

# “Estimation of the marketing potential of industrial enterprises in the period of re-engineering of business processes”

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# ESTIMATION OF THE MARKETING POTENTIAL OF INDUSTRIAL ENTERPRISES IN THE PERIOD OF RE-ENGINEERING OF BUSINESS PROCESSES

## Abstract

Activity of business entities requires a constant increase in the level of their economic potential and the level of competitiveness of the products on the market. This task can be fulfilled provided the concept of constant economic growth is formed in the activity of enterprises, which can be implemented through the management of changes in the economic activity of enterprises. One of the components is the marketing activity, which plays one of the leading roles in shaping the sustainable development of an industrial enterprise when carrying out transformational changes in its activity. These changes, which are the re-engineering of business processes, help the company management adapt to the changing market (marketing) environment and optimize the internal business processes. The relevance of the research is undeniable. The article presents the main directions of transition to the effective marketing activity in the period of re-engineering of industrial enterprises' business processes based on the analysis of the main trends of marketing and innovation activities of economic entities from different countries. The authors developed the indices that characterize the marketing potential of the company during the business processes' re-engineering. They proposed to use an integral index of the company's marketing potential during radical transformations and to take effective management decisions based on the prevailing range of its criteria values when carrying out an economic estimation of the company's marketing potential in the period of business processes' re-engineering. The results obtained from the calculations demonstrate the final estimation of the industrial enterprise's marketing potential during the business processes' re-engineering, which allows the top management of the industrial company to determine the level of performance of the company marketing activity and make sound managerial decisions for its further development.

## Keywords

analysis, marketing activity, business entity, radical transformations, method

## JEL Classification

L16, M31, O32

## INTRODUCTION

Under the conditions of constant market fluctuations and the influence of market environment on the activity of industrial enterprises, there is an urgent need to increase the potential of marketing activity, which should convey in the process of constant structural changes in internal, as well as external business processes of the companies. Marketing activity of enterprises refers to the method of meeting the needs of the consumers and identifying the sales opportunities, including the study of different needs of people for their individual satisfaction (Romankiv, 2007). Studying the companies' marketing potential, the transformational changes should be considered, including the radical ones. This is the essence of the business processes' re-engineering that allows to adapt the existing internal and external business processes of the enterprise to the changes of the market environment. The re-engineering of business processes refers to the funda-

mental rethinking and radical re-design of the business processes of the company to achieve radical improvements in the main relevant indicators of their activity – cost, services, quality, rates (Hammer & Champy, 1993). Many factors negatively affect the marketing policy of the industrial enterprises. Exploring this issue and considering the fact that the study was conducted in Ukraine, it is important to analyze the main statistical indicators of the socio-economic development of the industrial enterprises in the period 2010–2016.

Thus, the number of business entities in Ukraine in 2010 was 2,183,928 units, in 2016 – 1,865,530 units, which characterizes a reduction of the number of enterprises by 318,398 units. The number of workers employed at the enterprises in 2010 was 10,772.7 thousand people, in 2016 – 8,108.3 thousand people, which reflects the reduction of employed workers by 2,664.4 thousand people. As to the indices of the marketing activity of enterprises, the volume of sale (goods and services) should be indicated. Thus, in 2010, there were UAH 3,596,646.4 million (USD 451,743 million), in 2016 – UAH 6,726,739.8 million (USD 247,397 million), which characterizes an increase in the volume of sales of products in the hryvnia equivalent of UAH 3,130,093.4 million (USD 115,116 million). However, this increase is primarily due to the inflationary processes in the country and an increase in domestic prices for goods and services (Multispectral Statistical Information, 2017).

The negative factors influencing the marketing activity of Ukrainian industrial enterprises include inflationary risks, a decrease of current capital, a decrease of business activity of the small business, risks of further growth of energy and utilities prices, an increase of unemployment (Ukrainian News Union of Industrialists and Entrepreneurs, 2016).

All these factors determine the relevance of the research and its main purpose, which is to improve the methodical tools for analyzing the marketing activity of business entities of the industrial complex during the re-design of their business processes.

Industrial enterprises are defined as the subjects of economic relations, which carry out entrepreneurial activity with the aim of getting profit (Makhinchuk, 2013).

## 1. LITERATURE REVIEW

### 1.1. Marketing in the system of business process management of the companies

Exploring the marketing activity, a special role of carrying out the transformational changes in order to increase the level of the enterprise's marketing potential should be noted. The changes in marketing strategies during a recession are investigated in the work of Notta and Vlachvei (2015); when the strategic changes in the companies of different industries at the world level are focused on, and fundamental changes occur in the marketing strategies during the economic crisis. One of the main signs of effective marketing in the period of transformations is the study of its internal potential. The work of Mu, Bao, Sekhon, Qi, and Love (2018) considers an internal possibility of marketing and man-

agement of the enterprise productivity. Another important aspect of shaping the company's high level of the marketing potential is an introduction of the environment-oriented products and services, which characterizes the "green" transformation during the Third and the Fourth Industrial Revolution. In the paper of Papadas, Avlonitis, and Carrigan (2017), the concept of green marketing orientation has been developed, which consists of three dimensions: strategic green marketing orientation, tactical green marketing orientation and internal green marketing orientation in the period of companies' transformational changes. The role of social responsibility in the marketing activity of the industrial enterprises is worth noting, as the human factor is one of the main prerequisites for a successful business. Sanclemente-Téllez (2017) dealt with the improvement of the corporate social responsibility system in the management of business processes in marketing.

### 1.2. Estimation of the marketing activity of enterprises in the period of radical transformations of business processes

One of the main features in shaping the economic tools of the marketing potential during radical transformational changes is the process of its estimation. Accounting data are not enough, because they do not fully take due account of the formation of the value added of industrial products due to the company marketing activity. Economists Bendle and Wang (2017) wrote about the improvement of the estimation process of the enterprises' marketing activities. They presented the improved estimation of the marketing activities by introducing an economic analysis of the marketing accounts, which allow to separate the impact of marketing activity on the formation of the value added of industrial products of the enterprise. An important issue considered by the economists Kraus, Håkansson, and Lind (2015) is the study of the problematic aspects and possibilities of estimating the marketing elements in the economic activity of industrial enterprises in the period of business processes' re-engineering. It allows to focus on the negative and positive sides of estimating the marketing potential of industrial enterprises in the period of the business processes' re-engineering and to make effective managerial decisions in the marketing sphere. Scientists Schröder and Hruschka (2017) studied the mathematical apparatus and constructed models of dependence of consumer behavior on the decision to buy goods in the period of market changes. Giovanardi and Lucarelli (2018) critically studied the process of estimating the effectiveness of sales by implementing the marketing tools in the companies' activity.

### 1.3. Marketing activity of the enterprise in the period of re-engineering of business processes

An important role in improving the efficiency of economic activities of industrial enterprises is an introduction of the re-engineering of business processes as an element of the ongoing transformational changes in the business processes at the

enterprise. Hrabal (2016) carried out the research of managerial accounting of the process-oriented activity, which improved the process of estimating the effectiveness of the re-engineering measures in the business structures' activity. Olalla (2000) studied the role of information technology in the marketing activities of industrial enterprises. In our opinion, it is indispensable in planning the successful re-engineering activity in the marketing sphere of industrial enterprises. The success of marketing activity of industrial enterprises in the course of business processes' re-engineering is impossible without the state programs. Salant (2000) was engaged in the development of state regulatory mechanisms for the re-engineering of business processes in the trade sector. The research of the enterprise resource management role in the business processes' re-engineering of the marketing sphere in the industrial enterprises' activity was carried out by such scholars as Gardiner, Hanna, LaTour (2002).

Among the research papers devoted to the role of marketing activity of the companies during the re-engineering of business processes and the process of its estimation, little attention was paid to the study of methods for estimating the marketing potential of industrial enterprises in the period of business processes' re-engineering. Therefore, this issue is considered in the article. The scientific hypothesis lies in improving the methods of estimating the potential of the marketing sphere of industrial enterprises to form the criteria basis of this estimation in order to make effective managerial decisions in the business entities' activity.

## 2. METHOD

### 2.1. Research approach

The following methods were used in the article: a method of comparative analysis in determining the main trends of marketing and innovation activities of industrial companies; a methodical approach that includes an estimation of the competitiveness of a company's potential in order to calculate the indices of stimulants and disincentives that characterize the marketing potential of the enterprise; the Euclidean distance method to determine the integral index of the marketing po-

tential of the business entity. In addition, this article uses the Störger method to determine a range of values of an integral index of the industrial enterprises' marketing potential to identify its level in the business activity of the companies.

## 2.2. Participants

The study of the main trends of marketing and innovation activities of the industrial enterprises is drawn from the work of economic entities of the countries across the world, including EU countries, within the framework of the global competitiveness report of the countries. Information for estimating the marketing potential of an industrial enterprise in the period of the re-engineering of business processes is the financial data reporting, analysis of the production and marketing activities of the joint stock company Sumy Plant Nasosenergomash (Ukraine) in the re-engineering period 2015–2017.

## 2.3. Measuring tools

Carrying out the analysis of the main trends of marketing and innovation activities, a comparative analysis of the indices of the innovation block and the block of the commodity markets performance in estimating the global competitiveness of the countries across the world was applied. Such peculiarities were investigated by Schwab, Sala-i-Martin, and Samans (2017). The essence of this method is the comparison of an index of global competitiveness between the economic entities of different countries. Conducting this comparative analysis, the main directions of the effective marketing activity of industrial companies in the period of their business processes' re-engineering will be formed. Estimating the marketing potential, the indices that characterize the marketing potential of the company conducting the business processes' re-engineering will be developed. Therefore, the indices of stimulants and disincentives of the relevant indicators of the marketing potential of enterprises in the re-engineering of business processes will be calculated, using a method of estimating the competitiveness of the enterprise potential. Such scholars as Krasnokutskaya and Bubenets (2015) have investigated this issue. In addition to this toolset, an integral index of the enterprise marketing potential in the re-engineer-

ing period will be offered and the criteria significance of different levels of the marketing potential of the industrial enterprise in the period of radical transformations will be formed. The mathematical apparatus for calculating an integral index of the spheres of the company activity and its ranges was studied by Kostin, Kostin, and Kostin (2013).

## 2.4. Procedure

Conducting the research, the data on the enterprises' activity in the process of estimating the global competitiveness index of the countries across the world, including the countries of the EU in 2017, were collected. The data also include the statistical reporting of the industrial enterprise, namely, the information on financial, production and marketing activity in the period 2015–2017. The collected results were used exclusively for the research purposes.

## 2.5. Statistical analysis

A comparative analysis of the main trends of marketing and innovation activities of enterprises in the estimation of global competitiveness of the countries across the world based on the statistical information of the enterprises' activity was conducted. Studying the company statistical reporting, an analysis of the estimation of competitiveness of the company potential in the formation of the indices of stimulants and disincentives of the company marketing potential was used. The Euclidean distance method was applied in constructing an integral index of the marketing potential of the industrial enterprise during the re-engineering of its business processes. We formed the criteria significance of the levels of the integral index of the enterprise's marketing potential during the re-engineering.

# 3. RESULTS

## 3.1. Analytical and theoretical aspects

To study the marketing potential of enterprises in the course of business processes' re-engineering, it is advisable to use a general-to-specific approach. It will allow to analyze the main trends of marketing and innovation activity of business entities



**Table 1.** Comparative analysis of the global competitiveness of the countries across the world in 2017, cu/rank

Source: Formed on Schwab, Sala-i-Martin, Samans (2017).

Names of economic indicators	Switzerland	USA	Japan	Latvia	Slovakia	Ukraine	Nigeria	Venezuela	Yemen
<b>Performance of the commodity markets block</b>									
Intensity of local competition	5.5 (29)	6.0 (6)	6.2 (1)	5.5 (28)	5.4 (36)	5.0 (78)	5.1 (70)	2.8 (137)	4.1 (130)
Volume of market dominance	5.9 (1)	5.5 (3)	5.9 (2)	3.6 (79)	3.5 (88)	3.2 (106)	3.7 (69)	2.8 (137)	2.5 (132)
Trade tariffs	3.5 (49)	1.6 (34)	1.9 (36)	1.1 (6)	1.1 (6)	2.9 (44)	11.2 (115)	12.2 (122)	6.5 (80)
The degree of consumer orientation	6.1 (2)	5.8 (7)	6.2 (1)	4.8 (57)	4.7 (58)	4.6 (74)	3.9 (115)	3.6 (129)	3.5 (131)
Sophistication of the consumer	5.1 (3)	5.3 (1)	4.9 (7)	2.8 (109)	2.9 (101)	3.1 (93)	3.3 (79)	2.4 (130)	2.5 (125)
<b>Innovation block</b>									
Innovation potential	6.2 (1)	6.0 (2)	5.1 (21)	4.2 (57)	4.3 (48)	4.3 (51)	3.9 (82)	3.6 (116)	3.1 (133)
Costs on the scientific activity, introduction of new technologies and processes	6.1 (1)	5.9 (2)	5.6 (5)	3.2 (73)	3.4 (65)	3.2 (76)	2.9 (108)	2.5 (130)	2.6 (127)
Cooperation of the universities and industries in the sphere of scientific activity, introduction of new technologies and processes	5.8 (1)	5.7 (2)	4.7 (23)	3.1 (100)	3.3 (77)	3.4 (73)	2.5 (133)	3.0 (104)	2.3 (134)
Introduction of new technologies	5.9 (4)	6.0 (2)	5.5 (15)	4.4 (67)	4.8 (47)	4.3 (84)	4.3 (80)	3.7 (122)	2.9 (135)
Patent applications	300.1 (3)	176.5 (10)	332.4 (1)	11.8 (35)	11.3 (36)	3.6 (52)	0.0 (111)	0.2 (92)	0.0 (119)
Global competitiveness index	5.9 (1)	5.9 (2)	5.5 (9)	4.4 (54)	4.3 (59)	4.1 (81)	3.3 (125)	3.2 (127)	2.9 (137)

of different countries at the macro level, including the experience of the EU countries and make relevant conclusions regarding the development of marketing and innovation potential of the companies in these countries. The ranking of global competitiveness of the countries across the world was analyzed: leader-countries; countries with average development rates; outsider-countries (Table 1). This analysis is conducted in the performance of the commodity markets block, which characterizes the development of competition, relation to import, influence of the market, and the management of interaction with the consumers. All these factors in aggregate reflect the development of marketing potential of the companies of the investigated countries. There is also the innovation block, which contains the opportunities for the introduction of innovations, companies' costs for the research activity, introduction of new technologies and processes, which in aggregate characterizes the innovative development and implementation of innovation processes, that is, the re-engineering of the company business processes in the countries across the world.

A comparative analysis of the global competitiveness indices of the countries across the world found that the block of the indices of the commodity market performance, characterizing the development of the marketing potential, has the following divergence of the leader-countries from the outsider-countries. Thus, according to the intensity of local competition index, this divergence is 2.1 cu, in terms of market dominance – 3.4 cu, according to the consumer orientation degree – 2.7 cu, which all together characterize a rather different level of development of the marketing potential of the countries across the world and willingness to expand their own markets and take over the new markets. As for the block of the innovation indices, we have the following divergence of the indices of the leader-countries from the outsider-countries. According to the innovation potential index – 3.1 cu, the cost of enterprises on research and development – 3.5 cu, the level of introduction of new technologies – 3.1 cu, which in general is characterized by different levels of the country enterprises' ability to conduct innovation processes, including the re-engineering of business processes. As for

the global competitiveness index, the divergence of this index of the leader-country (Switzerland) from the outsider-country (Yemen) is 3 cu, which indicates the different level of competitiveness of the economic entities of these countries and the ability to increase their competitiveness on the domestic and foreign markets.

Having analyzed the dynamics of the indicators from the performance of the commodity markets block and the innovation block, the main directions of the transition to the effective marketing activity in the period of re-engineering of business processes of industrial enterprises were determined:

- shift in the industrial products sale orientation to the new markets, such as the reorientation of the machine-building products of the post-Soviet countries to the EU market;
- formation of the client-oriented business processes of industrial enterprises, implementation of the CRM concept;
- creation of a new quality of guarantee and post-warranty maintenance of the industrial products of enterprises, introducing Six Sigma, 5C, BPM, PDCA methods;
- formation of an export-oriented strategy for marketing activity through the transfer of the business processes in the sales activity to the trading offices, trading houses located abroad;
- improving the quality of marketing research on domestic and foreign markets for the industrial products;
- optimization of production and sales costs of industrial products by introducing the production capacities in other regions of the country and abroad;
- increase of the quality standards of maintenance of the industrial products of enterprises;
- formation of loyal credit and pricing policies of enterprises in relation to the consumer of industrial products (prolongation-possibility lending, factoring transactions, formation

of financial and industrial groups, development of a flexible system of discounts for large orders).

Schubert (2010) dealt with the problem of forming new directions of marketing activity in the innovations implementation. The researcher studied the influence of marketing and organizational changes on the innovation process in the activity of German enterprises. The emerging trends in the transition to effective marketing activity in the period of business processes re-engineering of industrial enterprises characterize the development of the theoretical provisions for the change management in the activity of industrial enterprises.

### 3.2. Descriptive statistics

Practical principles of estimating the marketing activity of industrial enterprises in the period of business processes' re-design were analyzed. For this purpose, the marketing activity of JSC Sumy Plant Nasosenergomash in the period of re-engineering of its business processes in the period 2015–2017, which included a redevelopment of the organization business processes and formation of a new Customer Relationship Management (CRM) system, was studied. To do this, Kobyzskyi offered the indices that characterize the marketing potential of the company during the re-engineering of its business processes (Table 2). These figures are the incoming information for estimating the marketing potential of an industrial enterprise in the period of radical transformations, which is associated with the re-engineering of the company marketing sphere.

Having collected the incoming information, a comparative analysis of the entity's research activity should be applied.

### 3.3. Comparative statistical analysis

The marketing potential of JSC Sumy Plant Nasosenergomash was estimated using a method of assessing the competitiveness of the company potential, which was improved by Krasnokutskaya (Krasnokutskaya, Bubenets, 2015), in order to determine the normalized values of the indicators (indices of stimulants and disincentives) that characterize the marketing potential of the company in the

**Table 2.** Incoming information on the estimation of the marketing potential of JSC Sumy Plant Nasosenergomash in the period of business processes' re-engineering

Marketing potential index	2015	2016	2017
The number of inspections of the operation objects and issued relevant feasibility studies in the period of re-engineering, pcs	3	5	12
The number of logs on the procurement electronic resources when implementing the CRM technology, pcs	2	4	6
The volume of orders on technical and economic substantiation of the relevant years in the period of re-engineering, UAH million	0	12,2	36,1
Sales volumes in the given segment (in EU countries), UAH million	5,93	25,97	40,09
The rate of order performance (redesign of organizational business processes of the marketing sphere), days	20	18	10
The volume of sales in a given segment (for the Ukrainian domestic market), UAH million	4,5	106,6	60,6
The number of corporate site visits for the period of time (month – November), pcs	440	786	812
The number of organized public or specialized events in the period of radical transformations (business seminars, management change projects, conferences, exhibitions) for potential consumers, pcs	5	13	15
The number of registered applications on the interest in cooperation with the company in the period of re-engineering, pcs	7,944	10,836	10,892
The number of change management projects based on digital technologies for the organization of marketing activity and its links with other activities, pcs	2	2	4
The number of new (innovative) units (denominations) in the nomenclature, pcs	112	28	322
The volume of orders for new (innovative) products, UAH million	52,1	219,4	350,1
Percentage of implementation of the marketing sales plan of products by a nomenclature type of production, %	71	65	72
Percentage of implementation of the marketing plan by the volume of innovation products sales, %	120	98	85
Divergence from the budget of marketing events in the period of redesign of the organization business processes of the marketing sphere, %	–5	–40	+50
The volume of attracted investments for the orders implementation, UAH million	15,0	19,2	80,8
The volume of attracted investments for the development of innovation products, UAH million	4,2	5,7	22,3
The level of profitability of the sales of goods and services, %	45	43.3	35.3
Percentage of funds paid to marketing specialists beyond staff schedule in the period of business process re-engineering (compared to the staff salary), %	40	42	55
The amount of money spent on training and professional development of staff involved in marketing activity for implementation of the re-engineering measures, UAH	18,000	27,000	29,000
The amount of money paid for the outsourcing services for the execution of tasks that are not a part of the existing composition of marketing staff (implementation of scrap re-engineering business processes), UAH	32,000	210,000	253,000
The amount of money paid to the specialists of various, but marketing, units of the company to fulfill the direct marketing priorities (implementation of scrap reengineering of business processes), UAH	0	22,000	58,000
Total number of days of overdue orders when implementing CRM technology, days	1,915	1,020	800
The number of re-engineering marketing events with the participation of specialists of other units, pcs	12	24	28

course of the business processes' re-engineering.

Normalized economic indicators of the marketing potential of the industrial enterprise in the period of re-engineering of business processes are determined by the formula:

$$B'_{in} = \frac{B_{in}}{B_{\max}} \rightarrow \max, \quad (1)$$

where  $B'_{in}$  is a normalized value of the  $i$ -th indicator of the marketing potential of the enterprise in the  $n$ -th period (an index of a stimulant);  $B_{in}$  is an actual value of its index of the marketing potential of the enterprise in the  $n$ -th period;  $B_{\max}$  is a maximum value of the indicator of the enterprise's marketing potential.

An index of a disincentive is determined by the formula:

$$B'_{in} = \frac{B_{\min}}{B_{in}} \rightarrow \min, \quad (2)$$

The process of normalization of the marketing potential indices estimation is necessary for bringing indicators of quantitative and qualitative estimation to one dimension in order to determine an integral index of the marketing potential of the industrial enterprise in the course of re-engineering of its business processes. In addition, the weighted values of each index were formed based on the expert estimation carried out by the specialists of marketing, financial, production services of JSC Sumy Plant Nasosenergomash.



**Table 3.** Normalized indices of the marketing potential of JSC Sumy Plant Nasosenergomash in the period of the business processes' re-engineering

Marketing potential index	Weight	2015	2016	2017
The number of inspections of the operation objects and issued relevant feasibility studies in the period of re-engineering, pcs	0.08	0.25	0.42	1.00
The number of logs on the procurement electronic resources when implementing the CRM technology, pcs	0.01	0.33	0.67	1.00
The volume of orders on technical and economic substantiation of the relevant years in the period of re-engineering, UAH million	0,06	0,00	0,34	1,00
The sales volumes in the given segment (in EU countries), UAH million	0,05	0,15	0,65	1,00
The rate of order performance (redesign of organizational business processes of the marketing sphere), days	0,03	0,50	0,56	1,00
The sales volume in a given segment (for the Ukrainian domestic market), UAH million	0,06	0,04	1,00	0,57
The number of corporate site visits for the period of time (month – November), pcs	0.02	0.54	0.97	1.00
The number of organized public or specialized events in the period of radical transformations (business seminars, management change projects, conferences, exhibitions) for potential consumers, pcs	0.03	0.33	0.87	1.00
The number of registered applications on the interest in cooperation with the company in the period of re-engineering, pcs	0.01	0.73	0.99	1.00
The number of change management projects based on digital technologies for the organization of marketing activity and its links with other activities, pcs	0.08	0.50	0.50	1.00
The number of new (innovative) units (denominations) in the nomenclature, pcs.	0.08	0.35	0.09	1.00
The volume of orders for new (innovative) products, UAH million	0,06	0,15	0,63	1,00
Percentage of implementation of the marketing sales plan of products by a nomenclature type of production, %	0.02	0.99	0.90	1.00
Percentage of implementation of the marketing plan by the volume of innovation products sales, %	0.01	1.00	0.82	0.71
Divergence from the budget of marketing events in the period of redesign of the organization business processes of the marketing sphere, %	0.01	0.00	0.00	1.00
The volume of attracted investments for the orders implementation, UAH million	0,03	0,19	0,24	1,00
The volume of attracted investments for the development of innovation products, UAH million	0,05	0,19	0,26	1,00
The level of profitability of the sales of goods and services, %	0.02	1.00	0.96	0.78
Percentage of funds paid to market specialists beyond staff schedule in the period of business process re-engineering (compared to the staff salary), %	0.07	0.73	0.76	1.00
The amount of money spent on training and professional development of staff involved in marketing activity for implementation of the re-engineering measures, UAH	0,02	0,62	0,93	1,00
The amount of money paid for the outsourcing services for the execution of tasks that are not a part of the existing composition of marketing staff (implementation of scrap re-engineering business processes), UAH	0,04	1,00	0,15	0,13
The amount of money paid to the specialists of various, but marketing, units of the company to fulfill the direct marketing priorities (implementation of scrap re-engineering of business processes), UAH	0,07	0,00	0,38	1,00
The total number of days of overdue orders when implementing CRM technology, days	0.04	0.42	0.78	1.00
The number of re-engineering marketing events with the participation of specialists of other units, pcs	0.05	0.43	0.86	1.00

The calculation of normalized indices of the marketing potential of an industrial enterprise in the period of re-engineering of its business processes is presented in Table 3.

Having determined the normalized indices of the company marketing potential, an integral index of the marketing potential proposed by Kobyzskyi should be calculated. It is estimated applying the Euclidean distance method according to the following formula:

$$I_{MRBP} = \sqrt{\sum_{j=1}^m (q_{in} \cdot B'_{in})^2}, \quad (3)$$

where  $I_{MRBP}$  is an integral index of the marketing potential of the enterprise during the re-engineering of its business processes;  $q_{in}$  is the weight of the  $i$ -th indices of the marketing potential of the enterprise in the  $n$ -th period;  $B'_{in}$  is a normalized value of the  $i$ -th index of the marketing potential of the enterprise in the  $n$ -th period;  $m$  is the number of the  $i$ -th indices of the marketing potential of the enterprise.

The resulting estimations of the industrial enterprise marketing potential in the period of the business processes' re-engineering was calculated,

**Table 4.** Ranges of criteria values of an integral index of the marketing potential of JSC Sumy Plant Nasosenergomash in the period of business processes' reengineering

$I_{MRBP}, cu$	A performance indicator of the range of criteria values
$I_{MRBP} \geq 0.10$	The range of criteria values of an integral index of the enterprise's marketing potential in the period of the business processes' re-engineering indicates a high level of marketing activity development, due to the effective re-engineering activities in the marketing sphere, which involves a comprehensive re-design of business processes in marketing (HR re-engineering, CRM implementation, ERP projects, outsourcing, fundraising, benchmarking of business processes, PDCA technology, PR)
$0.05 \leq I_{MRBP} < 0.10$	The range of criteria values of an integral index of the enterprise's marketing potential in the period of business processes' re-engineering indicates a sufficient level of marketing activity development, due to the effective conducting of the re-engineering activities in the marketing sphere, which involves a re-design of several business processes in marketing (HP-re-engineering, implementation of CRM projects)
$0 \leq I_{MRBP} < 0.05$	The range of criteria values of an integral index of the enterprise's marketing potential in the period of business processes' re-engineering indicates a low level of marketing activity development due to the low efficiency of the re-engineering activities in the marketing sphere of the company, which involves a redesign of the only one business process in marketing (PR)

namely, an integral index of the enterprise marketing potential during the re-engineering: in 2015 – 0.1 cu; in 2016 – 0.14 cu; in 2017 – 0.23 cu.

Thus, an increase in the marketing potential of the industrial enterprise JSC Sumy Plant Nasosenergomash is conditioned by the performance of the re-engineering activity in the marketing sphere of the industrial enterprise.

### 3.4. Criterial analysis

In order to increase the performance of managerial decision-making in the marketing activity of the industrial enterprise during the re-engineering of its business processes, it is essential to form a criteria basis for the resulting evaluation of the marketing potential of the enterprise in the period of radical transformations. Kobyzskyi offered a range of criterial values of an integral index of the enterprise's marketing potential in the period of the business processes' re-engineering in order to make effective managerial decisions aimed at raising the level of the marketing potential of the industrial enterprise.

This range of criterial values of an integral index of the enterprise's marketing potential is offered to be determined by the Störger's method, having calculated a corresponding Störger's coefficient by the following formula:

$$k_{I_{MRBP}} = \frac{I_{MRBP_{max}} - I_{MRBP_{min}}}{1 + 3.322 \lg N} = \frac{0.23 - 0.10}{1 + 3.322 \cdot \lg 3} = 0.05, \quad (4)$$

where  $k_{I_{MRBP}}$  is the Störger's coefficient, which characterizes the range of criteria values of an integral index of the enterprise's marketing potential during the re-engineering of its business process;  $I_{MRBP_{max}}$  is the maximum value of an integral index of the enterprise's marketing potential during the re-engineering of its business process;  $I_{MRBP_{min}}$  is the minimum value of an integral index of the enterprise's marketing potential during the re-engineering of its business process;  $N$  is the number of evaluation indices.

Table 4 shows a criteria basis, created by Kobyzskyi, to estimate the resulting estimation of the marketing potential of the production company JSC Sumy Plant Nasosenergomash in the period of business processes' reengineering, namely, the ranges of the criterial values of the integral indicator of the marketing potential of the enterprise in the period of transformations.

As a result, the criteria basis developed for assessing the marketing potential of industrial enterprises in the period of the business processes' re-engineering is an effective tool for the top management to form an effective toolset for monitoring the marketing activity of the company in the period of the business processes' re-engineering in order to determine the performance of the re-engineering measures that affect the company's activity in the marketing sphere.

## 4. DISCUSSION

Study of the role of the marketing potential in the economic activity of national industrial enterprises during a radical re-design of business processes is a relevant objective at the mod-

ern stage of the productive forces development. After all, the development of elements of the Third and the Fourth Industrial Revolution has an impact on the marketing activity of industrial enterprises. Thus, there is a need to use a benchmarking method in order to form the indices of the effectiveness of enterprise marketing activities in the period of the business processes' re-engineering and monitoring the indices of marketing activity of the enterprises in the leading countries. The influence of world trends on the activity of the Dutch companies during the industrial revolution was studied by Mokyr (2000) who considered the impact of the elements of global industrialization on the activity of the Dutch companies.

An improved method for evaluating the marketing activities of industrial companies during the period of business process re-engineering is proved necessary to increase the level of economic monitoring of transformational processes in the marketing of the company. Micheels (2017) considered the impact of marketing strategies on the consumers of the products from the US agribusiness companies as an economic tool for strategic monitoring of the company. He emphasized the need for strategic monitoring in the activity of the US companies.

It is necessary to form a system for preventing the economic risks in the marketing sphere in order to create a high level of marketing potential of the company in the period of business processes' re-engineering, since the re-engineering itself is a risky measure and needs a detailed plan for its implementation. Development of the methodological basis of the risk management system for the business processes' re-engineering of industrial enterprises, including the marketing sphere, was the object of the research of Taraniuk (Taraniuk, Taraniuk, 2016). The

scholar investigated the main obstacles to the implementation of the transformation projects at the Ukrainian enterprises.

## 5. CONSEQUENCES FOR THE MANAGEMENT

The management of the industrial enterprises should use a system of economic monitoring of the process of constant changes occurring in the company activity during the business processes' re-engineering. The following researchers, such as Cervellati, Naghavi, Toubal (2018), monitored the technology of adaptation of the trade enterprises to the changing market conditions and the introduction of the trade liberalization concept. Formation of a high level of social security for workers is also rather important, considering the economic changes in the enterprise activity. A scholar and economist Melnyk (Melnik, Taraniuk, Kozmenko, Sineviciene, 2016) considered the regression model of the social security. To make effective managerial decisions, it is important to consider the economic indices and performance indicators of the organizational tools of the sales system in the analysis of the marketing activity of the innovation-active industrial enterprise. These aspects were described in the research work of Olefirenko and Shevliuga (2017).

Marketing management should consider the following organizational and economic aspects, such as economic (economic monitoring of changes); social (change motivation of the staff); technical (introduction of the systems of process automation) in the process of re-engineering.

Implementation of the organizational and economic measures will address the problem of the marketing management of the industrial enterprise in the period of transformation changes.

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## CONCLUSION AND RECOMMENDATIONS

A comparative analysis of the trends of marketing and innovation activity of the business entities from different countries across the world was conducted. We have identified the leader-country (Switzerland) with the GC index of 5.9 and the outsider-country (Yemen) with the GC index of 2.9. The basic directions of transition to an effective marketing activity considering the introduction of a radical re-design of the business processes were formed. The indices that characterize the marketing potential of the com-

pany during radical transformations were also developed. The economic estimation of the marketing potential of JSC Sumy Plant Nasosenergomash during the re-engineering of its business processes was carried out due to the proposed integrated index of the company marketing potential in the re-engineering period ( $I_{MRBP}$ ), which amounted to 0.1 cu in 2015; in 2016 – 0.14 cu, in 2017 – 0.23 cu. These are the characteristics of the positive dynamics of the company marketing potential development. A range of criteria values of these indices were formed in order to make effective managerial decisions in the period of radical transformations. To proceed with the research on this topic, the study of the marketing potential of industrial enterprises of one industry in different countries to determine the peculiarities of the marketing activity of economic entities under the conditions of different economic systems in the period of radical transformations is proposed.

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