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THE MARKETING INFORMATION SYSTEM OF INDUSTRIAL ENTERPRISES IN THE CONTEXT FORECASTING RESEARCH

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Іванов Ю.Б., Яшкіна О.І. Маркетингова інформаційна система промислового підприємства в контексті прогностичних досліджень.

В статті запропоновано підходи щодо визначення джерел інформації для отримання прогнозів науково-технологічного розвитку підприємства в маркетинговій інформаційній системі. Автори вважають, що підґрунтям для отримання стратегічних прогнозів науково-технологічного розвитку підприємства можуть бути результати досліджень форсайт, які проводяться на макро-, мезо- та мікрорівнях.

Ключові слова: форсайт дослідження, науково-технологічний розвиток, стратегічні маркетингові дослідження, прогнози за експертними оцінками

Іванов Ю.Б., Яшкіна О.І. Маркетинговая информационная система промышленного предприятия в контексте прогностических исследований.

В статье предложены подходы по определению источников информации для получения прогнозов научно-технологического развития предприятия в маркетинговой информационной системе. Авторы считают, что основой для получения стратегических прогнозов научно-технологического развития предприятия могут быть результаты исследований форсайт, которые проводятся на макро-, мезо- и микроуровне.

Ключевые слова: форсайт исследования, научно-технологическое развитие, стратегические маркетинговые исследования, прогнозы по экспертным оценкам

Ivanov Yu.B. Yashkina O.I. The marketing information system of industrial enterprises in the context forecasting research.

The article analyses approaches of information sources identification to produce forecasts of scientific and technological development of the company's marketing information system. Authors believe that the basis for strategic forecasts of scientific and technological development of the enterprise may be the results of research foresight, which take place at the macro, meso and micro levels.

Keywords: foresight studies, scientific and technological development, strategic market research, expert forecasts

In the uncertain environment of marketing environment of industrial enterprises are faced with circumstances that increase the risk of making irrational decisions. The only way to reduce uncertainty is to increase awareness. Therefore, for the industrial enterprises it is expedient to use marketing information system, which allows you to obtain strategic information and current information. Strategic information allows to predict scenarios of situation development. In terms of the growth of crisis phenomena relevant is the search of rational ways of performing foresight research. This question has been actual for industrial enterprises in the conditions of globalization of the national economy and the signing of the agreement on free trade zone with the EU.

Analysis of recent researches and publications

The interpretation of the concept "marketing information system" is not debatable. In the sources are very close to the definition of marketing information system:

- this combination of personnel, information and methods (procedures) for the regular collection, processing, analysis and preparation for marketing decision making [1];
- this continuously operating system, which includes personnel, equipment, set procedures and methods for regular collection, processing, analysis and interpretation of Information from various sources; provides Integration, support and transfer of managers of information in the prescribed time and in a form suitable for decision making [2];
- this continuously operating system designed for the collection, processing, analysis, evaluation and distribution of information necessary for making decisions concerning marketing planning, implementation and control execution of marketing activities [3].

The essence of marketing information system in a systematic study of the factors which determining the marketing effectiveness. This system consists of four subsystems: internal reports; external information; marketing research; analysis of marketing

information. The main function of a marketing information system – collection and analysis of information, forecasting and risk assessment to prevent problems with the sale of products and optimize sales. "Anatomy" of marketing information system a well study, but its "physiology" is largely a "black box". Although in the conditions of dynamic changes increases the scientific-practical importance of production and economic activity ahead of the curve.

Unsolved aspects of the problem

Remain insufficiently studied methods by which industrial companies can obtain information of strategic importance.

The aim of the article is to substantiate the possibility of using forward-looking research in the form of foresight in marketing information system of the industrial enterprise.

The main part

Generally accepted is the following definition of foresight "is a systematic attempt to look into the long-term future of science, technology, economy and society to identify areas of strategic research and appearance of ancestral technologies that have the potential to bring great economic and social benefits" [4]. There are many similar definitions of this technology predict that generalizing can be argued that foresight is: 1) action-oriented thinking, discussion, delineation of the future; 2) attempt to identify long-term trends and coordinate them on the basis of decision making; 3) a process that includes: public organizations, industrial enterprises, research centres, non-governmental funds; 4) work at several levels: international, national, regional; 5) scenario forecasting 10-20-year term.

In the initial stages of using this technology foresight technology forecasting is used at the level of governments. Historically, the development of foresight began in the late 1950s in the military-industrial complex of the USA. At first this method was used to predict the consequences of long-term solutions and agreeing priorities for defence studies and security. Outside of defense and military research the first foresight began to use the Japanese government, when since the 1970s, technological foresights the development of national industry have been based on this method. The work of the technology foresight was carried out in France since the early 1980s. With 80s. twentieth century experiments in technology foresight was conducted in Sweden, Canada, Australia. While until the early 90-ies of the relatively few works from the technology foresight was conducted in the United States, great Britain and Germany. However, since the early 90-ies of the United States, Australia, Germany, UK, France began widely to organize a program from the foresight of technological development. Now such activities are systematically held in USA, Japan, Germany, Russia, UK, USA, France, Austria, Australia, Brazil, Malta, China, in the development programs of the EU, Sweden.

Gradually the foresight to spread scientific and technical sphere, and then the more general problem of socio-economic development. In many countries the foresight program have already completed several cycles and under the influence of the traditional Western model of cooperation between the state, business and science have become a standard tool not only of divination, but also the formation of common development goals. Split off of the regional, sectoral and corporate foresight. For example, a youth foresight - projects aimed at attracting young people to scientific and technical creativity; hindsight - retrospective analysis of mistaken decisions and failed projects. The results of the foresight steel development program, which define areas of research.

For foresight in the USA the company Calibrum Corporation was established on-line version of the Delphi method that has the name Surveylet – grouping method and analysis of the views expressed in interactive mode. Based on the principles Forsythe, Surveylet represents the possibility of interactive brainstorming, conducts a SWOT analysis, and predicts public opinion on the basis of individual statements. Surveylet transfers the Delphi technique in the online.

In the process of conducting research often uses the following techniques: futures workshops; Failure mode and effects analysis; Causal layered analysis (CLA); Scenario method; Delphi method; Future history; Monitoring; Anticipatory thinking; Trend analysis; Visioning; Systems engineering; Relevance tree; Futures wheel; Literature Review; Scenarios; Brainstorming; Expert Panels; Citizens Panels; Morphological analysis; Social network analysis; Stakeholder Mapping; Technology Roadmapping; Trend Extrapolation; Environmental Scanning; SWOT Analysis; Key Technologies; Futures Workshops; Modelling and simulation; Backcasting; Essays; Gaming; Cross-Impact Analysis; Megatrend Analysis; Multi-criteria Analysis; Bibliometrical analysis.

General scheme of the procedure to foresight as follows.

1) The initiator, the vast majority of cases, the government, other private companies, announces the need for research. Create a join that will affect the decisions regarding the program to the foresight, to convince the sponsors to participate in the program and to influence their activity. Usually a group like this is a complex social process involves creating various associations that represent different interests. Invited to cooperate stakeholders who will be the organizers and implementers of the program.

2) The organizers in most cases are government organization, may be carried out by public or commercial entities, private individuals. The organizers decide on the following issues:

- who decides on the implementation of the program;
- who provides funding budget;
- how the budget is formed and administered.

3) Defines the objectives and scope of the program, necessary information, time frame.

4) Based on the methodology of foresight defines the priorities and methods of research, research institutions have sufficient competence and ability to conduct research.

5) Defined development scenarios. Published study results.

6) The formation of the state or of commercial software development based on futuristic predictions. Program areas include research on certain topics and also a list of other events.

7) Verification of the effectiveness of program and their approval.

8) Monitoring of program implementation.

For example in the USA the organizers of foresight are the following public institutions:

- Department of state security;
- Institute of future technologies;
- Management of the USA army;
- Institute of environmental protection;
- NACA;
- The working group on creation of aviation electronics;
- Board of Trade;
- The Department of science and technology the White House (the national Council for science and technology, Institute of critical technologies).

In Ukraine since 2008 studies on technological foresight, which are called "strategic marketing research of scientifically-technological development of the state" [5]. Such research is conducted at the macro level for the strategic priority directions of innovation activity in Ukraine, which is determined by the Verkhovna Rada of Ukraine. In 2008 there were defined the development priorities in the field of "Energy and efficiency", in 2009 – "Biotechnology" and "New materials", and in 2011 – "Information and communication technologies". More unfortunately, such studies have not been conducted. The results of the Ukrainian foresight are the list of passports of innovative technologies that can be implemented in production for 10 years. Each of the technologies in the passport has some experts projected timeline of development and implementation, as well as predictions about sales of new high-tech products produced with this technology. Methods of forecasting, which are obtained by forecasts of the development, implementation and sales of new high-tech products, is a statistical analysis to determine the degree of coherence of expert opinions and the veracity of the predictions.

In marketing information system of the enterprise, this information may be important for more detailed assessments and forecasts. It is also important to take into account the results of regional foresight, that is, research aimed at definition of prospects socially-economic development of the region in which the enterprise is located. At the regional level strategic marketing research for research and technological development should make special structural units, which create local governments. The expert panel should include representatives of management bodies and enterprises of a particular region, scientists can be

and from other regions of Ukraine – the main thing that they were engaged in scientific research that can be used at the enterprises of the region and increase the level of regional innovative development.

Strategic marketing research for research and technological development at the enterprise level should undertake the enterprise, or marketing research Agency or research organization, the company will attract. The content of these studies is the identification of the most promising for enterprise innovation R & D.

For the largest automotive companies in the world such as General Motors, Ford Motors, Renault, Volkswagen peculiar strategy of cooperation, pooling efforts in the development of innovations that are intellectually and financially costly. Automotive corporations that unite the car industry in various countries cooperate to develop high-tech innovations.

For example, in the scientific works of Ukrainian scientists proposed implementation strategy for the integration of machine-building enterprises of the country to improve the efficiency of their operation. So, to integrated structures in the Western region it is proposed to include: public company "Borislav experimental foundry-mechanical plant", research mechanical factory "Karpaty", PJSC "Drogobych machine-building plant", PJSC "Truck", PJSC "Lviv experimental mechanical plant", PJSC "Kalush plant of construction machinery", PJSC "Drogobych truck crane plant", PJSC "Kovselmash", PJSC "Plant Lvivmash", PJSC "Plant Rivenmash", PJSC "Karpatnaftomash", PJSC "Lviv plant "Metalist". The creation of a strategic alliance among the machine-building enterprises of the Western region of the study's authors believe are beneficial because it will allow "to set technical standards in the field of agricultural engineering, to gain access to resources and knowledge of these companies, conduct joint research, development and production of technologically sophisticated products,... to reduce time for implementation of research in the life..." [6].

In our view, the integration of enterprises in certain sub-sectors of engineering possible on the grounds of R & D. That is, the strategic alliances of enterprises may be established only in the direction of scientific and technological research. This strategy will save time and cost of enterprises to conduct a similar research and development, strengthen scientific research capacity, to develop common standards the latest technologies.

The enterprise's scientific and technological Alliance may conduct joint R & D in areas of fundamental works, applied researches, scientific-technical developments. So, enterprises of railway machine building of PJSC "Azovmash", PJSC "Dneprovagonmash", PJSC "Stakhanov machine building plant", PJSC "holding company "Luganskteplovoz", PJSC "Kryukovsky railway car building plant" are competitors on the market, but the needs in research and technology have in common – improved performance of energy saving and energy efficiency of engines, reduce emissions, increase engine power.

In our opinion, the forecasting system which allows to align national interests with the scientific and technological development with regional and interests of such enterprises is:

1. Macro-level. Every 10 years, according to the research results of scientific-technological and innovative development of Ukraine the Academy of Sciences of Ukraine on the instruction of the Cabinet Ministers of Ukraine, the list of state priority directions of development science and technology. This list is fixed in the respective statutes, and is priority in obtaining public funding for research.

In each direction from among the state priorities SASII (State Agency on Science, Innovations and Informatization of Ukraine) initiates strategic marketing research. Today, their division's forecasting and analytical support of innovative activity Ukrainian Institute for Scientific, Technical and Economic Information. According to the results of strategic marketing research for research and technological development for each priority area the list of the most promising thematic areas, as well as the passports of the newest technologies in these areas. Passport latest technologies are posted on the website of the organization-researcher (Ukrainian Institute for Scientific, Technical and Economic Information), and the visitor can get acquainted with them. The companies behind these passports to assess the prospects of scientific research, book research or buy a license to use the technology developers. Conducted strategic marketing research for research and technological development every five years. Research funding comes from sources of financing of the Program of forecasting of scientific-technological and innovation development of Ukraine.

2. Meso-level. Regional priority thematic directions of scientific researches and scientific and technological developments are shaped specially created entities, for example, forecasting and analytical departments of innovative development of the region, which is subordinate to the Executive Committee of the city Council or Executive Committee of the regional Council. According to expert surveys identified the main research directions,

which caused regional needs. These areas may also be formed from the state scientific and technical priorities. In certain areas formed the panel of experts, which as a result of the questionnaire survey form passport the latest technology. Regional strategic marketing research for scientific and technological development are conducted at the expense of the community, therefore, as in the previous cases, the results should be made public, for example, on the website of Executive Committee of the regional Council. The duration of the studies – every five years. The financing of the regional strategic marketing research for research and technological development is funded from local budgets and enterprises in the region interested in the results of the study.

3. Micro-level. Priority thematic directions of scientific researches and scientific-technical development of enterprises / associations of enterprises aimed at ensuring competitiveness, increasing market share, expanding into new markets. Determines directions of R & D by enterprise management or management body of the scientific and technical association of enterprises within innovation development strategy. The results of the studies, which are the list of promising areas of research and/or the list of passports of the latest technology is the property of the company and should not be published.

Conclusions

Marketing information system of the industrial enterprise is an important tool for determining the strategic directions of its scientific and technological development. To obtain reliable long-term forecasts of scientific and technological development of the enterprise it is important to take into account the results of foresight studies conducted at national and regional levels. The most promising directions of scientific-technological development of the enterprise are defined according to expert interviews of heads research departments of the company. In certain directions are formed a strategic forecasts and development plans.

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