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The use of modern information and communication technologies by Ukrainian enterprises-producers of domestic boilers

Abstract

Information and communicative environment in which every enterprise works today, creates new information tasks for the management. Their solution is possible when adapting information management to new conditions. For the enterprises of mechanical engineering which is the key industry for each economically developed country providing the management of enterprise with marketing information is the issue of the day, both in terms of maintaining competitive positions in the market of each particular enterprise and industry as a whole.

The article shows that in Ukraine in the conditions of the gradual overcoming the negative consequences of the crisis, the temporary application of the provisions of the Association Agreement between Ukraine and the European Union and the tension in foreign trade relations with the Russian Federation, there is a significant geographical reorientation of export commodity flows from Russia to the European market, which is characteristic for the machine-building industry, in particular for the market of household boilers. The article presents and analyzes the statistics, which confirms such features of the market of domestic boilers in Ukraine as: very close interdependence of the main producers; slower process of getting out of the crisis in comparison with the entire engineering industry; significant change in the market structure. The access of the enterprises-producers to the European market with solid fuel boilers, requires new standards of work from domestic enterprises, which is confirmed by the data of export statistics. This includes information processes that should be arranged so qualitatively to meet the most demanding requirements and maintain the competitiveness of Ukrainian producers.

The article presents the results of the observation carried out by the authors of the article and includes the assessment of the level of information and communication technologies use by household boilers producers in Ukraine and comparison of the main indicators of domestic enterprises and foreign competitors. The analysis of the received information showed the low level of information and communication technologies use by domestic producers of domestic boilers and their considerable lag in comparison with the European enterprises.

It was substantiated that the use of the new information potential is possible only with the reconstruction of the provision of information processes. Therefore, the marketing information system of the boiler equipment manufacturers in Ukraine needs a full or partial reorganization. That is a promising direction for further research.

Keywords

marketing information, marketing information system, enterprise management, information and communication technologies (ICT), market of domestic boilers

1 Problem statement

The rapid progress in the field of information and communication technologies led to the emergence and development of a digital network communication space. This led to global changes in information processes in society, including economic relations. Methods and marketing instruments are considerably transformed in such terms. The new tasks of providing enterprise management with marketing information need a solution.

A relevant response to the challenges of the market environment is particularly important for enterprises in such an industry as mechanical engineering in every developed country. The machine-building industry reflects the level of scientific and technical state of the country, provides technical equipment, mechanization, automation of production, thus affecting progress in other areas of economic activity and competitiveness of the country in the foreign markets. Indicators of the industry's activity are the key to determining the level of economic development of the country. Machine building has a number of features that allow to say that for enterprises of this field providing enterprise management with marketing information in modern conditions is an actual problem in terms of maintaining competitive positions both in the market of each particular enterprise and industry as a whole. Among such features there are the complexity and high materiality of manufactured products; high stock of production; interrelation of enterprises and interdependence of production processes of their products; long payback cycles of investments; the complexity of marketing information processes in the industrial market, etc. These features lead to the increase of the economic risk level for the production and sales activities of machine-building enterprises, and increase the significance of high-quality marketing information when making managerial decisions.

Questions about the quality of the company's marketing information are considered in most of the strategic marketing management works of both foreign and domestic authors such as: G. Armstrong, D. Aaker, J. Dey, D. Jobber, J. F. Kotler, V. Kumar, G. Churchill, L. V. Balabanova, S. V. Mkhitarian and others. System research of marketing information was carried out by such scholars as: L. A. Sheljuk, E. V. Krikavsky, I. O. Deinega, O. V. Deinega, R. Patora [1, 2]. The recent works in this area worth noting are the research by I. A. Pedko [3], B. A. Oxentyuk and O. M. Frolenko [4], M. M. Yanevich [5], and others. Along with this, the peculiarities of providing the management of the machine-building enterprises with marketing information in new market conditions in Ukraine are not sufficiently explored.

The purpose of the research, carried out by the authors, was to determine the level of information and communication technologies use by domestic enterprises producers of domestic boilers under such circumstances as slow recovery from the crisis, changes in the structure of the market and a gradual reorientation of exports of products from Russia to the European market.

2 Research results

Since 2016, Ukraine's economy is showing the signs of gradual overcoming the negative effects of the crisis. Growth of GDP in 2016 amounted to 2.3 %, industrial output increased by 2.8 % [6]. In the conditions of the temporary application of the provisions of the Association Agreement between Ukraine and the European Union and the tension in foreign trade relations with the Russian Federation since 2016, there is a significant geographical reorientation of export commodity flows. Export of Ukrainian products to the countries of the European Union in 2016 compared to 2015 increased by 3.7 %. Export to the Russian Federation decreased by 25.6 % [7].

The gradual reorientation from Russian to the European market is also characteristic of the machine-building industry in Ukraine. In the last four years, not only the share of exports to the Russian Federation has decreased (from 23.8 % in 2013 to 9.9 % in 2016) in all Ukraine's export, but the share of machine-building products in export to Russia (from 35.5 % in 2013 to 28.2 % in 2016). Simultaneously with a significant decrease in the share of the Russian Federation in domestic export, the share of goods including machine-building products exported to the countries of the European Union is gradually growing. The share of exports of products to the EU countries increased from 34.1 % in 2015 to 37.1 % in 2016, the share of machine-building products increased from 5.1 % to 5.8 % respectively [7].

The European market makes new requirements as for the competitiveness of Ukrainian enterprises. It is necessary to apply new approaches to enterprise management in order to achieve compliance with these requirements, in particular a new level of organization of information processes. Consequently, reorganization of providing management of domestic machine-building enterprises with marketing information is an integral part of the processes of restoration of machine-building in Ukraine. One of the markets for which this problem is the most urgent is the domestic boiler market. Let us consider the features of this market, which confirm this choice.

The main types of boilers that are offered in the Ukrainian market, depending on the fuel used, are gas, solid fuel and electric boilers. Significant

changes have taken place in recent years in the structure of the household boilers market: the share of gas boilers is gradually decreasing (from 92 % in 2011 to 73 % in 2015). On the contrary, the percentage of solid fuel boilers is increasing (5 % in 2011, 23 % in 2015, and 13 % in 2016). Changes in the market structure of household

boilers in 2011-2016 are shown in Fig. 1. In such conditions the target market usually changes, which increases the importance of providing management with marketing information, the study of motivation and behaviour of new consumers, the establishment and maintenance of ongoing feedback from customers, etc.

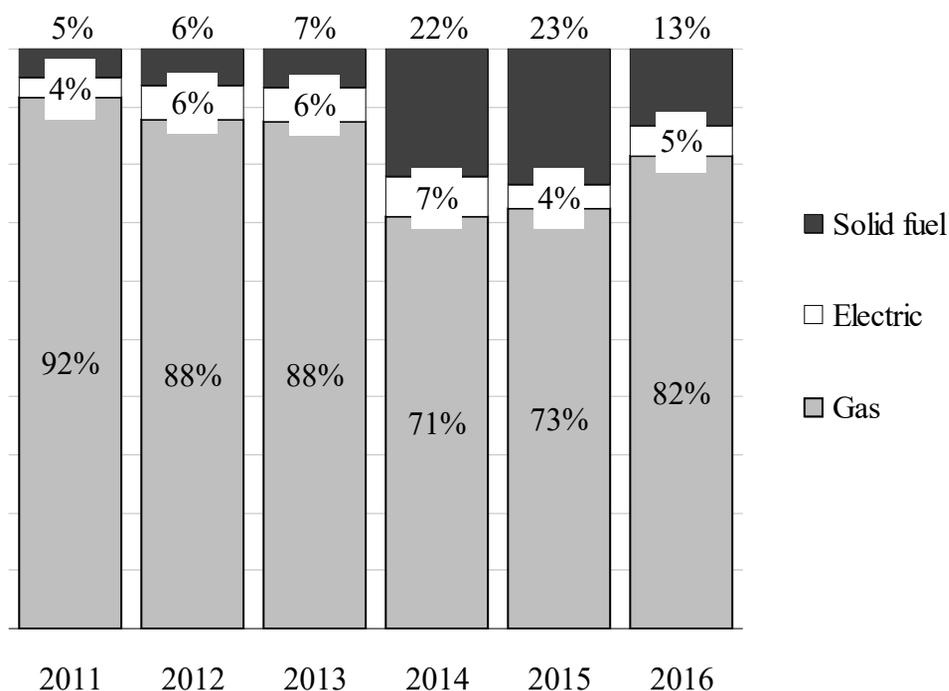


Figure 1 Changes in the market structure of household boilers in Ukraine in 2011-2016 (according to monitoring research by the Agency of Industrial Marketing [8])

Unlike the whole machine-building industry, boiler manufacturers are not so fast in recovering after the crisis: the number of boilers produced since 2014 is still decreasing for all types (the fact is that imports of gas boilers in 2016 are already beginning to recover and amounted to 113 % from 2015). Figure 2 shows the indices of production, import and export of household boilers for 2012-2016 in Ukraine. The attention is drawn to the export of solid fuel boilers in 2014, which exceeds the data of previous years by 11.5 times, which means that in 2014 Ukrainian enterprises began to actively enter the international market.

Let us consider the structure of exports of household boilers in different countries. The statistics confirm the main important changes in the activity of boiler producers: the share of boilers supplied to the Russian Federation is beginning to decrease (gas boilers: from 94 % in 2011-2014 to 84 % in 2016; solid fuel boilers: more than 40 % in 2011 and only 29 % in 2016). Until 2014 Ukrainian boilers were delivered mainly to the Russian Federation, Moldova and Tajikistan. In 2016, 49 % (in 2015 the corresponding figure is 36 %) of solid

fuel boiler export was made to European countries such as Poland, Czech Republic, Lithuania, Romania and others [8]. According to the report of Ministry of Economic Development and Trade of Ukraine, since 2015 boilers, machines, apparatus and mechanical appliances have been among the top 10 products exported to the EU [9]. The access to the international market, especially the European one, as the most developed, requires new standards of work from domestic enterprises. This includes information processes that should be arranged so qualitatively to meet the most demanding requirements and maintain the competitiveness of Ukrainian producers.

The market of household boilers is oligopoly. Six enterprises and manufacturing associations produce more than 80% of domestic boilers (87% of solid-fuel boilers) in Ukraine (according to 2016 and 2017) [8]. These are such well-known brands as Aton (PJSC Krasilovsky Machine-Building Plant), Atem (LLC Zhytomyrteplomash), Barmash (PJSC Barskiy Mashzavod), Agroresurs (Danko) (PJSC Agroresurs), KAZ (Kordi) Krasylivskyi agregatnii zavod) and Majak (PJSC Mayak), they have taken a

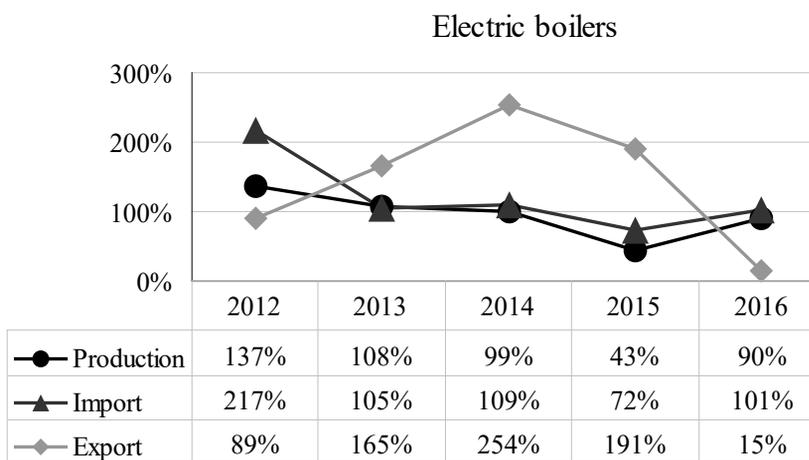
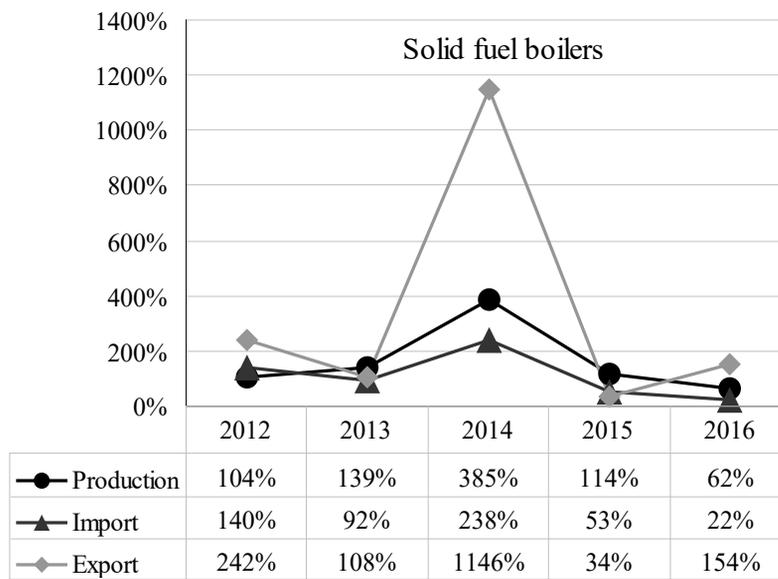
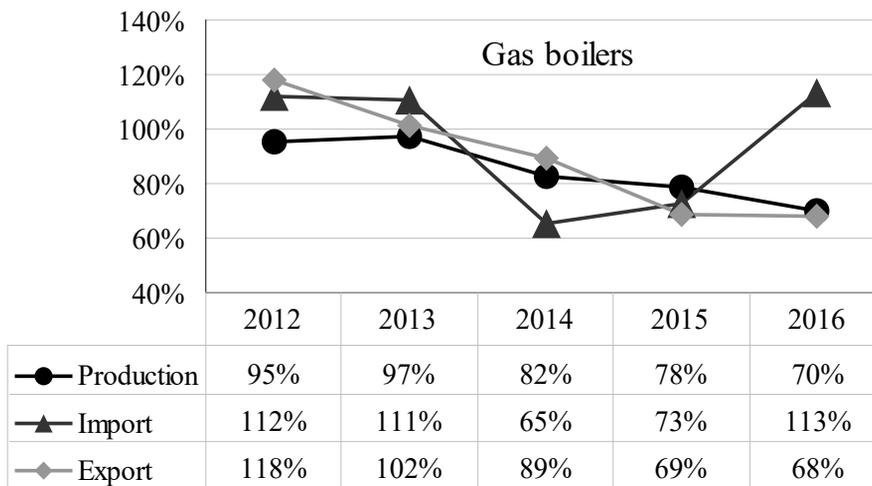


Figure 2 Indices of production, import and export of domestic boilers in Ukraine (according to monitoring reports of the Agency of Industrial Marketing [8])

leading position in the market for many years. In the oligopoly market there is a very close interdependence between the main producers. The prediction of the reaction of competitors and the calculation of demand and marginal revenue are very complicated. Therefore, the importance of continuous monitoring of market forces of competitors, price, commodity and communication policy, dynamics of market shares of domestic sales and exports is growing significantly.

Analysis of the level of information and communication technologies use by household boiler manufacturers was carried out by the authors themselves and included the observation of the main indicators of the quality of the organization and the effectiveness of the work of websites and the level of social networks use. For this such online services of site positions as SimilarWeb, Pr-

Cy, Megaindex, site update check service Web.archive were used. The score estimate of site quality was based on data obtained through the online analysis and promotion service SE-Ranking, taking into account the total number of errors in the various types of site scanning. As a result the errors detected during scanning the site were shown.

The main results of the analysis of websites of household boilers market leaders and their foreign competitors are given in Table 1. The table shows that all six enterprises have websites, but only at Zhytomyrteplomash LLC (Atem) and PJSC Krasylivsky Machine-Building Plant (Aton) sites are quite advanced and modern. The sites of PJSC Barskij Mashzavod and PJSC Agrolesurs are not optimized for mobile devices. The sites of the Krasylivsky Aggregate Plant and PJSC Mayak are made on a template solution and have an outdated design.

TABLE 1 Indicators of the quality of the websites of domestic boiler manufacturers in Ukraine and their foreign competitors (created using the online services: SimilarWeb, Pr-Cy, Megaindex, Web.archive, SE-Rranking)

	1	2	3	4	5	6	7	8	9
Enterprise	Zhytomyrteplomash LLC	PJSC Krasylivsky Machine-Building Plant	PJSC Barskij Mashzavod	PJSC Agrolesurs	Krasylivsky Aggregate Plant	PJSC Mayak	Foreign competitor Viadrus	Foreign competitor Viessmann	Foreign competitor Vaillant
Brand	Atem	Aton	Barmash	Agrolesurs (Danko)	KAZ (Kordi)	Majak	Viadrus	Viessmann	Vaillant
Site	atem.ua	aton.ua	barmash.com.ua	agrolesurs.ua	kaz.km.ua	majak.ua	viadrus.cz	viessmann.com	vaillant.de
Year of creation	2013	2007	2005	2012	2010	2005	1998	1998	1998
Average number of updates per year	10	13	7	10	4	6	19	24	34
Number of updates in 2017	1	4	3	1	0	3	8	30	11
Number of unique visitors per month	14730	15090	8670	7800	12360	10530	55910	131550	82410
Number of external links	331	1.3K	722	376	165	276	86K	116K	75K
Average time on site	01:11	03:04	00:35	00:53	01:35	01:56	02:40	04:08	01:59
Average number of pages per visit	4.40	2.77	2.03	2.46	5.23	3.26	3.25	4.99	3.11
Share of traffic from social networks	0.21%	0.12%	3.13%	0.14%	0.50%	0.26%	0.17%	2.32%	1.96%
Having markup Open Graph	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adaptability for mobile devices	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes
Balance rating of site (10 - maximum)	8	9	4	5	5	7	8	9	10

Comparing Ukrainian producers with European competitors (three companies, whose brands occupy the leading positions among those imported to Ukraine in 2017 were selected), there is a significant lag of all the key indicators. The average number of updates in the European manufacturer site per year is about 25 times. Domestic enterprises update sites on average from 4 to 13 times a year. A significant difference is also in the number of external links (several hundreds of links to Ukrainian websites, compared with tens of thousands of foreign companies). Due to the fact, that the spread of the Internet and the creation of sites in Ukraine took place much later than in Europe. But with the access of domestic enterprises to the European market, the task is to eliminate the current lag and ensure decent market positions.

As for the usage of social networks, unfortunately, only PJSC Krasylivsky Machine-Building Plant and PJSC Barrow Mashzavod have Facebook pages and links to them in the site (also link to the site with Facebook). However, even these pages do not function properly. The page of PJSC Krasylivsky Machine-Building Plant was created in 2011 and actively replenished until 2016, and in 2017 (August inclusively), only 8 posts were placed on it. The average number of likes is about 10. The total number of subscribers is less than 700 people. It is clear that this is not enough for the implementation of information influence. The page of PJSC Barskij Mashzavod is quite new. It was registered in 2016 and it is more active (14 posts have been published since the beginning of the year), while it has only 143 subscribers, but provides more than 3% of the site's activities (according to this indicator, the company even overtakes some European competitors).

PJSC Krasylivsky machine-building plant (Aton) is the only company with an existing Internet-shop of heating equipment, but the information is not updated enough: in 2017 there was only one update in January. On the main page of PJSC Mayak (Majak) the possibility of ordering boilers online is provided. On the PJSC Barsky

Mashzavod site there is a link to the trading partner's page where you can buy boilers. There is a list of products with current prices on this page, but there is no online order option. LLC Zhytomyrteplomash (Atem), Krasilovsky Aggregate Plant (Kordi) and PJSC Agroresurs (Danko) do not engage in direct sales of their products. Their sites provide a contact list with a large number of dealers who can sell their products.

3 Conclusions

The analysis of the level of information and communication technologies use by household boilers producers in Ukraine allowed to identify shortcomings in the current provision of companies under study with marketing information. In the conditions of global changes in information processes in society, including economic relations, the methods and tools of marketing are significantly transformed and new tasks of managing enterprise marketing information are needed. The stable position of the company in the market is possible only with the fullest possible use of new opportunities. This will reduce the impact of uncontrolled environmental factors due to their timely detection; increase the accuracy of forecasting in the field of sales, market opportunities and customer behavior; improve the processes of formation and support in accordance with the goals set for the comprehensive perception of the enterprise by all market agents.

The use of the new information potential is possible only if technical, software, staffing and methodological support of information processes are reconstructed and brought into compliance with the new requirements. Therefore, the marketing information system of the boiler equipment manufacturers in Ukraine needs a full or partial reorganization. The urgency of the problem is compounded by the reorientation of the export of domestic products to the EU countries, and the need to conquer and maintain market positions in the developed European markets.

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