

UDC 330:004.942:005.71.022.57

**Kateryna Udachyna**

Assistant,  
National Metallurgical Academy of Ukraine,  
Dnipro, Ukraine  
4 Gagarin Ave, Dnipro, 49600, Ukraine  
eudachyna7@yandex.ua  
ORCID ID:  
<http://orcid.org/0000-0002-0043-6010>

**Liliia Bandorina**

PhD (Economics), Associate Professor,  
National Metallurgical Academy of Ukraine,  
Dnipro, Ukraine  
4 Gagarin Ave, Dnipro, 49600, Ukraine  
bandorina1@yandex.ua  
ORCID ID:  
<http://orcid.org/0000-0003-1383-3098>

**Larysa Savchuk**

PhD (Economics), Professor,  
National Metallurgical Academy of Ukraine,  
Dnipro, Ukraine  
4 Gagarin Ave, Dnipro, 49600, Ukraine  
dialog-aktiv@rambler.ru  
ORCID ID:  
<http://orcid.org/0000-0003-2603-7218>

## Modelling the economic entity behaviour in the framework of the selected strategy

**Abstract.** The article deals with a competence approach to forming a business strategy. The authors have developed a comprehensive algorithm for modelling of the behaviour of the economic entity with regard to all aspects of the relevant activities on the basis of the assessment system of parameters according to the triad principle in the framework of the selected strategy. They suggest a new vision of the concept of competence, usefulness and adaptability. The testing of the proposed model was carried out on the example of the private company «TK Novyi Svit» (the New World Tourist Company).

**Keywords:** Competency; Explicate Model; Strategy

**JEL Classification:** L20; L29

**DOI:** <https://doi.org/10.21003/ea.V164-19>

**Удача К. О.**

асистент, Національна металургійна академія України, Дніпро, Україна

**Бандорина Л. М.**

кандидат економічних наук, доцент, Національна металургійна академія України, Дніпро, Україна

**Савчук Л. М.**

кандидат економічних наук, професор, Національна металургійна академія України, Дніпро, Україна

**Моделирование экономической поведінки суб'єкта господарювання у межах визначеної стратегії**

**Анотація.** У статті запропоновано компетентнісний підхід до формування стратегії підприємства. Побудовано комплексний алгоритм моделювання економічної поведінки суб'єкта господарювання з урахуванням всіх аспектів його діяльності на основі системи оцінних позицій за принципом триади у межах визначеної стратегії. По-новому розглянуто поняття компетенції, корисності та адаптації.

**Ключові слова:** компетенція; експлікована модель; стратегія.

**Удача Е. А.**

асистент, Национальная металлургическая академия Украины, Днепр, Украина

**Бандорина Л. Н.**

кандидат экономических наук, доцент, Национальная металлургическая академия Украины, Днепр, Украина

**Савчук Л. Н.**

кандидат экономических наук, профессор, Национальная металлургическая академия Украины, Днепр, Украина

**Моделирование экономического поведения субъекта хозяйствования в рамках определенной стратегии**

**Аннотация.** В статье предложен компетентностный подход к формированию стратегии предприятия. Построен комплексный алгоритм моделирования экономического поведения субъекта хозяйствования с учетом всех аспектов его деятельности на основе системы оценочных позиций по принципу триады в рамках определенной стратегии. По-новому рассмотрены понятия компетенции, полезности и адаптации.

**Ключевые слова:** компетенция; эксплицированная модель; стратегия.

### 1. Introduction

Under the conditions of unstable market environment, there is a need to develop a comprehensive algorithm for modelling the behaviour of the economic agent in the framework of the selected strategy and to provide an effective combination of tactics (specific tasks) for their further implementation.

### 2. Brief Literature Review

The theoretical and methodological framework of the research is based on the behavioural model of rational choice advanced by H. Simon (1978) [1], the classic model of the economic agent by A. Smith (1962) [2], the works by P. Kheyne (1991), D. Ariely (2012) [4], Ph. Kotler (2003) [5], V. P. Leshchuk [6] and V. I. Kovtun [7]. The relevant problems have been studied

by contemporary foreign scholars such as Maryann P. Feldman (2014) [8], K. Walczyk, K. Kopczewska, J. Kudla (2015) [9] and L. Waltman, N. J. van Eck, R. Dekker, U. Kaymak, 2012 [10]. The studied works do not provide a comprehensive approach to defining a strategy, which would cover all aspects of the economic entity's activities.

**3. The purpose of the article** is to identify adequate business strategy and model behaviour of the economic agent in its framework.

**4. Results.** To model the behaviour of the economic entity, let us develop a general algorithm in the form of the following tasks: 1) to identify alternative strategies and define the

the category of usefulness and adaptability. It should be noted that usefulness implies the competence and ability to give qualitative and quantitative assessment of the efficiency of the enterprise's activities or its subsystem, while adaptability should be viewed as an ability of the enterprise to get new quality attributes under the impact of factors of the external environment which affect its components through the functional competencies. Each phase of the life cycle is relevant to priority areas which are based on the functions of the enterprise, corresponding to the related competencies (Table 1).

The functional competencies provide a framework for modelling of economic behaviour of the enterprise with regard

Tab. 1: Functional competencies (FC) of enterprise's subsystems (functions)

Functions (subsystems)	Functional competencies (FC)
Marketing	Customer focus, response to customer needs, business relationships with suppliers, share of the target market segment, percentage of potential customers, quality of goods, service quality, brand recognition, awareness (advertising), renewal of products range.
Manufacturing	Rhythm of production, intensity of equipment use, integrated resource management, replacement for raw materials, quality of material resources, cuts in the unit cost, balanced exploitation of manufacturing facilities, enhanced cooperation, volume of production, transfer to another equipment supplier, sound use of resources.
Financial	liquidity, financial autonomy, solvency, creditworthiness, optimal cash distribution, sales volume, level of regular selling price, automation of trade processes, decrease in receivables, decrease in accounts payable.
Logistics	Shipping, stocking, storage, sorting, relocation of goods.
Innovative investment	Scientific research, implementation of new projects, introduction of scientific and technological developments, planning and advancement of new processes, promotion of new methods and forms of organisation of management processes, allocation of capital between different investment objects, investment in companies from various countries, investment in different industries.
Staffing	Staff qualification, regular training and development, discipline and responsibility, delegation of authority, analytical thinking, ability to organise information, development of corporate culture, staff motivation, integration of actions and knowledge in different structures, knowledge and experience of the staff.
Information security	Introduction of intelligent systems of information, timely provision of information, information security, assessment and classification of information, protection of intellectual property, use of all means of communication, market monitoring, monitoring of behaviour of consumers and competitors, transformation of information resources into various activities, speed of data processing and transmission.
Technical and technological	Efficient use of equipment, technological integration, and introduction of resource-saving technologies, equipment modernisation, planning of organisational and technical activities aimed at enhancing technological efficiency, automation of technological stages of production processes.

Source: Compiled by the authors based on [11-14]

goal based on the development strategy; 2) to provide a clear ranking of all the competences with regard to their usefulness at particular stages of their development and adaptation to the external environment; 3) to determine effective combinations of tactics along with the peak and the risk stages.

It is expected that each strategy comprises modelling of the essences of several components (subsystems), the functioning of which correspond to different development stages, such as the emergence, rapid growth, moderate growth, stabilisation and contraction. Each of the components has related competencies, i.e. criteria which can be used to determine the ability of a subsystem to successfully perform in accordance with the main objectives of the enterprise. Thus, in the context of this article, it is proposed to view a competence as a behavioural characteristic which determines the ability of the enterprise to conduct its activities in the most effective way with regard to the consistency of the strategy chosen by the enterprise with its functional components.

The proposed assessment system including the assessment parameters based on the principles (standpoint) of self-regulation of the enterprise (management entity) the assessment parameters based on the principles of the sectoral regulatory authorities (management subject) underpinning and assessment parameters based on the principles of the body of public administration underpinning the self-regulation model can represent the theoretical basis related to the process of identification of the enterprise's development strategy. The assessment system is expected to be based on

to assessment of parameters of its performance. The proposed assessment system may be presented in the form of a triad (Figure 1).

Also, there is a concept of explication, which is interpreted as a disclosure of insidious phenomena through the variety of other occurrences. It may be assumed that the level

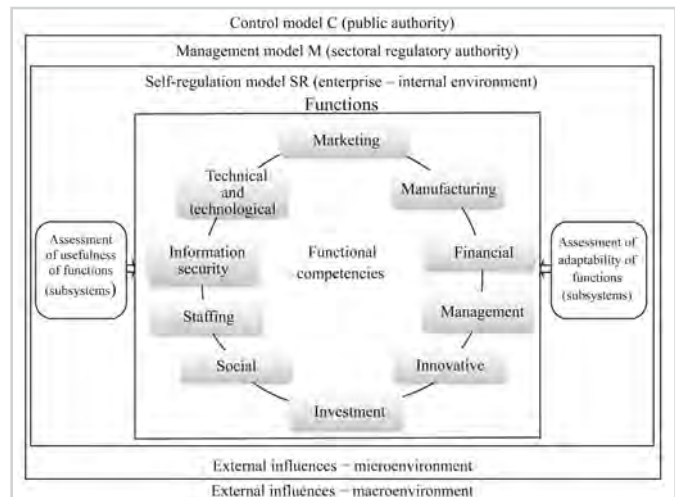


Fig. 1: Assessment system of enterprise based on the triad principle

Source: Compiled by the authors

of usefulness and adaptability of the enterprise to changes in the external environment is implicitly manifested via the competencies, the assessment of which, according to the triad principle, makes it possible to create an explicate model of behaviour of the economic entity in the framework of the selected strategy (Figure 2).

Based on the proposed algorithm, we have developed a system of economic behaviour modelling, which makes it possible to determine combinations of tactics and devise a business strategy.

The research shows that a great number of Ukrainian companies working in the tourist business operate without any adopted or officially approved decisions (plans) which contribute to the development of well-defined strategies aimed to help the enterprise to model rational economic behaviour and achieve its objectives. Enterprises at the earlier stages of their development lack expertise and specialists who are able to address relevant problems. At the same time, companies that have reached the point of steady growth or stabilisation and progressed to the stage of internal coordination rely on intuition and their own experience when it comes to their strategic plan projections.

In respect to strategic planning of the development of tourism abroad, foreign scholars propose to apply a multipronged approach based on the assessment of vulnerable areas according to the following three criteria, which are spatial distribution of tourist places, the level of attractiveness and the number of visitors [17]. They also put accent on the model which helps to determine areas favourable for the development of tourism, which takes account of the attractiveness of the area with regard to particular segments of customer demand [18]. In their scientific works, Greek researchers suggest a new conceptual approach to the development of options for strategic influence on selected locations, which is based on the determination of conditions related to sustainability of those locations in terms of their throughput regarding monitoring of the balance in the ecosystem and numerous effects of tourism at the level of local development [19].

Having analysed strategic planning relevant to the activity of tourist companies both in Ukraine and abroad, we discovered that insufficient attention is paid to the issues related to modelling of economic behaviour in the framework of the selected strategy.

It is therefore necessary to develop and implement such a system making it possible to take into account the peak and the risk functional competencies at each of the development stages, to decide on the appropriate combination of tactics needed to implement the strategy, to provide the sustainability of data by using the assessment system based on the triad principle.

The testing of the explicate model of forming the behaviour of the economic entity was carried out on the example of the private company «TK Novyi Svit» (the New World Tourist Company). A preliminary estimate showed that the abovementioned company was at the stage of steady growth. Taking into account the activities of the economic entity, we ranked the marketing, financial, innovative investment, staffing and information security subsystems (functions) and their competencies as follows (Figure 3).

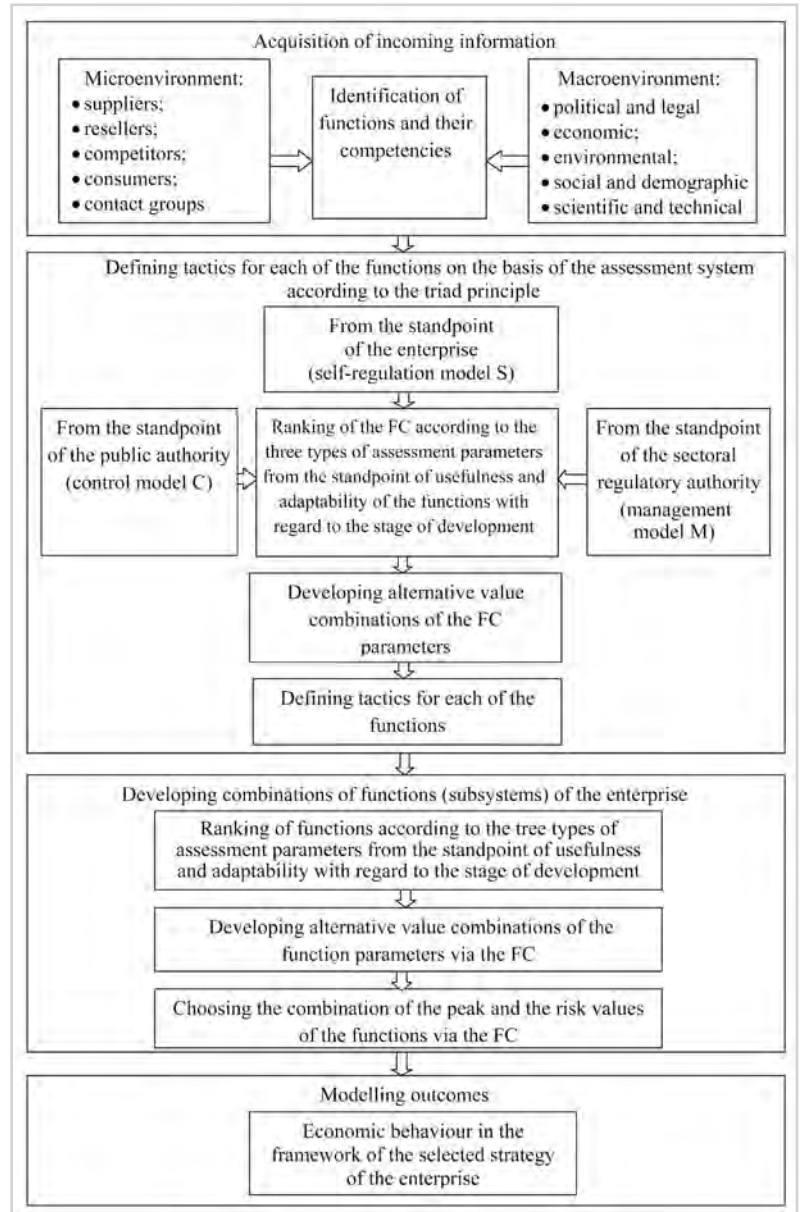


Fig. 2: Comprehensive algorithm for modelling the behaviour of the economic entity in the framework of the selected strategy  
Source: Compiled by the authors

Functional competencies	Identifier	Usefulness rank $R_s (x_1)$	Adaptability rank $R_s (y_1)$
Customer focus	M1	4	5
Response to customer needs	M2	5	2
Business relationships with suppliers	M3	3	4
Share of the target market segment	M4	7	6
Percentage of potential customers	M5	1	7
Quality of goods	M6	6	1
Service quality	M7	9	10
Brand recognition	M8	7	8
Awareness (advertising)	M9	10	9
Renewal of products range	M10	8	3

Fig. 3: The three-position ranking of functional competencies on the example of the assessment of the marketing subsystem of the enterprise  
Source: Compiled by the authors



The tactics of the marketing subsystem is based on tree parameters according to the triad principle, one of which is predominant and the other two are performing and controlling, respectively. Thus, the triad provides the sustainability of the combination of functional competencies (Figure 4).

As a result, we get the following combination (tactics) of the peak and the risk stages of the enterprise's activity:

$$T_m = \{M3, M1, M3; M9, M9, M4\}.$$

Similarly, we can create tactics for other functions of the enterprise (Figure 5).

Thereafter, we rank functions of the three positions from the standpoint of usefulness and adaptation with regard to their development stage. The strategy of the enterprise is developed based on the predominant, performing, controlling parameters according to the triad principle, which makes it possible to maintain sustainability of combinations of factors relevant to each of the subsystems (Figure 6).

Based on the results of the calculations, we get the following S-strategy:

$S = \{T_{sm}, T_{mf}, T_{cf}, T_{sip}, T_{mip}, T_{cs}\}$ , where the first three parameters attribute to the peak stage of the enterprise development and the other three correspond to the risk stage (Figure 7).

The developed system implemented, we assessed the economic effect taking into account the parameters relevant to the peak and the risk stages in order to determine the effectiveness of the system (Table 2).

**5. Conclusions.** The proposed competence approach to the development of the enterprise strategy made it possible to consider its functions, identify their additional advantages via the aforementioned functional competencies and model the behaviour of the economic entity. The application of the assessment system based on the triad principle ensured the sustainability of the obtained data.

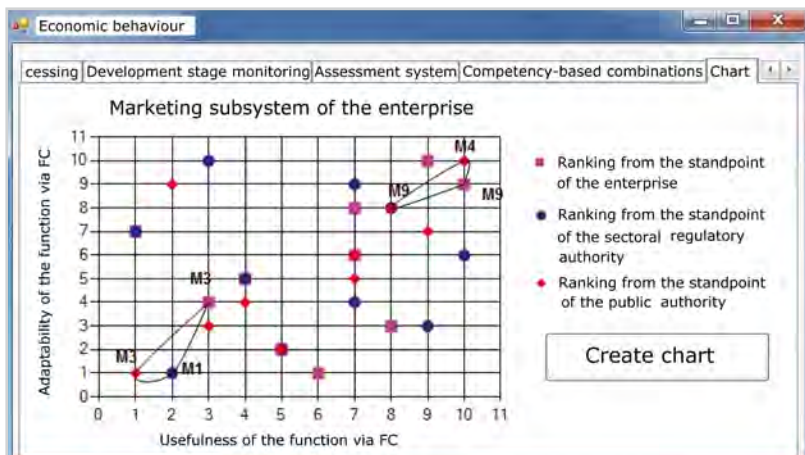


Fig. 4: Combinations of functional competencies of the marketing subsystem of the enterprise  
Source: Compiled by the authors

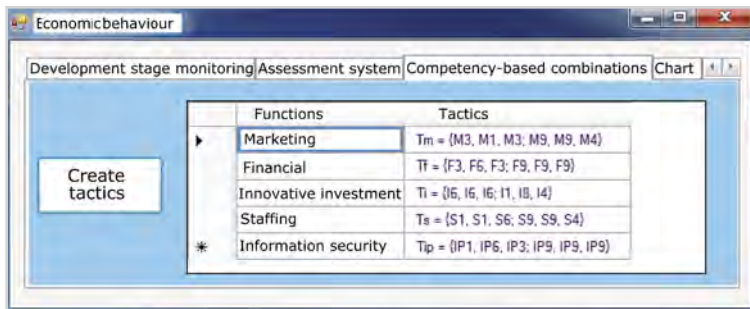


Fig. 5: Combinations (tactics) of the peak and the risk stages of each of the subsystems  
Source: Compiled by the authors

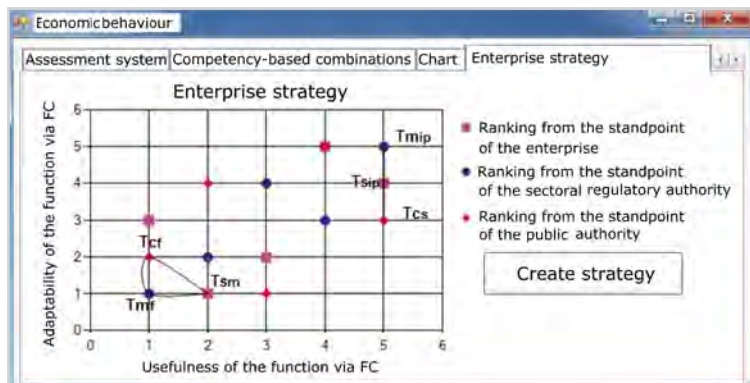


Fig. 6: Strategy of the enterprise with its peak and risk stages  
Source: Compiled by the authors

References

1. Siamon, H. A. (1978). Rationality as Process and as Product of Thought. *American Economic Review*, 68(2), 1-16. Retrieved from [http://www.ibiblio.org/philecon/General%20Information\\_files/simon-rationality.pdf](http://www.ibiblio.org/philecon/General%20Information_files/simon-rationality.pdf)
2. Smith, A. (1962). *An Inquiry Into The Nature And Causes Of The Wealth Of Nations*. Moscow: Sotsekhiz (in Russ.).
3. Heyne, P. (1997). *The Economic Way of Thinking*. Moscow: Cattalaxy (in Russ.).
4. Ariely, D. (2012). *Predictably Irrational, Revised and Expanded Edition: The Hidden Forces That Shape Our Decisions*. Moscow: Mann, Ivanov and Ferber (in Russ.).
5. Kotler, Ph. (2003). *Marketing Essentials*. Moscow: Vyliams, (in Russ.).
6. Leshchuk, V. P., & Polinkevych, O. M. (2015). Strategy of engineering enterprises' business process management in reengineering and redesign. *Ekonomichnij casopis-XXI (Economic Annals-XXI)*, 1-2(1), 57-61. Retrieved from [http://soskin.info/userfiles/file/2015/1-2\\_1\\_2015/Leshchuk\\_Polinkevych\\_Ishchuk.pdf](http://soskin.info/userfiles/file/2015/1-2_1_2015/Leshchuk_Polinkevych_Ishchuk.pdf) (in Ukr.)
7. Kovtun, V. I. (2015). Methodology of innovative strategies formation and selection *Ekonomichnij casopis-XXI (Economic Annals-XXI)*, 1-2(1), 36-39. Retrieved from: [http://soskin.info/userfiles/file/2015/1-2\\_1\\_2015/Kovtun.pdf](http://soskin.info/userfiles/file/2015/1-2_1_2015/Kovtun.pdf)
8. Feldman, M. P. (2014, June). The character of innovative places: entrepreneurial strategy, economic development, and prosperity. *Small Business Economics*, 43(1), 9-20. doi: <https://doi.org/10.1007/s11187-014-9574-4>
9. Kopczevska, K., Kudla, J., & Walczyk, K. (2017) Strategy of Spatial Panel Estimation: Spatial Spillovers Between Taxation and Economic Growth. *Applied Spatial Analysis and Policy*, 10(1) 77-102. doi: <https://doi.org/10.1007/s12061-015-9170-2>
10. Waltman, L., van Eck, N. J., Dekker, R., & Kaymak, U. (2011). Economic modeling using evolutionary algorithms: the effect of a binary encoding of strategies. *Journal of Evolutionary Economics*, 21(5), 737-756. doi: <https://doi.org/10.1007/s00191-010-0177-1>
11. Bendorina, L. M. (2005) *Methods for evaluating the effectiveness of multi-intelligence information technology* (Doctoral dissertation). Dnipropetrovsk national university, Dnipropetrovsk (in Ukr.).
12. Lozovska, L. I., Bendorina, L. M., Skorokhod, O. B., Savchuk, L. M., & Lisovenko, M. M. (2014). *Prediction of socio-economic processes*. Dnipropetrovsk: Herda (in Ukr.).
13. Bendorina, L. M., Kuznietsov, M. S., & Lozovska, L. I. (2012). Analysis of the mechanism of influence of intelligent information systems on success of the company. *Derzhava ta rehiony (State and Regions)*, 1, 89-95 (in Ukr.).
14. Andrushkiv, B., Melnyk, L., & Pohaidak, O. (2012). Ways to improve the efficiency of enterprise resource potential. *Formuvannia rynkovoï ekonomiky v Ukraini (Formation of Market Economy in Ukraine)*, 27, 3-7. Retrieved from [http://econom.lnu.edu.ua/files/downloads/Form\\_Rynk\\_Econ/027\\_2012/FREU\\_27\\_2012.pdf](http://econom.lnu.edu.ua/files/downloads/Form_Rynk_Econ/027_2012/FREU_27_2012.pdf)
15. Encyclopaedias & Dictionaries (2015). *Economic dictionary. Explicate*. Retrieved from <http://enc-dic.com/economic/Poleznost-11030.html> (in Russ.).
16. Wikiznanie (2011). *Explication (Philosophy)*. Retrieved from [http://www.wikiznanie.ru/wikipedia/index.php/Экспликация\\_\(Философия\)](http://www.wikiznanie.ru/wikipedia/index.php/Экспликация_(Философия)) (in Russ.).
17. Navratil, G., Lesjak, M., Picha, K. et al (2014). The importance of vulnerable areas with potential tourism development: a case study of the Bohemian forest and South Bohemia tourism regions. *Acta Geographica Slovenica*, 54(1), 115-130. doi: <https://doi.org/10.3986/AGS54108>
18. Navratil, G., Picha, K., Martinat, S. et al (2013). A model for the identification of areas favourable for the development of tourism: A case study of the Sumava Mts. and South

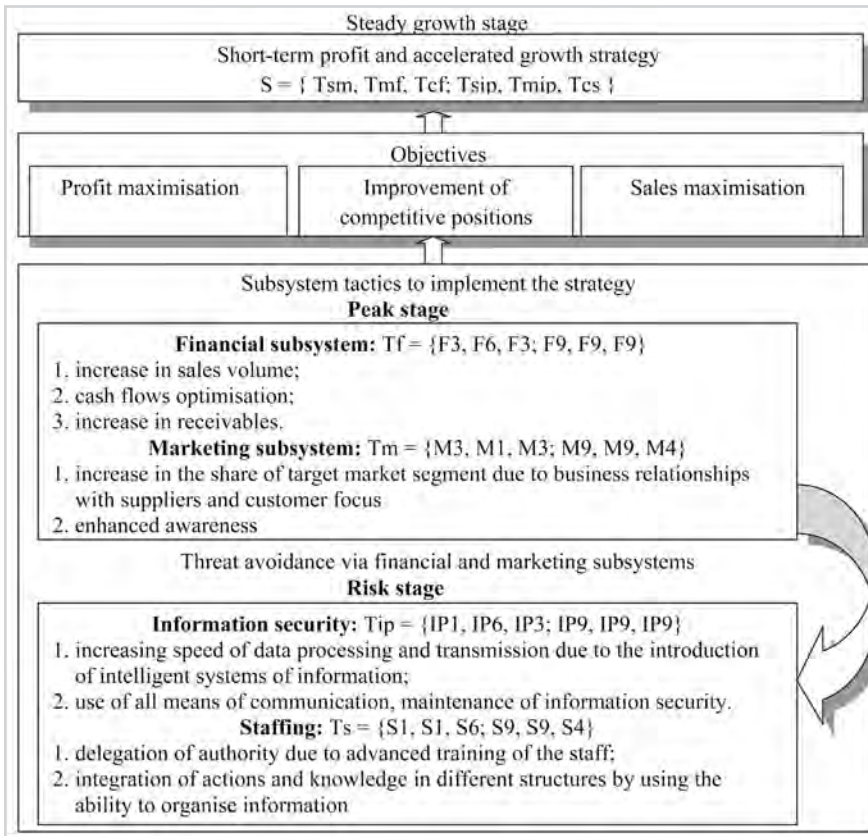


Fig. 7: Schematic representation of the strategy at the steady growth stage  
Source: Compiled by the authors

Tab. 2: Assessment results of the efficiency of the system implemented at the private company «TK Novyi Svit» (the New World Tourist Company)

Subsystem	Indicator	Effect, %
Financial	Sales volume	+7.2
	Solvency	+5.6
	Receivables	-3
Marketing	Share of the target market segment	+2.8
	Business relationships with suppliers	+8.3
	Customer focus	+7.1
	Awareness	+2.3
	Speed of data processing and transmission	+0.5
Information security	Introduction of intelligent systems of information	+1.3
	Use of all means of communication	+0.9
	Information security	+1.2
Staffing	Delegation of authority	+0.8
	Staff qualification	+1.8
	Integration of actions and knowledge in different structures	+0.7
	Ability to organise information	+1.4

Source: Compiled by the authors

ресурсного потенціалу підприємства [Електронний ресурс] / Б. Андрушків, Л. Мельник, О. Погайдак // Формування ринкової економіки в Україні. – 2012. – Вип. 27. – С. 3–7 – Режим доступу : [http://econom.lnu.edu.ua/files/downloads/Form\\_Rynk\\_Econ/027\\_2012/FREU\\_27\\_2012.pdf](http://econom.lnu.edu.ua/files/downloads/Form_Rynk_Econ/027_2012/FREU_27_2012.pdf)

15. Экономический словарь. Энциклопедия [Электронный ресурс] // Энциклопедии & Словари, 2009-2015. – Режим доступа: <http://enc-dic.com/economic/Poleznost-11030.html>

16. Экспликация (Философия) [Электронный ресурс] // Викизнание. – Режим доступа: [http://www.wikiznanie.ru/wikipedia/index.php/Экспликация\\_Философия](http://www.wikiznanie.ru/wikipedia/index.php/Экспликация_Философия)

17. Navratil G. The importance of vulnerable areas with potential tourism development: a case study of the Bohemian forest and South Bohemia tourism regions / G. Navratil, M. Lesjak, K. Picha, et al. // Acta geographica Slovenica. – 2014. – Volume 54. – Issue 1. – pp. 115-130. doi: <https://doi.org/10.3986/AGS54108>

18. Navratil G. A model for the identification of areas favourable for the development of tourism: A case study of the Sumava Mts. and South Bohemia Tourist regions (Czech Republic) / G. Navratil, K. Picha, S. Martinat, et al. // Moravian Geographical Reports. – 2013. – Volume 21. – Issue 1. – pp. 25-40. doi: <https://doi.org/10.2478/mgr-2013-0003>

19. Christofakis M. Strategic Options for Tourism Impacts on Local Sustainability: A Conceptual Approach / M. Christofakis // Local Economy: The Journal of the Local Economy Policy Unit. – 2010. – Volume 25. – Issue 7. – pp. 586-598. doi: <https://doi.org/10.1080/02690942.2010.532357>

Bohemia Tourist regions (Czech Republic). *Moravian Geographical Reports*, 54(1), 25-40. doi: <https://doi.org/10.2478/mgr-2013-0003>

19. Christofakis, M. (2010). Strategic Options for Tourism Impacts on Local Sustainability: A Conceptual Approach. *Local Economy: The Journal of the Local Economy Policy Unit*, 54(7), 586-598. doi: <https://doi.org/10.1080/02690942.2010.532357>

References (in the language original)

1. Siamon H. A. Rationality as Process and as Product of Thought [Electronic resource] / H. A. Simon // American Economic Review. – 1978. – Volume 68. – № 2. – P. 1–16. – Access mode : [http://www.ibiblio.org/philecon/General%20Information\\_files/simon-rationality.pdf](http://www.ibiblio.org/philecon/General%20Information_files/simon-rationality.pdf)

2. Смит А. Исследование о природе и причинах богатства народов / А. Смит. – М. : Соцэкгиз, 1962. – 654 с.

3. Хейне П. Экономический образ мышления / П. Хейне. – М. : Калалаксия, 1997. – 704 с.

4. Ариели Д. Поведенческая экономика. Почему люди ведут себя иррационально и как заработать на этом / Д. Ариели. – М. : Манн, Иванов и Фербер, 2012. – 296 с.

5. Котлер Ф. Основы маркетинга / Ф. Котлер ; пер. с англ. – М. : Изд. дом «ВИЛЬЯМС», 2003. – 1200 с.

6. Лещук В. П. Стратегія управління бізнес-процесами машинобудівних підприємств через реінжиніринг та перепроектування [Електронний ресурс] / Л. П. Лещук, О. М. Полінкевич, Л. І. Іщук // Економічний часопис-XXI. – 2015. – № 1–2 (1). – С. 57–61. – Режим доступу: [http://soskin.info/userfiles/file/2015/1-2\\_1\\_2015/Leshchuk\\_Polinkevych\\_Ishchuk.pdf](http://soskin.info/userfiles/file/2015/1-2_1_2015/Leshchuk_Polinkevych_Ishchuk.pdf)

7. Ковтун В. І. Методологія формування та вибору інноваційних стратегій [Електронний ресурс] / В. І. Ковтун // Економічний часопис-XXI. – 2015. – № 1–2 (1). – С. 36–39. – Режим доступу : [http://soskin.info/userfiles/file/2015/1-2\\_1\\_2015/Kovtun.pdf](http://soskin.info/userfiles/file/2015/1-2_1_2015/Kovtun.pdf)

8. Feldman M. P. The character of innovative places: entrepreneurial strategy, economic development, and prosperity / M. P. Feldman // Small Business Economics. – 2014. – Volume 43. – Issue 1. – pp. 9–20. doi: <https://doi.org/10.1007/s11187-014-9574-4>

9. Korpcewska K., Kudla J., Walczyk K. Strategy of Spatial Panel Estimation: Spatial Spillovers Between Taxation and Economic Growth / K. Korpcewska J., Kudla K., Walczyk // Applied Spatial Analysis and Policy. – 2015. – pp. 1–26. doi: <https://doi.org/10.1007/s12061-015-9170-2>

10. Waltman L., van Eck N. J., Dekker R., Kaymak U. Economic modeling using evolutionary algorithms: the effect of a binary encoding of strategies / L. Waltman, N. J. Eck, R. Dekker, U. Kaymak // Journal of Evolutionary Economics. 2011. – Volume 21. – Issue 5. – pp. 737–756. doi: <https://doi.org/10.1007/s00191-010-0177-1>

11. Бандоріна Л. М. Методи багатокритеріальної оцінки ефективності інформаційно-інтелектуальних технологій: Автореф. дис... канд. екон. наук: 08.03.02 / Л. М. Бандоріна ; Дніпропетр. нац. ун-т. – Д., 2005. – 20 с.

12. Прогнозування соціально-економічних процесів: навчальний посібник з грифом МОНУ / Лозовська Л. І., Бандоріна Л. М., Скороход О. Б., Савчук Л. М., Лісовенко М. М. – Дніпропетровськ : Герда, 2014 – 106 с.

13. Бандоріна Л. М. Аналіз механізму впливу інформаційно-інтелектуальних систем на успішну діяльність підприємства / Л. М. Бандоріна, М. С. Кузнецов, Л. І. Лозовська // Держава та регіони. – 2012. – № 1. – С. 89–95.

14. Андрушків Б. Шляхи підвищення ефективності використання

Received 12.03.2017