

Development of a Set of Marketing Activities in the Construction of an Innovative Energy Efficient Cluster

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Abstract – The author substantiates the urgency of building clusters in the context of development of the Russian national innovation system, as well as the need to reduce the excess energy intensity of industry. Taking these factors into account, the author proposes the formation of a new type of cluster structures: innovative energy efficient clusters. The author's definition of this term is given in the introductory part of the study. The analysis and review of selected studies on the topic of cluster development of the economy and energy efficiency of industrial enterprises is carried out.

Keywords – innovations; energy saving; cluster; marketing; marketing information system.

1. Introduction

One of the most important trends in the development of the global innovation economy in the last decade has been the formation of industrial clusters in many developed countries. They consist on special integrated structures, the creation of which allows obtaining a number of important economic effects due to the geographical proximity of their participants.

In the Russian economy, the objective economic advantages of the cluster organization of production

have made the clusters themselves one of the most popular forms of organization in the innovation industry. This trend is supported at the state level by the Ministry of Economic Development of the Russian Federation and the Ministries of Industry and Trade of the Russian Federation. In particular, in 2012, the Ministry of Economic Development of the Russian Federation initiated the first large state program in the field of cluster development of industry in Russia, within the framework of which the selection, assistance, development and subsidies of the first 27 pilot innovative territorial clusters were carried out. The high performance of this program contributed to the further development of cluster integration in various regions and industries of Russia. Currently, in the Russian scientific and expert community, clusters are recognized as integral structural components of the National innovation system.

According to the author, cluster structures represent a highly effective form of consolidation of industrial, scientific and infrastructure organizations and can become one of the key drivers of innovative and economic development of Russian regions. In the process of research work, the author's attention was focused not only on the problems of effective organization of innovative production, but also on issues related to improving the energy efficiency of the Russian industry. As shown by the analysis completed in previous studies, many domestic enterprises have a high level of excess energy intensity, which negatively affects their economic efficiency and competitiveness of their products. In many cases, their excessive energy consumption is associated with the lack of systemic energy conservation and a number of engineering and technological factors, including a high level of wear and tear of engineering and energy communications, the use of outdated equipment, violation of the integrity of the enclosing structures, etc. Accordingly, even being a part of a cluster, such enterprises are unable to fully reveal their innovative and technological potential, reducing the overall economic efficiency of the entire cluster.

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In order to systematically solve the listed problems at the level of the entire cluster formation, the author has developed a new type of clusters: the innovative energy efficient cluster. An innovative energy efficient cluster is understood as a geographically integrated complex of industrial enterprises, universities, research and development organizations and infrastructure organizations, as well as a specialized energy service company, united by a single digital environment, within which the participants carry out sole and joint development and implementation in production of innovation and investment projects in compliance with the energy efficiency targets set in the cluster and the implementation of an active energy conservation policy. As it can be noted from the above definition, the creation of such clusters is aimed not only at the production of innovative products, but also at a systematic increase in the energy efficiency of the organizations and enterprises involved in their work. The purpose of this study is to develop a single set of interrelated marketing activities in the formation and development of an innovative energy efficient cluster.

When building and developing innovative energy efficient clusters, one of the most important areas of development for companies and enterprises involved in its activities is the organization of effective interaction with target markets based on methods and tools from the field of marketing. Actively developing throughout the XX century, marketing from a limited set of technologies associated with advertising and product promotion has gradually become one of the basic elements of the philosophy of companies, reflecting in its genesis changes in markets and the system of relationships between manufacturers and consumers.

With the development of world markets, due to the dynamic growth of scientific and technological progress and an increase in the level of competition in them, one of the most important marketing attributes of enterprises' activities is increasing adaptability, not only to the direct needs of consumers, but also to their implicit requests and wishes. Marketers learn to adjust the developed offer as accurately as possible to those desires of ordinary buyers, for the analysis of which specialists need a deeper study of target market segments, not limited by the formal framework of traditional marketing research. Individualization of a commercial offer is one of the main trends in modern marketing, which in the modern world, saturated with numerous and experienced competitors, is becoming more and more influential, putting the figure of the consumer himself at the center of the entire range of marketing activities.

Marketing itself is a continuously developing and evolving branch of economic science, actively using to ensure its own development and the whole range of the latest technologies related to the digitalization of the economy and the creation of qualitatively new digital spaces that attract potential consumers: social networks, instant messengers, services for businessmen and youth forums, etc. The active development of marketing in the context of digitalization and technology diffusion of the Fourth Industrial Revolution allowed a number of reputable scientists to announce the formation of the Marketing 4.0 concept. The above factors prove the need for a systematic approach to the development of a set of marketing measures when creating an innovative energy efficient cluster, since it is their successful implementation that largely determines the success of the commercialization of innovative products created by the cluster members.

2. Theoretical Basis

The initial prerequisites for the formation of cluster theory can be found in studies on the association of manufacturers in industrialized areas of London, carried out at the beginning of the 20th century by the respected economist Alfred Marshall [1]. Subsequently, at the end of the last century, a clear structure of the theory of industrial clusters was developed by the famous American economist Michael Porter, who developed the following definition of this term: "Clusters are geographically consolidated interconnected companies and institutions in a certain area. Clusters encompass a range of interrelated industries and other entities that are important to competition. These include, for example, suppliers of specialized resources such as components, equipment and services, as well as suppliers of specialized infrastructure" [2]. In following years, the topic of cluster development of the economy attracted such scholars as D. Simmie, D. Sennett [3], P. Cook, R. Huggins [4], P. Dicken [5] and others.

In Russian science, among the scientists specializing in the development of clusters are R.S. Golov and A.V. Mylnik, who have developed a number of their own models of cluster structures, among which we can highlight the innovation-investment and the innovation-synergetic clusters [6], [7]. A certain attention to research in the field of cluster development of the economy was also paid by A.P. Agarkov and E.A. Erokhina [8].

The research of an authoritative expert in the field of energy efficiency improvement is devoted to the issues of applied energy saving in industry [9]. In one of his researches he repeatedly emphasizes the importance of such quality as consistency in the

implementation of energy-saving measures in industry. In addition, a significant contribution to the development of the scientific foundations of energy conservation, including in the industrial sphere, was made by N.I. Danilov, who became the author of one of the first scientific articles, textbooks and teaching aids covering a wide range of topics related to general issues of energy conservation and energy efficient technologies [10].

3. Methodology

In preparing and conducting the research, the author used a number of general scientific research methods: analysis and synthesis, deduction and induction, decomposition and classification, etc. In particular, when developing a set of marketing activities, the author analyzed the existing experience and the main marketing tools used in already operating clusters, on the basis of which a universal set of marketing activities that does not depend on the industry in which the cluster operates was synthesized.

In addition, based on the decomposition of the existing models of marketing information systems (MIS), the author has designed his own model of the MIS, which fully meets the objectives of the development of an innovative energy efficient cluster.

4. Results

As a part of the study, the author has developed the following set of marketing activities carried out in the formation of an innovative energy efficient cluster (Table 1). It should be noted that in a real cluster, the direct development of marketing activities should be carried out with the help of coordinated efforts of marketing specialists from the relevant departments of the enterprises and organizations included in the cluster. Thanks to this, the parity of interests of the cluster members is achieved when developing a strategy and programs for promoting products manufactured within the framework of joint projects implemented in the cluster.

Table 1. Set of marketing activities carried out in the implementation of an innovative energy efficient cluster

№	Name of marketing event	Description of marketing event
1.	Complex marketing research	Marketing research is carried out by the cluster members to analyze the regional, national and international market for products corresponding to the profile of the products manufactured by the cluster
2.	Cluster marketing policy development	Formed marketing policy consolidates the basic principles and approaches of cluster members to work with target markets and consumers
3.	Creation and promotion of the cluster brand	This event involves the collective development of a brand that reflects the qualities and strengths of the cluster members that are important for promoting products.
4.	Building a cluster MIS	Creation of a unified MIS of the cluster with its subsequent integration into the cluster digital infrastructure
5.	Formation of integrated marketing communications	Formation of a system of marketing communications with target markets, used by all cluster members, thereby allowing to achieve a synergistic effect
6.	Implementation of tools for evaluating the effectiveness of marketing activities	Development and implementation of a system of performance indicators for assessing ongoing marketing activities

We will analyze in more detail the individual marketing activities listed in Table 1. First of all, when implementing marketing activities, the key task of the project team for the formation of an innovative energy efficient cluster is to conduct comprehensive marketing research. The main purpose of the research is the analysis and assessment of the most priority markets to determine the optimal structure of the cluster, taking into account the profile of its production activities. Since one of the main goals of the cluster being formed is to achieve a significant economic effect from its activities, it is advisable to include in its structure those enterprises whose joint work within the cluster structure will create those

products that will have a high level of demand in existing markets. And, on the contrary, the inclusion in the cluster of enterprises with a low level of compliance of capabilities and products with current innovation trends will make them weak links in its structure, thereby reducing the final indicators of its economic efficiency.

Within the framework of marketing research, the specialists of the project team solve a number of main tasks:

- determination of basic geographic, sociological and economic parameters of target markets;
- comprehensive analysis of competing companies in target markets, including a study of their

marketing strategies, products sold, mechanisms of interaction with consumers, etc.;

- conducting a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis, which determines the strengths and weaknesses of the cluster being formed in relation to the existing market opportunities and threats;
- segmentation of target markets and selection of priority market segments for the further formation of marketing communications;
- analysis of innovation trends in target markets;
- research of existing consumer expectations from already sold products and potential innovative solutions, the release of which the cluster will specialize on the basis of questionnaires, online surveys, organization of focus groups, etc.

The above are the main stages of marketing research, which reflect the primary tasks of the project team in forming the cluster in determining the basic foundations of marketing policy and assessing the possibilities of its successful implementation by the enterprises and organizations included in the cluster. The developed marketing policy is the context in which further interaction with the market of the enterprises included in the cluster develops. First of all, it includes the main goal of the implementation of marketing activities, which is determined by the cluster members. In addition, it determines the marketing strategy developed within the cluster, consolidating the efforts of marketing departments and departments of its members, reflecting the main strategic guidelines of the cluster structure's marketing activities.

A more detailed development of a marketing policy involves the creation of a sales and product policy that determines the mechanisms of the cluster's work with wholesale and retail sales organizations, as well as the formation of a product range. At the stage of creating a cluster, initially, these policies can be based on portfolios of projects already being implemented by enterprises, assuming further expansion through the joint release of innovative products already within the cluster structure. An important part of the marketing policy is the pricing of the products sold, the work with which is influenced by the results of the previously conducted marketing research. Understanding the current state of demand in target markets allows marketers of the cluster being created to objectively assess both the economic opportunities of consumers and their motivation to purchase the appropriate product. In addition, within the framework of the marketing policy, tools are developed to promote cluster products: channels for marketing communications are determined, the dynamics of demand for products is modeled, advertising materials are developed, etc. An important quality of

marketing policy in this case should be its flexibility, taking into account the subsequent development of the cluster and the release of new products. In this context, it should be noted the importance of predictive modeling of the development of both the cluster itself and the target markets, as the initial data for which the results of the conducted marketing research should be used.

On the basis of the marketing policy, a brand of an innovative energy efficient cluster is developed with the aim at increasing the market competitiveness of its members. The very essence of a brand implies two levels of its perception by potential consumers: visual and psychological (emotional). At the visual level, the brand consists of the name of the cluster, its logo with a unique corporate identity, advertising slogans, a brief description of the mission and tasks of the cluster, which are available for visual and auditory perception by consumers. At the psychological level, the brand embodies the benefits and unique values, targeted positive emotions that the products of the cluster should evoke in the consumer. An effective brand in this sense reflects the psychological relationship between the manufacturer and the consumer, which guarantees the latter confidence in the purchased product, a positive experience of its use with the subsequent transition to the category of regular customers. At the same time, in the conditions of constantly growing volumes of advertising information, the brand becomes a kind of "beacon", distinguishing the cluster's products among dozens of other advertising offers.

According to the author, the model of an effective brand of an innovative energy efficient cluster should include four main aspects:

- technological aspect, which clearly reveals the technological novelty of the manufactured products, their advantages over competitors' products, functionality and quality. This aspect is aimed at instilling confidence in consumers that they are purchasing the best product with high innovation potential, reliability and durability;
- economic aspect, within the framework of which the cluster marketers substantiate the rationality of the current price for the manufactured product, its compliance with the qualities revealed in the technological aspect, as well as the readiness for a flexible pricing policy, various promotions for consumers (seasonal discounts, price reductions on the eve of the holidays), long-term after-sales support and service. This aspect is important for the formation of consumer confidence in the economic fairness of cluster enterprises when they conduct pricing and eliminate suspicions of attempts to artificially inflate prices for their own products;

- social aspect, which is based on the assertion of the social responsibility of the cluster as a participant in the Russian economy. In particular, it implies the role of the cluster in creating new high-performance jobs in the region where it is based, supporting Russian scientists and inventors and ensuring the implementation of their developments in production, contributing to the growth of the regional economy and ensuring the possibility of creating new industries and infrastructure organizations around the cluster, solving the problem import substitution. The social aspect of the brand is aimed at the formation of a "human" image of the cluster in the minds of consumers, its relationship with their personal civic position;
- energy efficient aspect, revealing those technologies and efforts to implement them at enterprises and organizations of the cluster, which contribute to the disclosure of its energy saving potential. This aspect reflects the important competitive advantage of the innovative energy efficient cluster, which has value not only in the perception of consumers, but also in the eyes of potential investors. The desire to improve energy efficiency proves the

development of the cluster's technological and marketing policy in accordance with advanced world standards, which can increase its investment attractiveness for both Russian and foreign investors.

As it can be noted from the above model of the brand of an innovative energy efficient cluster, ultimately it is aimed at communication both with the rational functions of consumers' thinking, associated with the assessment of the objective technological and economic qualities of products, and with their emotional side of thinking. It is the integrity of these aspects in a single model that ensures a holistic perception of the brand by consumers, as well as the greatest likelihood of their positive response to further marketing activities carried out by cluster members.

An important role in the implementation of a set of marketing activities is played by the MIS, which is a set of subsystems for collecting, processing and analyzing internal and external information about the economic and marketing activities of the cluster in order to provide the cluster management with the necessary data to improve its strategy and make key decisions on interaction with the market (Figure 1).

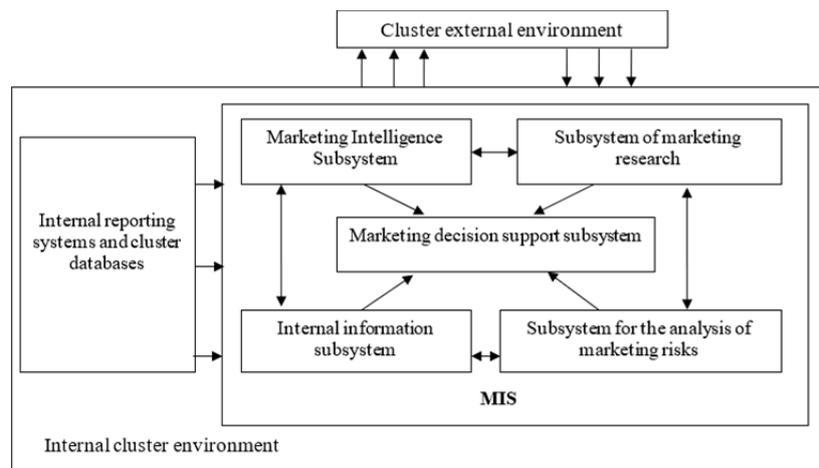


Figure 1. The structure of the MIS of an innovative energy efficient cluster

In practice, the functioning of the structure of the MIS, shown in Figure 1, is provided by marketers from the relevant departments of the enterprises and organizations within the cluster. The MIS includes a number of subsystems. The internal information of the subsystems is used for the analysis of internal documents and reporting on the economic activities of the cluster related to its interaction with the market and includes the analysis of data from the following sources: various types of reporting, data on the volume of sales of cluster products, product pricing, information from sales departments about payment for already shipped products, etc. Its main purpose is to collect, process and analyze the information that is already at the disposal of the relevant services of the

cluster members and reflects the retrospective of their marketing and economic activities. In its work, this subsystem closely interacts with the internal reporting systems of the cluster and its databases, shown in Figure 1 as a separate block on the left side of the diagram.

The marketing research subsystem is used within the framework of the MIS to collect and analyze information related to the promotion of the current products and forecasting the sales of the developed products of the cluster. Given the high degree of their cost and labor intensity, such studies are rarely carried out on an ongoing basis and are associated with the need to collect important information for making strategic marketing decisions. For example,

such market research can be carried out as a part of making decisions on the feasibility of investing in the development of a specific innovation, when the cluster management needs to analyze the willingness of consumers to purchase it and to identify their additional wishes for such a product. Thus, already during the research and development (R&D) phase, it becomes possible to optimally adjust the team of researchers and scientists in accordance with the real needs and wishes of consumers.

In contrast to the Marketing Research Subsystem, the Marketing Intelligence Subsystem constantly monitors the market in order to promptly and timely provide the leadership of the innovative energy efficient cluster with information on changes in the economic balance and the level of competition in target markets, in the field of legislation, in innovative products introduced by competitors, etc. Unlike complex marketing research, which requires serious preparation and "field" work, marketing intelligence is carried out mainly in the form of desk research. As a part of marketing intelligence, cluster specialists are able to use open databases, industry and federal Internet portals, as well as acquire access to closed data of commercial information and analytical agencies, analytical and statistical industry reports and databases. In addition, the work of this subsystem also implies the analysis of competitors and their products. Continuity of operation of the Marketing Intelligence Subsystem provides a constant flow of fresh information about changes in target markets, valuable for making strategic marketing decisions by the cluster management.

An equally important role in the work of MIS is played by the Marketing Risk Analysis Subsystem, within which the relevant risks and related factors of the internal and external environment are analyzed, including:

- risk associated with incorrect forecasting of demand for innovative products of the cluster;
- risk of incorrect segmentation of the market and selection of an unsuitable segment for the sale of cluster products;
- risk of choosing ineffective marketing communications and product promotion channels;
- risk of incorrect assessment of consumer loyalty to the cluster brand;
- risk of setting an overpriced or understated price for cluster products;
- risk of lack of feedback from consumers of cluster products;
- risk of choosing the wrong marketing strategy;
- risk of underestimating competitors and their marketing methods;

- risk of an overly hasty launch of the cluster's products on the market without proper preparation of consumers and taking measures to promote it, etc.

When operating this subsystem, information from both the internal and external environment of the cluster is used. Correct assessment and management of relevant types of risks can significantly reduce the economic losses of an innovative energy efficient cluster from erroneous and hasty actions when interacting with the target market.

Information from the above four subsystems is consolidated within the framework of the Marketing Decision Support Subsystem, which is the main intellectual core of the MIS. The technological basis of this subsystem is an intelligent information and analytical complex based on statistical and mathematical models of forecasting and decision support, as well as capable of including algorithms for artificial intelligence, fuzzy logic and work in Big Data. The main purpose of this subsystem is the integrated processing and analysis of information from the internal and external environment of the cluster in order to assist its leadership in the development and adoption of management decisions related to the market and marketing policy of the cluster structure. Facilitating the process of in-depth analysis of large data sets, the Marketing Decision Support Subsystem identifies important factors that reflect the opportunities and threats facing the entire cluster structure that are not always obvious to the management and creates stable and logically verified prerequisites for developing the necessary tactical and strategic decisions.

An important role in the structure of the complex of marketing activities is played by the formation of integrated marketing communications that determine the cluster's capabilities in interacting with target market segments. The use of marketing communications is one of the most important tools in the promotion of innovative products of the cluster, since it is thanks to them that advertising information about it is disseminated, constant links with the most priority market segments are built, consumer interest in the innovations produced in the cluster is stimulated and feedback from buyers is provided. From the point of view of channels for organizing marketing communications, they distinguish between television, Internet resources, print press and radio, as well as forms of interactive interaction between consumers and representatives of the cluster: the organization of open press conferences, meetings with consumers, excursions to the production of a cluster for journalists and the most proactive of buyers, etc. The advantage of integrated marketing communications is that various elements of product promotion through different channels complement

each other and thereby contribute to the formation of a synergistic effect, increasing the implementation of the entire set of marketing activities.

Considering the fact that electronic resources of the Internet prevail among other sources of information for ordinary consumers, when promoting products of an innovative energy efficient cluster, first of all, it is advisable to focus on this channel. The dynamic development of the Internet space in recent years has led to an exponential growth of various forms of organization and presentation of information: forums, conferences, video hosting, large trading platforms and specialized portals dedicated to high technologies, social networks and photo download services. All this variety of Internet resources not only attracts hundreds of millions of potential customers around the world every day, but also provides marketers with a huge selection of ways to promote their own products. These methods include direct advertising, which often causes negative emotions in most consumers. In recent years, methods of implicit promotion of products have become increasingly popular, within the framework of which its advantages are disclosed by the members of the Internet community themselves:

- description of the benefits of innovation by the in-house experts of Internet portals in the framework of reviews of new technology;
- reviews on innovation made by successful bloggers with an audience of millions;
- creation of "viral" videos with their placement on large video hosting platforms;
- involvement of opinion leaders of certain subcultures with a significant number of followers in the promotion of products;
- methods of "hidden marketing" in social networks, when a marketer enters into a discussion of products disguised as an ordinary consumer;
- storytelling methods, when a story interesting to the public is developed around the product, including its use in the framework of life and fantasy situations, which allows us to capture the attention of potential consumers.

The success of such forms of product promotion is explained by the growing intellectual decentralization of consumers who are no longer inclined to trust the company as some kind of authority and prefer to see the opinion of the product from the same users or well-known bloggers, believing that they view the product with an open mind and are not directly interested in selling it.

The final link in the marketing mix of an innovative energy efficient cluster is the introduction of tools to assess the effectiveness of marketing activities. These tools are used by cluster specialists to assess the effectiveness of investments in measures to promote innovation, allowing, based on objective data, to develop the most optimal marketing communications system, determine the best tools for promoting products and evaluate both the effect of marketing campaigns and the overall effectiveness of the marketing mix in the cluster. As a rule, when assessing the effectiveness of the implemented marketing activities, quantitative, qualitative and point methods are used. Quantitative methods are aimed at determining the economic effect based on the ratio of the costs of specific activities to the achieved economic results (growth in sales, gross profit, increase in market share, etc.). From the point of view of practice, quantitative methods are used most often in the modern economy, since they allow to obtain the most accurate and visual results for management and require fixed information for their use, which simplifies the work of marketers in collecting and preparing it for performance evaluation.

Qualitative methods of analysis make it possible to assess the effectiveness of the functioning in the marketing divisions of the cluster, as well as to analyze the data obtained on the basis of the feedback mechanism from existing and potential consumers. One of the qualitative methods of assessment is marketing audit, on the basis of which the cluster specialists assess the level of customer loyalty to the cluster brand, the willingness to recommend its products to their friends and colleagues, the level of popularity of the brand and its products in target markets and the changes in the dynamics of consumer attitudes towards the cluster. Qualitative methods of analysis, even though they are more laborious to use than quantitative ones, provide information that is very valuable for improving the marketing strategy of a cluster, which makes it possible to adjust the vector of development of its marketing policy, to identify the most effective channels of marketing communications and to optimize advertising offers and the main mechanisms for promoting products.

When using scoring methods for assessing the effectiveness of marketing activities, marketers, even at the stage of developing the activities themselves, establish its key performance criteria in various categories: deadlines, marginal cost, quantitative audience coverage, effectiveness of supervisors, number of positive responses from consumers when conducting field events in public places, etc. At the end of the event, all criteria are assessed in points, on the basis of which a conclusion on its effectiveness is formulated in accordance with the obtained values.

5. Discussion

The complex of marketing activities is the basis on which the entire range of functions related to the interaction between cluster members and the consumer audience from target market segments is implemented. The development of the structure of this complex, the disclosure of its individual components and their organic interconnection is of high importance both at the theoretical and applied levels. From a theoretical point of view, the formation of such a complex reflects the development of marketing methodology in relation to forms of cluster organization of manufacturers and suppliers of innovative products that are relatively new for the economy. From the standpoint of the practice, the development of a set of marketing measures is a necessary step on the way to the successful commercialization of innovation, since it is in its structure that those applied measures are regulated and determined, on the basis of which the direct interaction of cluster members with target groups of consumers will be carried out.

The model of a complex of marketing activities developed by the author considers in its structure the entire algorithm of necessary actions and the sequence of their presentation, as a part of the complex corresponds to the logic and sequence of the implementation of individual stages in the life cycle of the entire innovation and investment project. Its important difference from the existing developments in the field of marketing support and promotion of innovations is that initially the entire complex of measures is aimed at the implementation, not by one enterprise or company, but by a cluster structure as an integral organizational and technological complex, which includes a number of enterprises, research organizations, energy service company, auxiliary and service structures. In accordance with this condition, all the tools offered in the marketing complex were adapted by the author for their use in a cluster considering the most important principles and trends of intracluster cooperation in the implementation of joint projects. So, for example, the MIS of the cluster is focused on the use of internal reporting systems and cluster databases, and among the key aspects of the cluster brand we find the energy-efficient aspect, which fully reveals the efforts of the cluster members to improve energy efficiency and the energy efficient technologies used.

6. Conclusion

The development of a marketing mix is one of the most important stages in the formation of an innovative energy efficient cluster, determining the level of its efficiency in interaction with the market in the commercialization of manufactured innovative products, and it also allows determining the optimal composition of the cluster participants. The complex of marketing activities developed by the author may be of certain interest both for scientists specializing in the field of research of modern clusters, and for marketers from enterprises and organizations that are part of real cluster structures facing the difficult task of coordinated consolidation of efforts and resources in the commercialization and promotion of joint innovation investment projects. The results obtained by the author make it possible to determine those basic measures, the implementation of which is necessary for the successful introduction of cluster innovation to the market.

References

- [1]. Marshall, A., & Marshall, M. P. (1920). *The economics of industry*. Macmillan and Company.
- [2]. Porter, M. E. (1998). *Clusters and the new economics of competition* (Vol. 76, No. 6, pp. 77-90). Boston: Harvard Business Review.
- [3]. Simmie, J., & Sennett, J. (1999). Innovative clusters: global or local linkages?. *National Institute Economic Review*, 170(1), 87-98.
- [4]. Cooke, P. N., & Huggins, R. (2001). Il cluster dell'alta tecnologia di Cambridge [The Cambridge high-technology cluster]. *Sviluppo locale*, 8, 34-60.
- [5]. Dicken, P. (2003). *Global shift: Reshaping the global economic map in the 21st century*. Sage.
- [6]. Golov, R. S., & Mylnik, A. V. (2012). Teoreticheskiye osnovy formirovaniya innovatsionno-sinergeticheskikh promyshlennykh klasterov. *Ekonomika i upravleniye v mashinostroyenii*, (3), 26-29. [In Russian].
- [7]. Golov, R. S., & Mylnik, A. V. (2014). Conceptual framework for the formation of innovation and investment cluster environments in the context of economic modernization. *Economics and Management in Mechanical Engineering*, 1, 32-38.
- [8]. Agarkov, A. P., & Yerokhina, Ye. A. (2014). Sovershenstvovaniye sistemy proizvodstvennoy infrastruktury v usloviyakh formirovaniya korporativnykh klasterov. In *Korporatsii-Paradigma Formirovaniya Natsional'noy Ekonomiki* (pp. 12-16).
- [9]. Teplyshev, V. YU. (2014). Kontseptual'nyye osnovy i strukturnoye postroyeniye sistemy upravleniya energosberezheniyem na predpriyatiyakh v promyshlennosti. *Ekonomika i upravleniye v mashinostroyenii*, (1), 46-51.
- [10]. Danilov, N. I., Lisienko, V. G., & Shchelokov, Ya. M. (2006). Problems of strategy and theory of energy efficiency. *Economy of the region*, 4, 78-87.