vs/article/2888/>. Last accessed 23.06.2014.
2. Bristol Stickney, Boaz Soifer. (2009). Solar Thermal Hydronics. *Solar Pro, Issue 2.6*. Available: <http://solarprofessional.com/articles/products-equipment/solar-heating/solar-thermal-hydronics>. Last accessed 23.06.2014.
3. Wind Energy – Wind measurement: Boundless possibilities. (2014). *Sun&Wind Energy*, № 4, 26–29. Available: <http://www.sunwindenergy.com/content/wind-energy-wind-measurement-boundless-possibilities>. Last accessed 23.06.2014.
4. Distributed wind. (2013). *WindEnergy*, № 6, 94–98.
5. Shefter, Ya. Y. (1957). *Yzobretateliiu o vetrodvyhateliakh y vetroustanovkakh*. K.: Tekhnika, 150.
6. *Elektrycheskiy henerator*. Available: [http://ru.wikipedia.org/wiki/Электрический\\_генератор](http://ru.wikipedia.org/wiki/Электрический_генератор). Last accessed 23.06.2014.
7. Taryfy na elektroenerhiyu, kotorye otpuskaiutsia naseleniyu na yun 2014 hoda. Available: <http://www.oblenergo.odessa.ua/index.php/ru/tarif-y-dlya-bytovykh-potribitelej-arhiv/1014-tarif-y-iyun-2014>. Last accessed 23.06.2014.
8. *Vetrohenerator FLAMINGO AERO 1,6-4,4*. Available: <http://avtonom.com.ua/alternativnaya-energetika/vetrogenerator/vetrogenerator-flamingo-aero-16-44.html>. Last accessed 23.06.2014.
9. *Klymat Odessa*. Available: <http://www.meteoprog.ua/ru/climate/Odesa/>. Last accessed 23.06.2014.
10. Labeish, V. H. (2003). *Netradytsyomnye y vozobnovliaemye ystochnyky enerhiy*. K.: Teploenerhetyka, 207.
11. *Solnechnaia batareia Yingli Solar YL250C-30b*. Available: <http://avtonom.com.ua/alternativnaya-energetika/solnechnye-batarei/solnechnaya-batareya-yl250c-30b-altek-alista.html>. Last accessed 23.06.2014.
12. *Skhema podklyucheniya solnechnykh batarei*. Available: [http://sunandwind.ru/alternativnay\\_energetika/shema-podklyucheniya-solnechnykh-batarei.html](http://sunandwind.ru/alternativnay_energetika/shema-podklyucheniya-solnechnykh-batarei.html). Last accessed 23.06.2014.
13. *Srok okupaemosti solnechnykh system*. Available: <http://www.superalternatiya.narod.ru/solbat.htm>. Last accessed 23.06.2014.
14. *Tseny na stroitelstvo LEP, rastsenky na ustanovku opor LEP*. Available: [http://elektrik-master.ru/ceny\\_na\\_stroitelstvo\\_lep](http://elektrik-master.ru/ceny_na_stroitelstvo_lep). Last accessed 23.06.2014.

## OXIDATION STABILIZATION OF PEANUT-LINEN BLEND LIPIDS

page 10–14

Food quality is crucial in terms of impact on human health and life expectancy. The task of preserving the quality of fat-and-oil products lies in protecting lipids from oxidation, during which substances that not only degrade the quality characteristics of the product, but also can be harmful to human health are formed. To prevent oxidation of products, antioxidant-containing raw materials are widely used.

Analysis of the content of antioxidants of oil extracts of sage leaves, black currant leaves, garlic, rose hips was conducted by the method, which consists in calculating the dependence of the amount of absorbed oxygen on time during initiated oil oxidation at increased temperature.

It was found that the investigated oil extracts have an inhibitory effect and their introduction in the amount of 5 % increases the oxidative stability of peanut-linen blend by 1,2–1,7 times. According to the content of antioxidants and relative oxidation stability, the studied oil extracts can be arranged in the following series: sage leaves > rose hips > black currant leaves > garlic.

The studies show that the oil extracts contain substances that have antioxidant properties and allow to recommend them as an additive that inhibits oil oxidation processes. This blended oil has a balanced composition of polyunsaturated fatty acids, is stable to oxidative spoilage and enriched with biologically active substances. The developed product is recommended for people with weak health and for preventive purposes.

**Keywords:** extract, peanut-linen blend, antioxidant properties, oxidation.

#### References

- Kuznecova, A. A., Antonova, E. V. (2012). Faktory, formirujushhie kachestvo i bezopasnost' rastitel'nyh masel., Materialy VI nauchno-prakticheskoy konferencii studentov, Irkutsk. *Ocenka kachestva i bezopasnosti potrebitel'skih tovarov*, 6, 33–44.
- Aluyor, E. O., Ori-Jesu, M. (2008). The use of antioxidants in vegetable oils – A review. *African Journal of Biotechnology*, 7(25), 4836–4842. DOI:10.5897/AJB08.063.
- Poljanskij, K. K., Rudakova, L. V. (2004). Aktual'naja problema – antioksidantnaja aktivnost' pishhevyh produktov. *Molochnaja promyshlennost'*, 11, 44.
- Cehina, N. N., Has'janova, N. G., Pirogova, N. A., Romanov, A. S., Puchkov, S. V. (2008). Izuchenie ingibirujushhego dejstvija dobavok masla shipovnika v rastitel'nye masla. *Sb. nauch. tr. MPA, VI/2*. M.: GIOR, 180–185.
- Cehina, N. N., Has'janova, N. G., Orehova, S. V. (2009). Izuchenie biologicheskoy aktivnosti i antiokislitel'nyh svojstv kaliny i produktov ee pererabotki. *Vestnik Kuzbasskogo gosudarstvennogo tehničeskogo universiteta*, 2, 90–92.
- Cehina, N. N., Has'janova, N. G., Pirogova, N. A., Puchkov, S. V. (2010). Izuchenie oksislitel'noj stabil'nosti oblepivovogo masla. *Tehnika i tehnologija pishhevyh proizvodst*, 16, 55–57.
- Mariassoyva, M. (2006). Antioxidant activity of some herbal extracts in rapeseed and sunflower oils. *Journal of Food and Nutrition Research*, Vol. 45, No. 3, 104–109. Available: <http://www.vup.sk/en/download.php?bulID=16>.
- Tokaev, Je. S., Manuk'jan, G. G. (2009). Sravnitel'naja harakteristika antioksidantnoj aktivnosti rastitel'nyh jekstraktov. *Hranenie i pererabotka sel'hozsy'r'ja*, 9, 36–39.
- Bashilov, A. V.; applicant and patentee State Scientific Institution «Central Botanical Garden of the National Academy of Sciences of Belarus». (10.09.2012). *Ingibitor perekisnogo okslenija*. Pat. 2460764 Ros.: MPK: S11V5/00. № 2460764; appl. 15.11.2010, 3 p.
- Usatjuk, S. I., Pelelova, L. S.; applicant and patentee National University of Food Technologies. (25.05.2012). *Sposib stabilizacii roslinnoi olii*. Pat. 69987 Ukraina: MPK S11V 5/00. u201112464; appl. 24.10.2011, Bjul. № 10, 4 p. Available: <http://uapatents.com/4-69987-sposib-stabilizacii-roslinnoi-oli.html>.
- Korshunova, G. E., Petrenko, T. V., Il'dirova, S. K. et al; applicant and patentee Donetsk National University. (16.10.2000). *Sposib stabilizacii sonjashnikovoii olii do okslennija*. Pat. 28571 Ukraina: MPK6 C11B5/00. № 97073487; appl. 02.07.1997, Bjul. № 5, 3 p. Available: <http://uapatents.com/3-28571-sposib-stabilizacii-sonjashnikovo-oli-do-okslennija.html>.
- Shadyro, O. I., Sosnovskaja, A. A., Edimecheva, I. P. et al; applicant and patentee Establishment of the Belarusian State University, «Research Institute of Physico-Chemical Problems», LLC «Club» Eco-Farms». (30.04.2008). *Sposib stabilizacii l'nanogo masla*. Pat. 10449 Respublika Belarus': MPK6 C 11B 5/00. № a 20060911; appl. 19.09.2006, 7 p.
- Bashilov, A. V., Spiridovich, E. V., Reshetnikov, V. N.; applicant and patentee State Scientific Institution «Central Botanical Garden of the National Academy of Sciences of Belarus». (10.09.2012). *Ingibitor perekisnogo okslenija*. Pat. 2460764 Ros. Federacija: MPK7 C11B5/00. № 2010146440/13; appl. 15.11.2010, 4 p.
- Korotchenko, V. I. (20.06.2006). *Antioksidant*. Pat. 2278154 Ros. Federacija: MPK S11V5/00. № 2278154; appl. 23.08.2004, 3 p.
- Vasilenko, O. M., Fedjakina, Z. P., Demidov, M. I.; applicant and patentee Closed Joint Stock Company «Kharkiv Fat Factory». (15.09.2003). *Olija salatna (varianti)*. Pat. 59932 Ukraina: MPK6 A23D9/00. № 59932; appl. 09.12.2002, Bjul. № 5, 3 p. Available: <http://uapatents.com/5-59932-oliya-salatna-varianti.html>.
- Bilous, O. V., Demidov, I. M. (10.04.2014). *Sposib gal'muvannja oksnennja zhiriv, olij ta zhirovmisnih produktiv*. Pat. 89254 Ukraina: MPK14 C11B 5/00. № 89254; appl. 02.12.2013, Bjul. № 7, 2 p. Available: <http://uapatents.com/5-89254-sposib-galmuvannja-oksnennja-zhiriv-olij-ta-zhirovmisnih-produktiv.html>.
- Dragonjuk, O. A., Dragonjuk, M. A., Marushko, L. P. (2012). Antioksidantna dija ekstraktiv likars'kih roslin rodini Lamiaceae na stabil'nist' olii sonjashnikovoii v procesi zberigannja. *Naukovij visnik Volins'kogo nacional'nogo universitetu imeni Lesi Ukraïni*, 17, 127–132.
- Kamkar, A., Javan, A. J., Asadi, F., Kamalinejad, M. (2010, July). The antioxidative effect of Iranian Mentha pulegium extracts and essential oil in sunflower oil. *Food and Chemical Toxicology*, V. 48, № 7, 1796–1800. doi:10.1016/j.fct.2010.04.003.
- Özcan, M. M., Arslan, D. (2011). Antioxidant effect of essential oils of rosemary, clove and cinnamon on hazelnut and poppy oils. *Food Chemistry*, Vol. 129, Iss. 1, 171–174. doi:10.1016/j.foodchem.2011.01.055.
- Ayadi, M., Kamoun, N., Attia, H. (2009). Physico-chemical change and heat stability of extra virgin olive oils flavoured by selected Tunisian aromatic plants. *Food and Chemical Toxicology*, Vol. 47, Iss. 10, 2613–2619. doi:10.1016/j.fct.2009.07.024.
- Hras, A. R., Hadolin, M., Knez, Z., Bauman, D. (2007). Comparison of antioxidative and synergistic effects of rosemary extract with  $\alpha$ -tocopherol, ascorbyl palmitate and citric acid in sunflower oil. *Food Chemistry*, Vol. 71, Iss. 2, 229–233. doi:10.1016/S0308-8146(00)00161-8.
- Iqbal, S., Haleem, S., Akhtar, M., Zia-ul-Haq, M., Akbar, J. (2008). Efficiency of pomegranate peel extracts in stabilization of sunflower oil under accelerated conditions. *Food Research International*, Vol. 41, Iss. 2, 194–200. doi:10.1016/j.foodres.2007.11.005.
- Mei, W. S. C., Ismail, A., Esa, N. M., Akowuah, G. A., Wai, H. C., Seng, Y. H. (2014). The Effectiveness of Rambutan (Nephelium lappaceum L.) Extract in Stabilization of Sunflower Oil under Accelerated Conditions. *Antioxidants*, 3(2), 371–386. doi:10.3390/antiox3020371.
- Dejnichenko, G., Kramarenko, D., Galyapa, I. (2013). Vpliv maslyanogo ekstraktu biomasi H. Pluvialis na oksnennja roslinnix olij. *Tovari i rinki*, 1, 102–110.
- Alekseeva, L. I., Bolotnik, E. V. (2013). Rozmarinovaya kisnota i antioksidantnaja aktivnost' Prunella Grandiflora i Prunella Vulgaris (Lamiaceae). *Rastitel'nyj mir Aziatskoj Rossii*, 1(11), 121–125.
- Buldakov, A. S. (2001). *Pishhevyje dobavki*. Ed. 2. M.: DeLi print, 435.
- Nikul'shin, V. P. (2010). Chesnok – sil'nejshij prirodnyj antibiotik i antioksidant. *Kartofel' i ovoshhi*, 1, 21–22.
- Kim, M.-Y., Choi, S.-W., Chung, S.-K. (2000). Antioxidative Flavonoids from the Garlic (Allium sativum L.) Shoot. *Food Science and Biotechnology*, V. 9, № 4, 199–203.
- Vaidya, V., Ingold, K. U., Pratt, D. A. (2008). Garlic: Source of the Ultimate Antioxidants – Sulfenic Acids. *Angewandte Chemie International Edition*, Vol. 48, Iss. 1, 157–160. doi:10.1002/anie.200804560.
- Dubinina, A. A. (2014). *Naukove obgruntuvannja formuvannja spozhivnih vlastivostej fortifikovanix past iz fruktiv ta ovochiv*. Kh, 395.

## ECONOMICS AND MANAGEMENT OF ENTERPRISE

### EVALUATING THE EFFECTIVENESS OF USING PRINTING EQUIPMENT

page 15–17

The effectiveness of using printing equipment was studied and the calculations for the qualitative evaluation of the equipment effectiveness in the printing industries were made. The speed and quality of printing depends on the applied printing equipment, for correct using the full capacity of a printing machine, the parameters that affect the performance of the printing equipment were studied (circulation, number of color inks, order format, complexity of orders, num-

ber and qualifications of printers). Next, the main parameters (print time, production capacity) were determined that will speed up the printing process, make it more accurate and insure the production from the perpetual violations of order deadline, violations of printing equipment loading schedule. As a result, the printing process will be more organized.

**Keywords:** effectiveness, printing, production, performance, equipment, machine, quality, speed, circulation, evaluation.

#### References

- Polyansky, N. (1991). *Fundamentals of printing production*. Moscow: Book, 352.

2. Mogin, R. (2005). *Design printing production*. Moscow: MGUP, 194.
3. Kipphan, G. (2003). *Book of printing*. Moscow: MGUP, 1280.
4. Tsigelman, T. (1986). *Operational production planning on printing companies*. Moscow: Book, 103.
5. Granskaya, L., Kuptcova, O. (1981). *Handbook technologist – poly-graphist*. Moscow: Book, 256.
6. Levin, S. (1985). *Production processes in the printing industry. Design and calculation*. Moscow: Book, 320.
7. Isakova, M. (1997). *Cross-industry standard time and production processes of printing production*. Moscow: GPNITS «Economy», 448.
8. Predko, L., Myklushka, I. (1996). *Guidelines for the implementation of a course project on the subject «Design and calculation of joint technological processes using a PC»*. Lviv: UAD, 48.
9. Mironov, G., Ershov, A. (2002). *Organization of the printing industry*. Moscow: Moscow State Unitary Enterprise, 352.
10. Volkova, O. (2001). *Economics of Enterprise*. Moscow: Infra-M, 192.

**RESEARCH OF ECO-EFFICIENCY INDEX IN EVALUATING ENTERPRISE PRODUCTION PROCESSES**

page 18–21

The necessity of searching optimally balanced economic and environmental solutions of an enterprise activity within the environmental concern of humanity and business was substantiated in this paper. A thorough theoretical literature review of domestic and foreign scholars on this issue was made. The essence and role of the eco-efficiency strategy was revealed, its main ideas, characteristics and features were given. In addition, the scientific instrument of the eco-efficiency strategy, implemented on the basis of the life cycle concept was presented, the areas where the enterprise should work to be eco-efficient were given, the benefits, which it can receive from the implementation of this strategy in their activity were given. As a result of the studies, the eco-efficiency indicator for domestic enterprises was calculated. The obtained results of calculations

indicate the need and benefits of implementing the eco-efficiency strategy in the activities of domestic enterprises, as this will improve both economic and environmental indicators of the enterprise activity.

**Keywords:** production process, ecologization, environment, eco-efficiency indicator, eco-efficiency strategy.

**References**

1. *Eco-efficiency: Creating more value with less impact*. (2000). WBCSD, 32. Available: [http://www.wbcd.org/web/publications/eco\\_efficiency\\_creating\\_more\\_value.pdf](http://www.wbcd.org/web/publications/eco_efficiency_creating_more_value.pdf). Last accessed 18.07.2014.
2. Burchart-Korol, D. (2012). Ekoefektywność – nowym kryterium oceny system produkcyjnego. *Logistyka*, № 6, 40–43.
3. Burchart-Korol, D., Czaplicka-Kolarz, K., Kruczek, M. (2012). Eco-efficiency and eco-effectiveness concepts in supply chain Management. *Congress Proceedings Carpathian Logistics Congress CLC Jeseník, 07–09.11.2012, Jeseník, Czech Republic, EU*. Available: <http://konsys2.tanger.cz/files/proceedings/09/reports/862.pdf>. Last accessed 18.07.2014.
4. Burchart-Korol, D., Ślaski, P. (2011). Analiza ekoefektywności w logistyce produkcji. *Logistyka*, № 5, 56–59.
5. Czaplicka-Kolarz, K., Burchart-Korol, D., Krawczyk, P. (2010). Metodyka analizy ekoefektywności. *Journal of Ecology and Health*, № 6, 34–36.
6. Andrieieva, N. M., Barannik, V. O., Khlobystov, Ye. V. et al; In: *Khlobystov, Ye. V. (2010). Stalyi rozvytok i ekolohichna bezpeka suspilstva v ekonomichnykh transformatsiakh*. Simferopol: Fieniks, 582.
7. Prykhodchenko, A. A. et al. (2008). *Stratehiia staloho rozvytku*. Dniprodzerzhynsk: DDTU, 413.
8. *Promyslovi tovary AT «Obolon»*. Available: <http://obolon.ua/ukr/products/industrial-goods/>. Last accessed 18.07.2014.
9. *Zvit «Obolon» zi staloho rozvytku 2011-2012 r.r.* Available: <http://www.obolon.ua/files/site/ZVIT%20Obolon%20CSR%202011-2012.pdf>. Last accessed 18.07.2014.
10. *Hlobalnyi zelenyi kurs*. (March 2009). Available: [http://www.unclearn.org/sites/www.unclearn.org/files/inventory/UNEP90\\_RUS.pdf](http://www.unclearn.org/sites/www.unclearn.org/files/inventory/UNEP90_RUS.pdf). Last accessed 18.07.2014.

**DEVELOPMENT OF PRODUCTIVE FORCES AND REGIONAL ECONOMY**

**MODELLING OF REGIONAL HIGHER EDUCATION SERVICES MARKET: MICROECONOMICS METHODOLOGICAL APPROACH**

page 22–26

This article presents the analysis of changes in education services market in recent years, when total number of freshmen decreased rapidly, that caused significant fall of income of many colleges and universities. Under such circumstances total revenues are proposed to be considered as a key parameter for maximizing from financial point of view in order to reach financial stability of colleges and universities. The model of kinked demand curve is applied to present situation of higher education services market in Ukraine. Instead of traditional for Ukraine accountant approach to calculation of tuition cost, calculation of changes in demand and total revenue are carried out on the basis of price elasticity of demand for higher education services. Relative index of price adjustment effectiveness is suggested to evaluate impact of tuition changes on total revenues. Proposed models, analytical instruments and recommendations could help colleges and universities to maintain market share and their income base by means of scientifically based pricing strategy.

**Keywords:** higher education, kinked demand curve, price elasticity, total revenue.

**References**

1. Kostiukova, O. V., Petruk, T. I. (2012). Financial support of public and private higher educational institutions in Ukraine. *Ekonomichnyi visnyk Donbasu*, 1(27), 113–115.
2. Salohubova, V. M., Ivchenko, Ye. A. (2013). Role of marketing complex impact on shaping the competitiveness of universities. *Proc. of the 19th scientific-practical conf. on modern education problems «Uni-*

*versity and region»*, Luhansk, SNU im. V. Dalia, October 31-November 1, 2013. Available: <http://dspace.snu.edu.ua:8080/jspui/bitstream/123456789/3414/1/24.pdf>.

3. Kucherenko, S. Yu., Rybchenko, Yu. V. (2014). Tuition as a source of funding for public higher education institution. *Proc. of Conf. «Scientific thought of the information age»*. Available: [www.rusnauka.com/8\\_NMIW\\_2014/Economics/3\\_161775.doc.htm](http://www.rusnauka.com/8_NMIW_2014/Economics/3_161775.doc.htm).
4. DeLeeuw, J. (September 2012). *Unemployment Rate and Tuition as Enrollment Predictors*. Monroe, 13. Available: [www.monroeccc.edu/institutionalresearch/analyses.htm](http://www.monroeccc.edu/institutionalresearch/analyses.htm).
5. Chen, R. (2008). Financial Aid and Student Dropout in Higher Education: A Heterogeneous Research Approach. *Higher Education. Handbook of Theory and Research. Springer Science + Business Media, Vol. XXIII*, 209–239. doi:10.1007/978-1-4020-6959-8\_7.
6. *Analysis of Tuition Pricing Strategies*. (2013). Hannover research, 23. Available: <http://www.hannoverresearch.com/insights/analysis-of-tuition-pricing-strategies/?i=higher-education>. Last accessed 22 June 2014.
7. Bryan, G. A., Whipple, T. W. (1995, September). Tuition Elasticity of the Demand for Higher Education among Current Students: A Pricing Model. *The Journal of Higher Education, Vol. 66, № 5*, 560–574. doi:10.2307/2943936.
8. Brown, C., McClary, A., Bellingar, J. (2012). Determinants of student demand at Florida Southern College. *Journal of Case Research in Business and Economics*, 5. Available: [www.aabri.com/manuscripts/11861.pdf](http://www.aabri.com/manuscripts/11861.pdf).
9. In: Panchushyn, S., Ostroverh, P. (2010). *Analitychna ekonomia [Analytical economics]*, Vol. 2. Ukraine, Kyiv: Znannya, 437.
10. Strategies to Avoid Costly Tuition Pricing Mistakes. (2008). *Market Intelligence Brief*, 1(1). Available: [www.artsci.com/market/MIB%20Pricing.pdf](http://www.artsci.com/market/MIB%20Pricing.pdf).

11. *Ofitsyniyi zvit pro provedennia ZNO u 2013 r.* [The official report on the external evaluation in 2013]. (2013). Ukraine, Kyiv: Ukrainskyi tsentr otsiniuvannia yakosti osvity, 480.
12. *Rozpodil abiturientiv ZNO-2014 za rehionamy stanom na 29.03.2014 r.* [Regional distribution of university entrants in 2014, registered for external evaluation as for 29.03.2014]. (2014). Available: [www.lvtest.org.ua/files/doc\\_site/RegRegions.pdf](http://www.lvtest.org.ua/files/doc_site/RegRegions.pdf).

## RESEARCH OF POTENTIAL OF SHARE CERTIFICATES IN THE AGRICULTURAL SECTOR

page 26–32

The main national features of the enterprises of the agricultural sector were determined and strategic objectives of the agricultural sector of Ukrainian economy in order to ensure food security of the country were formed in the paper. The place of the state in forming the system of laws and regulations on the land market was defined. The level of financial support of the agricultural sector was characterized and it was found that most agrarian formations of various organizational-legal forms run a deficit of financial resources. The author proposes one of the sources of financial resources, in particular through share certificates. Issue of share certificates allows, on the one hand, to provide farm enterprises with financial resources, on the other, to mobilize local and regional securities markets, which in turn will have a positive impact on the situation in the countryside and domestic securities market.

It was proposed to include share certificates in listing of local-regional securities markets.

**Keywords:** financial market, financial resources, share certificates, farm enterprise.

### References

1. Kang, D. L.; Harvard University. Graduate School of Business Administration. Division of Research Family. (2000). *Ownership and Performance in Public Corporations: A Study of the U.S. Fortune 500, 1982–1994*. Division of Research, Harvard Business School, Vol. 51, 28.
2. Demianenko, M. Ya., Hudz, O. Ye., Stetsiuk, P. A. (2008). *Otsinka kredytopromozhnosti ahroformuvan (teoriia ta praktyka)*. K.: NNTs IAE, 302.
3. Lesechko, M. D., Malyk, Ya. Y., Helei, S. D. et al. (2002). *Ekonomichna bezpeka Ukrainy: vntrishni ta zovnishni chynnnyky*. Lviv: Vydavnychiy tsentr LNU imeni Ivana Franka, 256.
4. Borodina, O. M., Heiets, V. M., Hutorov, A. O. et al; In: Heits, V. M., Borodina, O. M., Prokopa, I. V.; NAS of Ukraine, Instytut Economics and Forecasting. (2012). *Ukrainska model ahrahnoho rozvytku ta yii sotsioekonomichna pereoriientatsiia*. K., 56.
5. Dyer, Jr., W. G., Sanchez, M. (1998, December). Current State of Family Business Theory and Practice as Reflected in Family Business Review 1988–1997. *Family Business Review*, Vol. 11, № 4, 287–295. doi:10.1111/j.1741-6248.1998.00287.x.
6. Rumiantsev, S. A. (2003). *Ukrainska model korporatyvnoho upravlinnia: stanovlennia ta rozvytok*. K.: Znannia, 150.
7. Berger, A. N., Udell, G. F. (1995, January). Relationship Lending and Lines of Credit in Small Firm Finance. *Journal of Business*, Vol. 68, № 3, 351–381. doi:10.1086/296668.
8. Kovalenko, M. P. (2001). Pidstavy ta chynnnyky uspishnoho korporatyvnoho upravlinnia pidpriemstvamy APK Sumskoi oblasti. *Ukrainskyi investytsiyniy zhurnal «WELCOME»*, № 5–6, 33–36.
9. Huse, M. (1990, January). Board composition in small enterprises. *Entrepreneurship & Regional Development*, Vol. 2, № 4, 363–374. doi:10.1080/08985629000000023.
10. Berle, A., Means, G. (1997). *The Modern Corporation and Private Property*. New York: Oxford University Press, 641.
11. Palyha, Ye. M. (2000). *Sotsialno-ekonomichnyi mekhanizm formuvannia efektyvnoi ekonomiky*. Lviv: Instytut rehionalnykh doslidzhen NAN Ukrainy, 340.
12. Vasilieva, L. M. (2009). Mistse ta rol fermerskykh gospodarstv u suchasni ekonomichni systemi y ahrahni sferi. *Derzhava ta rehiony*, № 1, 30–32.
13. Pro natsionalnu depozytarnu systemu ta osoblyvosti elektronnoho obihu tsinykh paperiv v Ukraini. (10.12.1997). *Zakon Ukrainy № 710/97-VR*. Available: <http://zakon4.rada.gov.ua/laws/show/710/97-vr>. Last accessed 18.07.2014.
14. In: Kossak, V. M. (2004). *Naukovo-praktychnyi komentar Tsyvilnoho kodeksu Ukrainy*. K.: Istyna, 976.
15. Neubauer, F., Lank, A. G. (1998). *The Family Business: its Governance for Sustainability*. Routledge New York, 272.
16. Salvato, C.; In: Koiranen, M., Karlsson, N. (2002). Towards a Stewardship Theory of the Family Firm. *The Future of Family Business-Values and Social Responsibilities*. F.B.N. Research Forum Proceedings, Helsinki, Finland, 23–36.

## RESEARCH OF MICROENTERPRISES IN LATVIA IN THE CONTEXT OF RESOLVING UNEMPLOYMENT

page 32–36

Based on the data of the Register of Enterprises of the Republic of Latvia, the State Revenue Service, Report on the Development of the National Economy of Latvia and publications in periodicals, the author examines the place and role of microbusiness on the labor market of Latvia. According to Eurostat, in mid-2014 the unemployment rate in Latvia was by 11,4 % higher than in neighboring Estonia and Lithuania. And this despite the deterioration of the demographic situation and the continuing outflow of economically active population to Western countries. Over the past 10 years, the population of Latvia has decreased by 13 %, from 2,319 million people in 2004 to 1,995 million people in mid-2014. Microenterprises started to be established in Latvia in 2010 in the midst of the economic crisis as one of the measures to overcome unemployment, which exceeded 20 %. Today, the share of microenterprises is 85,5 % of all enterprises. Herewith, the turnover of all the microenterprises is 1 % of the total turnover of all enterprises in the country. Mass registration of microenterprises with the facilitated taxation has led to a reduction in unemployment. However, not having got the expected effect of the tax collection from microenterprises, fiscal authorities have decided to increase the turnover tax from 9 to 15 % for them starting from 2015. This decision has led to a sharp reduction in the registration of new microenterprises in the current year and, thus, to an increase in unemployment. According to the author, in view of the Latvia's economy structure, it is necessary to create conditions for the more efficient activity of microenterprises and bringing them out of the shadows, for which the turnover tax should be reduced rather than increased. The question of increasing the turnover tax can be placed after the microenterprises will operate at a profit.

**Keywords:** labor market, employment, unemployment, small business, microenterprises, taxes.

### References

1. *World Development Report 2013: Jobs*. (02.01.2013). Washington, DC: World Bank. Available: [http://siteresources.worldbank.org/EXTNWDR2013/Resources/8258024-1320950747192/8260293-1322665883147/Overview\\_Russian.pdf](http://siteresources.worldbank.org/EXTNWDR2013/Resources/8258024-1320950747192/8260293-1322665883147/Overview_Russian.pdf). Last accessed 18.07.2014.
2. Lursoft pētījums: Mikro un mazie uzņēmumi Latvijas ekonomikā ieņem aizvien nozīmīgāku lomu. (30.05.2013). *Lursoft*. Rīga. Available: <http://www.lursoft.lv/press/2013/05/30/Lursoft-petijums-Mikro-un-mazie-uznemumi-Latvijas-ekonomika-ienem-aizvien-nozimidaku-lomu>. Last accessed 18.07.2014.
3. 80,48 % no sodag registrētajiem uzņēmumiem ir mazkapitāla SIA. (12.05.2014). *Lursoft*. Rīga. Available: <http://www.lursoft.lv/press/2014/05/12/80,48proc-no-sodag-registretajiem-uznemumiem-ir-mazkapitala-SIA>. Last accessed 18.07.2014.
4. *Zinājums par Latvijas tautsaimniecības attīstību*. (Jūnijs. 2014). Available: [http://www.em.gov.lv/images/modules/items/2014\\_jun.pdf](http://www.em.gov.lv/images/modules/items/2014_jun.pdf). Last accessed 18.07.2014.
5. Sventytyskaia, E. (07.12.2011). Nalohooblozhenye maloho y mykrobyznesa v Latvyy: problemy y resheniya. *Materiyaly Kruhlykh stolov BMA. Rynok truda v Baltyy y ES: zakonemosty y paradoksy. The Baltic Course*. Available: <http://www.baltic-course.com/rus/opinion/?doc=46349>. Last accessed 18.07.2014.
6. Pavuk, O. (2014). Retirement economy within the context of problems of demography and the labour market in the Baltic States. *Conference «Economic Science for Rural Development»*, Jelgava, LLU ESAF, 24–25 April 2014, 9.
7. Pavuk, O. (07.12.2011). Rynok truda v Baltyy y ES: zakonemosty y paradoksy. *Materiyaly Kruhlykh stolov BMA. The Baltic Course*. Available: [http://www.baltic-course.com/rus/kruglij\\_stol/?doc=49937](http://www.baltic-course.com/rus/kruglij_stol/?doc=49937). Last accessed 18.07.2014.
8. Pavuk, O., Moldenhauer, N. (November 2013). Employment an indicator of economy virtualization (by example of the United States).

- Economic Annals-XXI, 11–12(1), 23–26.* Available: [http://soksin.info/userfiles/file/2013/2013/11-12\(1\)2013/Pavuk\\_Moldenhauer.pdf](http://soksin.info/userfiles/file/2013/2013/11-12(1)2013/Pavuk_Moldenhauer.pdf).
9. Eurostat. Available: <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>. Last accessed 18.07.2014.
  10. Hendlyn, V. (11.11.2013). Ymmyhratsyia Ee velychestva. Kak nashy sootchestvennyky ustrayvaiutsia v Velykobyrtanyy. *Б Denhy*. Available: <http://195.68.141.169/doc/2331217>. Last accessed 18.07.2014.
  11. Mikrouzņēmumu nodokļa likums. (19.08.2010). *Latvijas Vēstnesis*. Rīga, Available: <https://www.vestnesis.lv/?menu=doc&id=215302>. Last accessed 18.07.2014.
  12. Central Statistical Bureau of Latvia. Available: [www.csb.lv](http://www.csb.lv). Last accessed 18.07.2014.
  13. Citadele Index. Latvijas uzņēmēju aptaujas rezultāti. Tirgus un sabiedriskās domas pētījumu centrs. (2014). *SKDS and Citadele Index*. Rīga. Available: [http://www.citadele.lv/common/img/uploaded/doc/index/ci\\_march\\_2014\\_lv.pdf](http://www.citadele.lv/common/img/uploaded/doc/index/ci_march_2014_lv.pdf). Last accessed 18.07.2014.

**JUSTIFICATION OF EDUCATION MARKET CHARACTERISTICS**

page 36–39

Despite the large number of discussions of various scientists and economists in the field of education for young people, still little attention has been paid to the market of education services. In this paper, the author presents characteristics of the market of education services with respect to higher educational institutions of Ukraine. The main purpose of the research is to study theoretical and methodological approaches relative to the market of education services. The basic concepts are formulated and defined, namely, «market», «education service», «market of education services». In addition, participants of the education service market are analyzed and summarized, which is divided into generally accepted and offered participants of these services. Also, special attention is paid to the peculiarities of the market of education services. The developments presented in this paper are used in the learning process in studying the course «Personnel Management».

**Keywords:** market, education service, education services market, participants of education service market.

**References**

1. Gorskij, V. S., Neviria, G. K., Pogrebniak, V. A. (2009). *Suchasni sistemi vishoi osviti: porivnannia dlia Ukraini*. Kiiiv: KM Akademia, 290.
2. Buzko, I. (2007). Rozvitok rinku osvitnich poslug v Ukraini v umovach globalizatsii. *Ekonomist*, № 8, 28–33.
3. Stebluk, N. F. (2009). Ekonomichna priroda osvitnich poslug v sistemii vishoi osviti Ukraini. *Visnik Khmel'nitskogo natsionalnogo universitetu*, № 6(2), 196–199.
4. Aoki, M. (2007, April). Endogenizing institutions and institutional changes. *Journal of Institutional Economics*, Vol. 3, № 1, 1–31. doi:10.1017/s1744137406000531.
5. Patora, R. (2002) *Rinok osviti v sistemii kadrovogo zabezpechennia strategichnogo rozvitky kraini*. Lviv, 39.
6. Obolenska, T. E. (2002). *Marketing u sferi osvitnich poslug*. Kharkiv, 346.
7. Ogarenko, V. M. (2005). *Derzavne reguluvannia diialnosti vishich navshalnih zakladiv na rinku osvitnich poslug*. Kiiiv: NADU, 326.
8. Tischenko, G. A. (2010). Osobennosti i klassifikatsiia uslug vishego professionalnogo obrazovannia. *Vestnik HGAEP*, № 2(47), 83–88.
9. Aleksandrov, V. (2007). Osvitnia posluga. *Ekonomika Ukrainy*, № 3, 53–60.
10. Kontseptsiya. *Wikipedia*. Available: <http://ru.wikipedia.org/wiki>.
11. Livshina, V. V. (2004). *Formirovanie sistemii menedzmenta kachestva vuza*. Krasnoiar'sk: SibGTU, 324.

**ADDITION OF A THEORY OF FINANCIAL GLOBALIZATION IN CONTEXT OF EXPANSION OF FOREIGN BANK CAPITAL**

page 40–43

The paper considers the essence of financial globalization and its effects for the country's economic development, in particular the market. The essence of financial markets was studied, current trends were analyzed and factors influencing the formation of the Ukrainian market were determined. Special attention was paid to the expansion of foreign bank capital as a key factor in the development of financial

globalization, potential advantages and disadvantages of this process were analyzed.

It was proved that these advantages and disadvantages cannot serve as a universal model to analyze the effects of foreign banks expansion as the main motive of the output of banking structures beyond national markets is a desire to make a profit, and some advantages and disadvantages occur as a consequence of selecting the individual strategy by each bank structure.

The necessity of a comprehensive government regulation of the financial market, in the context of opening, operation and liquidation of the sirlain and representative offices of foreign banks for maximizing the beneficial effects of their activities and leveling of potentially negative consequences.

**Keywords:** financial market, global financial market, financial globalization, foreign bank capital.

**References**

1. Lutsyshyn, Z. O. (2002). *The transformation of the global monetary system in the context of globalization*. K.: VTs «Druk», 224–242.
2. Held, D., McGrew, A., Goldblatt, D., Perraton, J.; Translation from English; In: Pavlenko, Yu. (2003). *Global Transformations: Politics, Economics and Culture*. K.: Feniks, 584.
3. Chub, O. O. (2009). *Banks in the Global Economy*. K.: KNEU, 340.
4. Kornyluk, R. V., Ivasiv, I. B., Dyba, O. M. (2012). *Foreign banks in Ukraine: Impact and Regulation*. K.: KNEU, 234.
5. Robertson, R. (1992). *Globalization: Social Theory and Global Culture*. SAGE, 211.
6. Allais, M.; Transl.: Ehorov, Y. A. (2003). *La Mondialisation. La destruction des emplois et de la croissance. L'evidence empirique*. M.: TEIS, 314.
7. Soros, G. (2000). A new global financial architecture. *Economic Issues*, 12, 60–64.
8. Teaser, L. L., Werner, I. M. (1998). The Internationalization of Securities Markets Since the 1987 Crash. *Brookings-Wharton papers on financial services, Vol. 1*, 281–349. ISSN 1098-3651.
9. McGrew, A. G.; In: Eatwell, J., Jelin, E., McGrew, A., Rosenau, J. (1998). *Globalisation: Conceptualizing a Moving Target. Understanding Globalisation: The Nation-State, Democracy and Economic Policies in the New Epoch*. Stockholm: Swedish Ministry of Foreign Affairs/Almqvist & Wiksell International, 5–25.
10. Smovzhenko, T. S., Kirieiev, O. I., Druhov, O. O. et al; In: Smovzhenko, T. S. (2008). *New stage of development of the banking system of Ukraine: increase the participation of foreign investors*. K.: UBSNBU, 231.
11. Claessens, S., van Horen, N., Gurcanlar, T., Mercado Sapiain, J. (2008, March). Foreign Bank Presence in Developing Countries 1995–2006: Data and Trends. *SSRN Journal. Social Science Electronic Publishing*. Available: <http://dx.doi.org/10.2139/ssrn.1107295>.

**RESTRUCTURING OF REGIONAL LONG-TERM PLANNING PRINCIPLES: ADAPTATION OR STRATEGIC CHOICE**

page 44–50

System of creating long-term plans of regional development, currently in force in Russia, with singling out the subsystems of socioeconomic planning and territorial planning and the levels in the current context, defined by the imperatives of sustainable and innovative development in it is investigated in the paper. Increasing the role of institutional factors of the development of regions requires their stipulation in complex of conceptual and legislative planning provisions, ensuring improved living standards.

In order to solve the complex of problems, associated with the underestimation of regional planning, with the inconsistency of plans with conceptual development directives, with the disagreement of socioeconomic and territorial-spatial planning components, with an incomplete exploration of the real prerequisites in the regions for the implementation of innovative initiatives.

The consistency of the spatial approach to regional planning, expressed in the dominant of transformational function, synchronization configuration and RES parameters with modern development imperatives was proved. Transition to the adaptive-spatial model of regional planning, ensuring completeness of accounting internal and external development factors of RES was justified. New elements of regional planning, determining the content of the planned activities and the specifics of the subjects of the regional economy were found.

It was shown that innovation infrastructure defines a new design of socioeconomic space of the region, which requires recognition of its elements as special objects of regional policy.

The proposed modeling of long-term planning, based on a synthesis of its socioeconomic and territorial components, provides the best adaptation of plans to the innovation development imperatives, taking into account the real possibilities of a particular region. Due to the unity of planning principles, the consistency of regional development decisions, developed at the federal and regional levels of public authority is reached, the system of regional administration is optimized, efficiency of the modernization processes in the regions is increased, disparities in living standards are reduced through rational and integrated use of resources.

**Keywords:** imperatives, region, sustainable innovative development, regional planning, spatial aspect.

#### References

1. *Evropejskaia khartija rehionalnoho/prostranstvennoho planirovaniia*. Available: <http://docs.cntd.ru/document/902018818>. Last accessed 17.07.2014.
2. Osnovopolahaiushchye prynsyipy ustoiichyvoho prostranstvennoho rozvytytia Evropeiskoho kontynenta. (2002). Translation from English K. K. Ananychev. *Doklad komiteta rukovodytelei Evropeiskoi Konferentsyy Mynystrov rehionalnoho planirovaniia (SEMAT), 7–8 sentiabria 2000*. M., 26. Available: <http://www.coe.int/t/dgap/localdemocracy/ceamat/VersionPrincipes/Russe.pdf>. Last accessed 17.07.2014.
3. Evropejskaia ekonomycheskaia komysyisia. (2008). *Terrytoryalno-prostranstvennoe planirovaniie: kliuchevoi ynsument rozvytytia y efektychnoho upravleniia s udelenyem osoboho vnymaniia stranam s perekhodnoi ekonomykoi*. Niu-New York and Geneva: United Nations. Available: [http://www.uncece.org/hlm/documents/Publications/spatial\\_planning.r.pdf](http://www.uncece.org/hlm/documents/Publications/spatial_planning.r.pdf). Last accessed 17.07.2014.
4. Metodolohiia planuvanniia rehionalnoho rozvytku v Ukraini: Instrument dlia rozrobky stratehii rehionalnoho rozvytku i planiv yikh realizatsii. *Proekt Yevropeiskoho Soiuzu. Pidtrymka polityky rehionalnoho rozvytku Ukrainy*. Available: [http://www.if.gov.ua/files/1%20METODOLOH\\_Ya%20PLANUVANNIA%20REH\\_ONALNOHO%20ROZVYTKU.pdf](http://www.if.gov.ua/files/1%20METODOLOH_Ya%20PLANUVANNIA%20REH_ONALNOHO%20ROZVYTKU.pdf). Last accessed 17.07.2014.
5. Liubchenko, O. M. (2007). Pryntsyipy formuvanniia stratehii sotsialno-ekonomichnoho rozvytku rehionu. *Ekonomichnyi visnyk NHU*, 2, 11–16.
6. Fashchevskiy, M. I.; In: Fiialka, S. (2011). Metodolohichni problemy rehionalno-prostorovoi orhanizatsii hospodarstva. *Formuvanniia rynkovoii ekonomiky. Spets. vyp.: u 2 ch. Rehionalnyi rozvytok Ukrainy: problemy ta perspektyvy*, Ch. 1, 8–16.
7. Khymynets, V. V. (2014). The correlation sustainable development and population life quality for example Carpathians region. *Technology Audit And Production Reserves*, 1(2(15)), 37–41. Available: <http://journals.urau.ua/tarp/article/view/21254>.
8. Zelinska, O. (2010). Planuvanniia prostorovoho rozvytku prykordonnykh terytorii yak odyn z napriamiv yevropeiskoho transkordonnoho spivrobitnytstva. *Ekonomist*, 2, 47–51.
9. Palekhov, D. A., Shmydt, M., Shapar, A. H. (2009). Osnovnye napravleniia reformirovaniia rehionalnoho planirovaniia v Ukrainy v kontekste ustoiichyvoho rozvytytia s uchedom praktyky ES. *Ekolohiia i pryrodokorystuvanniia*, Vyp. 12, 10–16.
10. Khomych, L. V. (2007). Stratehiia rehionalnoho rozvytku i planuvanniia terytorii. *Stratehichni priorytety*, 4(5), 142–149.
11. Dontsov, D. H., Yushkova, N. H. (2007). *Hradostroytelnoe rehulirovaniie ratsionalnoho yspolzovanniia terrytorii*. Volhohrad, 184.
12. Yushkova, N. H. (2014). Rozvytytie hradostroytelnykh system rehionov y ymperatyvy hospodarstvennoho upravleniia. *The privolzhsky scientific journal*, 1(29), 99–103.
13. Kontseptsyia dolhosrochnoho sotsialno-ekonomycheskoho rozvytytia Rossyiskoi Federatsyy na peryod do 2020 hoda. *Rasporiazhenie Pravytelstva RF ot 17 noiab. 2008 h. № 1662-r*. Available: <http://base.garant.ru/194365/>. Last accessed 17.07.2014.
14. Yushkova, N. H. (2014). Perspektivy rehionalnoho planirovaniia. *Vestnyk PAHS*, 2(27), 199–208.
15. Kontseptsyia Stratehyy sotsialno-ekonomycheskoho rozvytytia rehionov Rossyiskoi Federatsyy. *Proekt Mynysterstva rehionalnoho rozvytytia Rossyiskoi Federatsyy ot 2005 hoda*. Available: <http://www.gosbook.ru/node/48488>. Last accessed 17.07.2014.
16. Kontseptsyia sovershenstvovanniia rehionalnoi polityky v Rossyiskoi Federatsyy. *Proekt Mynysterstva rehionalnoho rozvytytia Rossyiskoi Federatsyy ot 2010 hoda*. Available: [http://www.komfed.ru/section\\_42/475.htm](http://www.komfed.ru/section_42/475.htm). Last accessed 17.07.2014.

## MATHEMATICAL METHODS, MODELS AND INFORMATION TECHNOLOGIES IN ECONOMICS

### DEVELOPMENT OF MATHEMATICAL MODEL OF SYSTEM-REFLEXIVE MARKETING

page 51–58

System-reflexive paradigm of strategic marketing management, taking into account market environment globalization, business transnationalization process, competition intensification at the national and global level was presented in the paper. The introduction of the considered management paradigm is designed to provide proactive position of the business in relation to the market environment, elimination of the gap between business strategy and market environment, the implementation of strategic opportunities.

To disseminate the proposed approach to business management, a mathematical model of the system-reflexive strategic marketing management, taking into account the critical success factors for achieving the market objectives of the business manager was developed in the paper. The extent, to which the rank of the system reflection of the manager affects on the degree of realization of his interests was defined, and the method of determining the success rate of the system-reflexive strategic marketing management of the enterprise was developed. During the study, the critical success factors, namely integrated indicators of degree of realization of interests of internal and external stakeholders of the enterprise, the conformity of the underlying market of the enterprise with the objective indicator of market environment globalization, indicator

of the relative market share of the business on underlying markets were identified.

Studies have shown a direct correlation between the rank of the system reflection and ability of the manager to realize his own strategic interests. Using system-reflexive marketing in the enterprise activity allows constructively resolve internal and external conflicts, form a strategic vision and corporate strategy, promotes management subjects' awareness of the management object and their own interests in relation to it; increases the business efficiency.

**Keywords:** strategic management, marketing, strategic marketing, reflexive management, system-reflexive marketing.

#### References

1. Imam, A., Zadeh, M. N., Dubey, L. R. (2011). Dairy Marketing Strategies in the Context of Globalization: Issues and Challenges. *International Journal of Trade, Economics and Finance*, Vol. 2(2), 138–143. doi:10.7763/ijtef.2011.v2.92.
2. Kotsas, S., Lazarides, T. G. (2012, March). Globalization and Marketing Competition Strategy: A Conceptual Analysis of Consumer Behaviour. *SSRN Journal. Social Science Electronic Publishing*. Available: <http://dx.doi.org/10.2139/ssrn.2030817>.
3. Mattssona, J. (2008). True Marketing: A Value Based Philosophy for Strategic Marketing. *Journal of Strategic Marketing*, Vol. 16, Iss. 3, 175–188. doi:10.1080/09652540802117132.
4. Kotler, P., Achrol, R. S. (2011, May). Frontiers of the marketing paradigm in the third millennium. *Journal of the Academy of Marketing Science*, Vol. 40, Iss. 1, 35–52. doi: 10.1007/s11747-011-0255-4.

5. Pridmore, J. (2010). Reflexive marketing: the cultural circuit of loyalty programs. *Identity in the Information Society*, Vol. 3, Iss. 3, 565–581. doi: 10.1007/s12394-010-0064-9.
6. Beckett, A., Naya, A. (2008). The reflexive consumer. *Marketing Theory*, Vol. 8, Iss. 3, 299–317. doi:10.1177/1470593108093558.
7. Bettany, Sh., Woodruffe-Burton, H. (2009). Working the limits of method: the possibilities of critical reflexive practice in marketing and consumer research. *Journal of Marketing Management*, Vol. 25, Iss. 7–8, 661–679. doi:10.1362/026725709x471550.
8. Evers, N., Andersson, S., Hannibal, M. (2012). Stakeholders and Marketing Capabilities in International New Ventures: Evidence from Ireland, Sweden and Denmark. *Journal of International Marketing*, Vol. 20, Iss. 4, 46–71. doi:10.1509/jim.12.0077.
9. Aaker, D. A. (1995). *Strategic market management*. USA: John Wiley & Sons, Inc., 379.
10. Bagiev, G. L., Meffert, H. (2009). *Interaction marketing. Concept. Strategies. Efficiency*. St. Petersburg: StPSUEF, 672.
11. Vesnin, V. R. (2006). *Strategic Management*. Moscow: Velbi, Prospekt, 328.
12. Kudenko, N. V. (2005). *Strategic Marketing*. Kyiv: KNEU, 152.
13. Rayko, D. V.; National Technical University «Kharkov Polytechnics Institute». (2008). *Strategic management of marketing activity: methodology and organization*. Kharkov: Publishing house INZHEK, 632.
14. Salyga, S. Y., Kirylova, L. I., Kalandzhi, I. A. (2009). *Improvement of strategic marketing at enterprises*. Publishing house of Classical Private University. Zaporizhia, 52.
15. Dligach, A. A. (2012). *Strategic Marketing Management*. Kyiv: Alerta, 272.
16. Dligach, A. A. (2010). System-reflexive marketing in modern business. *Marketing in Ukraine*, № 5, 43–47.
17. Dligach, A. A. (2013). System Reflexive Strategic Marketing Management. *Bulletin of Taras Shevchenko National University of Kyiv*, № 11(152), 28–34.
18. Thomas, L. T. (2004). Russia's Reflexive Control: Theory and the Military. *Journal of Slavic Military Studies*, Vol. 2, Iss. 17, 237–256.
19. Lefevr, V. A. (1966). Elements of logic in reflective games. *Problems of engineering psychology*, Vol. IV. Moscow: Publishing house of USSR Academy of Sciences, 127.
20. Zozulev, A. V., Solnev, S. A. (2008). *Marketing research: Theory, Methodology, Statistics*. Moscow, Kyiv: Knowledge, 643.
21. Lepa, R. N., Lysenko, Y. G., Merkulov, T. V., Dligach, A. A. and others; In: Lepa, R. N. (2011). *Reflexive Processes in the Economy: Concepts, Models, Applied Aspects*. Donetsk: Knowledge, 422.

**METHOD OF EQUILIBRIUM SOLUTION FINDING FOR PORT'S OPERATORS IN COMPETITIVE ENVIRONMENT OF OLIGOPOLY TYPE**

page 58–63

In the article, a theoretical approach is proposed for development of competitive strategies of ports terminals (OPT) at local market of

stevedoring services. The aim of research is development of method for equilibrium solution which is based on synthesis of microeconomics (theory of firm) and operations research methods (transportation type problems). Such approach allows give to OPT the concrete quantitative and qualitative recommendations for cargo flows attraction under competition of oligopoly type taking into account the co-operation with the transportation companies. These recommendations are connected with discounts of OPT from basic tariffs for transshipment. Formally these discounts are taking into account as coefficients of corresponding objective functions (total profit of OPT and transport companies) with the help of so-called demand functions. It is supposed that demand function for cargo transshipment at each port's terminal depends linearly on total cargo flow of all port terminals. The Cournot equilibrium cargo flows' distribution among ports terminals is found in evident form. The Stackelberg equilibrium solution is analyzed, as well. Some other market's structures for ports operators are considered.

The results of research may be used in managerial practice of the ports operators when developing by them the competitive strategies at local market of stevedoring service.

**Keywords:** ports operators, competition, oligopoly, transportation problem, the Cournot equilibrium, the Stackelberg equilibrium.

**References**

1. Porter, M. (2007). *Konkurentnaia stratehiya. Metodyka analiza otraslei y konkurentsyy* [Competitive strategy. Techniques for analyzing and competitors]. M.: Alpyna Byznes Buks, 453.
2. Intriligator, M. (1975). *Matematicheskiye metody optimizatsiy y ekonomicheskaya teoriya* [Mathematical optimization and economic theory]. M.: Prohress, 606.
3. Yastremskiy, O. I., Gritsenko O. G. (1998). *Osnovy microeconomiki*. Kyiv: Znannya, 673.
4. Brandimarte, P., Zotteri, G. (2007, June 25). *Introduction to Distribution Logistics*. John Wiley & Sons, Inc., 590. doi:10.1002/9780470170052.
5. Kholodenko, A. M., Sudarev, V. A. (2004). Vertikal'naya integratsiya v logisticheskoy tsepoche postavok. *Metody ta zasoby upravlinnya rozvytkom transportnyh system*, № 7, 208–221.
6. Kobets, V. M. (2005). Rivnovaga logistichnoi systemy pry goryzontalnoi integratsii uchasyukiv v umovach infirmatsinoi asymmetrii. *Metody ta zasoby upravlinnya rozvytkom transportnyh system*, № 9, 83–101.
7. Savel'eva, I. V. (2012). *Printsipy strategicheskogo upravleniya v deyatelnosti operatora konteinerного terminala*. Odessa: Astroprint, 304.
8. Postan, M. Ya. (2006). *Ekonomiko-matematicheskie modeli smeschannyh perevozok*. Odessa: Astroprint, 376.
9. Gol'stein, E. G., Yudin, D. B. (1969). *Zadachi lineinogo programmirovaniya transpotnogo tipa*. Moskva: Nauka, 382.
10. Kuntsi, H. P., Krelle, W. (1965). *Nelyneinoe prohrammyrovanye* [Nicht-lineare programmierung]. M.: Sovetskoe radio, 303.
11. Odell, P. L., Duran, B. S. (1974). Cluster Analysis. *Lecture Notes in Economics and Mathematical Systems*. Springer Berlin Heidelberg, 140. doi:10.1007/978-3-642-46309-9.