

“Marketing aspect of the innovation communications development”

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Marketing aspect of the innovation communications development

Abstract

The article analyzes innovation communications (InCo) as a factor for the innovation networks development. It is shown that the necessity to use InCo practice is due to the complexity of processes in high-tech sectors and the relevance of the development of appropriate organizational and economic tools for marketing relations. The main goals of the innovation networks development are determined. In the context of the study of factors for the innovation networks development, the role of relationship marketing, which involves the constructing long-term mutually beneficial relations with key partners of the economic entity, should be noted. It is determined that relationship marketing acts as a tool for practical implementation of the concept of joint creation of value in modern institutional forms of interaction in the innovation system (innovation networks, in particular virtual, international clusters, alliances, etc.). It was emphasized that in order to achieve the network aspect of innovation development of the economy, it is necessary to use models of open innovation, that is, combining efforts of economic entities in the scientific and technical field and exchange of operating results. The main communication problems, which cause the blocking of innovation development are determined. The analysis made it possible to distinguish between the groups of methods and mechanisms that are most often considered in the InCo practice. InCo practices are considered in terms of the possibility of organizing and self-regulating systems.

Keywords: innovation system, relationship marketing, innovation networks.

JEL Classification: L10, M10, M31, O30.

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Introduction

The search for new sources to provide companies' and countries' competitiveness, as well as ways to increase the management efficiency at different levels of the economy is due to the increasing number of threats, significant complication of the environment and business conditions, rapid development of information and communication technologies, increased competition and transformation of economic interaction models.

Leading world economies consider knowledge as the most important factor in the socio-economic development of post-industrial society, paying particular attention to the development of national innovation systems.

Innovative development is possible thanks to the commercialization of technologies of various industries. Building a network innovation infrastructure at both the national and international levels is an effective tool.

A number of developing countries, including Ukraine, have significant scientific and technological potential and world-class developments, but are actually not involved in the global high-tech market. In Ukraine, the innovation market has not remained static, but the share of hi-tech products does not reach 0.5%. GDP growth in

developed countries is achieved through the new technologies introduction.

To remedy the situation, it is necessary to create a communication environment for the efforts coordination and consolidation. The importance of the communication aspect is compounded by the need to expand international cooperation, in which if at least one of the elements of the process remains without due attention, there are gaps in communications. Such problems result in uncertainty and deprive the parties of the opportunity to develop strategic cooperation in the long run or lead to problems in cooperation.

Relationship marketing is inextricably linked with the process of innovation communications. When developing a new technological product, marketing tools are used to predict its market demand, possible threats and advantages. After creating a product, the promoting it among users and advertising are necessary. Therefore, relationship marketing plays an important role in the innovation system.

1. Literature review

According to Braunerhjelm and Henrekson (2015), stimulation of the long-term investment for industrial growth and practical use of knowledge is very vital. For these purposes, authors propose to consider the networks and marketing tools. Communicators and their providing policy are the element of scientific and technological activities measurement (OECD, 1995).

According to Ivanova et al. (2015), innovation system mediates between the knowledge production

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process and the economy. To this end, it is necessary to gain more information about the functional structure and productivity of innovation systems. The given research question addresses the links between the study of economy knowledge base, prevailing type of innovation systems, and net economic income of nations.

Avdeeva (2011) systemized the principles of national innovation system management based on linkages between various factors. Edler and Fagerberg (2017) also highlighted the importance of innovation systems and provided reasons for the development of innovation policy.

Ponomarenko et al. (2018) analyzed the tendencies of forming information economy industry in Ukraine and considered the development of high-tech industries in the country. It was stated that innovation industry was still not at a high level.

Podluzhna (2017) highlighted the importance of information and communication technologies in Ukraine for shaping the economics of knowledge. Computerization of the whole marketing processes, implantation of new technologies among personnel of enterprises, social media use and e-services adoption are vital.

OECD experts (2015) consider system innovation as a concept used to illustrate a “horizontal policy approach that mobilizes technology, market mechanisms, regulations and social innovations to solve complex societal problems in a set of interacting or interdependent components that form a whole socio-technical system”. While analyzing the reasons for innovation policy failures, the experts consider a) lack of multi-level policy coordination (regional, national, and European), b) lack of horizontal coordination between innovation policies and sectoral policies (transport, energy, agriculture), and c) lack of vertical coordination (between Ministries and implementation agencies), etc.

According to Botta (2015), national innovation system management requires governmental detrimental interference with market mechanisms. This improves market mechanisms insofar as governmental support goes to a wide range of decentralized research and innovation initiatives competing each other and challenging established market positions. Research also points out the activities of network state institutions development.

Among the goals of integration into innovation networks, which can be considered as a new level of innovation development, one can note the exchange of technologies, experience in narrow sectors, expanding partnerships, reducing costs and time in technological processes, finding new resources, etc.

(Krapyvny, Omelyanenko, & Vernydub, 2015). New level of economic development requires a high quality of national innovation system with public and private elements that makes it possible to link up with advanced global research networks (Wagner & Leydesdorff, 2005).

To make innovation communications efficient and to achieve a continuous process of resource sharing, it is necessary to involve economic agents. This aspect forms a new terminology – network marketing (NM), and when attention starts to focus on interfirm interactions, relationship marketing is developed (RM) (Tretyak, 2011).

Fagerberg et al. (2017) analyze the GVCs issues and range of relevant factors, including not only forms of “openness” but also differences in nation’s technological absorptive capacity. Authors also underline that knowledge is free, but that fact does not mean that it is easy to access and exploit.

Anderson and Narus (1990) emphasize the role of the relationship marketing. Relative dependence of a manufacturer and a distributor can contribute to success of both.

Evstafiev, Molchanov, and Sharakhin (2006) considered new marketing tools in new information age, which are relevant to innovation marketing. These issues are important for innovation culture (Marekha & Omelyanenko, 2016) and PR in the Innovation Communication System (Nordfors, 2007).

Although there is a number of publications devoted to innovation marketing, the practical aspects of innovation communications are still relevant.

2. Methodology

The aim of the research is to analyze the main points of innovation communications management, which are critical factors of innovation marketing success.

To this end, both classical scientific methods (analysis and synthesis, logical generalization, analogies, comparative comparison and graphoanalytical methods) and specific methods of the economy of high technologies and innovative management are used.

The following methods are used to determine the objectives of innovation communications:

- ◆ adapted decision-making methods based on the performance indicators optimization;
- ◆ methods based on the analysis of schemes for the strategic development of innovation systems and intersectoral high-tech complexes; and
- ◆ methods of searching for innovative ways of development and methods of integrated economic analysis of development policy.

The fundamental principles of purposeful management of institutional dynamics within the framework of development strategies require constant research, as in the current context, the situation in the innovation field is constantly changing. This requires identifying pressing problems and determining the prospects for its development under technological changes.

3. Results

The successful implementation of the innovation ecosystem principle at the present stage is based upon innovation networks operating at several levels: global (implementation of fundamental research), national and regional (solving problems of socio-economic development) and sectoral (complex projects). A generalized network can be considered as a professional association of infrastructure organizations or individuals whose activities and services relate to different forms of commercialization and technology transfer.

The international innovation network has the following goals:

- ◆ promoting international strategic cooperation in the science industry and innovation of the participating countries, as well as solving a wide range of strategic tasks;
- ◆ informing governments of participating countries on policies in the science industry and innovation and existing funding mechanisms for research activities;
- ◆ improving the policies of the participating countries, taking into account international experience, opportunities and problems arising in the international context;
- ◆ establishing world-class partnerships under global challenges, which include space exploration;
- ◆ the use of partnerships aimed at the successful development of innovation and investment attraction to increase the innovative capacity of the participating countries.

As part of the research of factors in the innovation networks development, the role of relationship marketing should be noted, which involves shaping the long-term mutually beneficial relations with key partners of the economic entity. Strategically, relationship marketing is aimed at building long-term relationships, which is a crucial factor of competitiveness under current conditions.

Traditionally, relationship marketing is considered in the context of the enterprise and its consumers' interaction in the commodity market, but this significantly narrows the concept and there is lack of understanding of the strategic role of marketing

and its main role in managing the innovation system subjects, which are integrated into clusters and networks in order to increase their own competitiveness.

One of the most urgent contemporary aspects of the marketing theory development is the concept of the joint creation of value, based on the idea that all companies involved in the production of a particular product, including suppliers, manufacturers, intermediaries, the client, as well as various other companies and organizations, including financial institutions, higher education institutions, research centers, consulting, marketing and advertising firms, participate in value creation. Thus, the concept of joint creation of value implies that all market participants enter mutually beneficial relations on the basis of understanding the combination of benefits from them.

Based on previous researches, one can confidently state that relationship marketing acts as a mechanism for the practical implementation of the concept of joint creation of value in modern institutional forms of interaction in an innovation system (innovation networks, in particular virtual, international clusters, alliances, etc.).

Combining the efforts of various entities of the countries in technological areas and the exchange of the latest technologies are the result of using the open innovation model. As a result, it can be argued about the formation of the network aspect of innovation development. Its effectiveness will depend on marketing tools.

In the context of the network aspect of relationship marketing, a key thesis of modern innovation management is presented that innovation results from the interaction of the state, business, scientific and educational communities. These relationships are based on the system of managed communications called innovation communications (InCo).

The innovation communication system is proposed to be considered as an integral part of the innovation system, which focuses on the communication flows within the system and in the environment. The streams of information associated with the innovation ecosystem affect the decision-making and the system competitiveness. The concept of an innovation communication system was proposed by David Nordfors in 2006 (2007).

Communication is a key aspect of innovation, because innovation is based on the vision of the process. Communications create the opportunity to implement an innovation process, for example, while assuring the top management or searching for investors. Communications are needed so that the

innovation system functions concertedly when transforming ideas into innovations: the properties of innovations must be brought to customers, and the client's needs must be brought to the developers. PR needs to evolve in parallel with the development of R&D and business. Successful innovation activity requires a combination of technology, business model and marketing strategy. For this reason, communications must now perform a greater function than innovation marketing and positioning the company as a leader in the market of new ideas.

Communication in the innovation field as an independent direction was formed in 2009 on the basis of innovation journalism (InJo), as well as communications in the science industry (scientific relations – SR). Stanford University, the EU and VINNOVA, the Swedish Agency for Innovation Systems, became leaders in this area. The practice of communication in the field of innovation is now being developed in addition to the United States in just a few countries, in particular, in Slovenia, Mexico, and Sweden.

The Stanford Entrepreneurship Network (SEN) is a unifying element of various business structures, distributed to specific faculties and campuses. SEN also acts as a forum for communication and cooperation between member organizations. As part of SEN, the cooperation takes place also at the international level with the participation of entrepreneurs and researchers from Stanford and the Silicon Valley. In the context of SEN, the following programs are implemented:

- ◆ carrying out educational and corporate activities for entrepreneurs;
- ◆ Annual Entrepreneurship Week at the Stanford University;
- ◆ the Coaches on Call program, which involves the availability of special time in organizations in which students can meet with leading industry experts.

On the University's part, SEN includes the Center for Entrepreneurial Studies, the Center for Social Innovation, the Graduate School of Business (GSB) Entrepreneur Club, and GSB Energy Club, which operate within the Graduate School of Business (GSB).

The technology transfer office (or the technology licensing office) is the central element of innovation infrastructure in all universities in the United States and Europe. These structures provide a full range of work with inventions, maintaining close links with researchers before the disclosure of the inventions essence and bringing the process to technology commercialization

through the creation of a new business or licensing technology of operating companies.

Today, not only the formation of innovative structures, but also the improvement and creation of innovative tools for technology transfer technologies (Reut, 2007) require special attention: "personal" technology transfer (skilled personnel movement); electronic technology transfer and e-commerce; information platforms and distance information exchange; distance employment; cooperative virtual exchanges; scientific and technical exhibitions, fairs, seminars, conferences, symposiums; scientific and technical publications.

Nowadays, despite the fact that in Ukraine a huge number of different institutes for modernizing the economy are created and planned to be created at various levels, i.e. technology parks, business incubators, centers for collective use of scientific equipment, technology transfer centers, business angels, this system has not a sound strategy; this reduces their effectiveness or makes them purely formal.

Among the main communication problems, which causes the blockage of innovation, it is worth highlighting the following:

- ◆ disruption of information space of scientific periodicals;
- ◆ disruption of communications between corporate investors and innovative infrastructures (including research centers), almost a total absence of innovative skills and understanding of investors' tasks from academics;
- ◆ critical lag in the skills and scale of marketing innovation from world leaders.

InCo can be defined as a set of communication tools aimed at solving the problems of supporting the generation of knowledge, transferring them to business processes and promoting innovative high-tech products.

The analysis conducted by the authors allowed to identify the following groups of methods and mechanisms that are most often considered as part of InCo practices:

- ◆ methods for organizing specific communications between scientists and scientific institutes, which include procedures for verification and evaluation of the scientific products significance (citation indices);
- ◆ communication methods between the scientific community, experts in the field of technological development, R&D managers of corporations' departments, which include analysis of

development trends, forecasting, indicators, investment analysis, analysis of the effectiveness of financing for development (projects);

- ◆ communication mechanisms between developers and investors (roundtables, conferences, presentations, etc.);
- ◆ communication mechanisms between innovative infrastructures (venture funds, business angels, etc.) and corporations, companies interested in innovations and introducing them (investment tours, exhibitions, promotional information campaigns).

In the context of the possibility of organization and self-regulation of systems, innovative development is associated with economic security as a target property of economic systems, provided by two mechanisms:

- ◆ the mechanism for managing domestic, in particular, economic and innovative, security includes the targeted influence of the state and society on the economy development to maintain its security. In this context, one can note the role of economic diplomacy in advancing the interests of the state and in the innovation area;
- ◆ self-organization mechanisms that function independently under the conditions when there is a single (close) system of values, goals and interests in society.

When considering the role of relationship marketing in the functioning of these mechanisms for self-organization and management, one should take into account the factors of innovation development, formulated on the basis of global foresight researching high-tech industries, in which the following principal trends are distinguished:

- ◆ intensifying the convergence of sciences (first of all, nano-, bio-, info-, and cognitive sciences) and, on their basis, developing convergent technologies, which extends the range of agents involved in a variety of innovative projects;
- ◆ the growing importance of the multidisciplinary approach in research and technology transfer;
- ◆ intensifying diffusion of modern high technologies into medium-tech sectors of the manufacturing area (industry, transport, agriculture);
- ◆ increased influence of new technologies on management and organizational forms of business, which stimulates the development of flexible network structures and virtual innovative forms of project interaction.

The marketing aspect of the innovation communications development can be manifested as follows:

1. taking measures for the innovations promotion;

2. stimulating state institutions, local authorities and communities in promoting innovation;
3. support and stimulation of innovation activity of all stakeholders;
4. exchange of experience in innovation activities;
5. increasing the role of advertising tools in stimulating innovation.

Discussion

From a practical perspective, InCo is a direction of communication activity, a specialized approach and tools implemented to unite participants in innovation activities, stimulate their open dialog and cooperation for the joint production of innovation. Let's take a closer look at the InCo aspects.

First, the research ideas marketing is taking place. This is a complex process as it requires a significant theoretical base and skills and it is not known what the result will be. The next aspect is the marketing of research results. At this stage, the product is not yet completed, in order to get some results, you need to attract investment in the project.

R&D marketing is a special form of marketing, since there are no guarantees regarding the object of investment.

Marketing of intellectual property (IP) requires a thorough IP market analysis because it is very specific. There are certain restrictions on intellectual property: in time, volume, and also in the territory of distribution.

The model of open innovation envisages the transition from internal development to the acquisition of external knowledge, experience and the latest technology. Adaptation of innovative developments and forecasting of possible risks are quite important.

Technology marketing is a set of actions and measures aimed at creating and promoting innovative products and services. At this stage, the product commercialization is important.

In the context of shaping the network communication practices, one can consider the properties of technology as a marketing subject:

- ◆ uncertainty: the utility cannot be precisely predicted for the technology. Therefore, the buyer cannot be sure that this technology will be used properly;
- ◆ inventive level: as there are many additional scientific research results, the technology is constantly under development (improvement);
- ◆ innovativeness: products that are the result of technology can overcome the existing ones on the market. The emergence of new technologies accelerates the disappearance of existing ones,

and may also contribute to the industry transformation;

- ◆ shortening the development period and short life cycle: accelerating the development (development and implementation) of modern technologies is a general trend. Terms for distribution of innovations decreased on average from 35 to 1-1,5 years;
- ◆ complexity: given the ability and need to combine with other technologies and trends in their development, the technology has a high complexity in terms of different technological factors and technological decisions in relation to customers. The technology complication is determined by the growing and more differentiated requirements of consumers, and successful technological products arise as a result of combining the supply of goods with new technological opportunities in the form of technological innovations (Technology Push) and satisfying the dynamic consumer demand for innovative products (Need Pull).

For technology marketing, the 6 I concept is proposed:

- ◆ information – the importance of information (about the developer, technology and its alternatives);
- ◆ internationalization – the internationality of innovation processes;
- ◆ idea – the degree of originality and uniqueness of the idea on which the technology is based;
- ◆ image – the factor of the technology developer image;
- ◆ incorporation – the importance of cooperation between partners, especially in the case of international innovation and technology cooperation;
- ◆ intricacy – the complexity of technology as a marketing subject.

The task of technology marketing requires analysis of the market and the level of technological development of two countries – the developer and the target country (Figure 1).

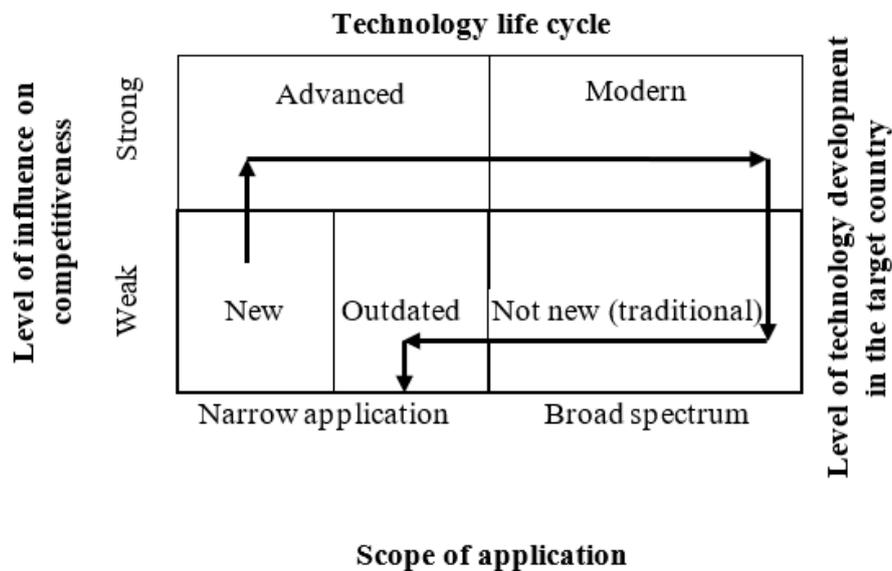


Fig. 1. Analysis of technology in the international marketing context

Source: Developed by the authors.

The factors contributing to the success of technology commercialization are the current market situation, consumer demand and expectations, and their willingness to accept this product. Therefore, it is necessary to clearly define the marketing strategy, to identify effective markets for technology. Image creation is another important aspect.

Legal, financial, institutional, information and innovation factors need to be taken into account to promote InCo innovation networks.

In the open innovation era, the position of the information environment as an intermediary

between creative products and real innovations in the simplest case can be presented in this way:

Ideas → Communication environment → Innovations

The European Institute of Innovation and Technology puts business, science and education at the corners of the knowledge triangle, and the state and society surround this triangle. Business and education are the most attractive areas for cooperation, and most difficult to create a communication process with the state. At the same time, one of the InCo main tasks is the elimination of contradictions, the creation of background for

understanding and harmonizing the actions between social groups within the “triangle” and externally, which have not only different goals, but also differ in outlook.

One of the main goals of the InCo is organizing the dialog between stakeholders in the innovation space. Therefore, to develop innovation networks, it is advisable to consider the whole range of InCo practices (Table 1).

Table 1. Communication in the field of innovation

Direction	Practice	Content
Communication in the knowledge triangle	InCoUniv	The practice is aimed at making higher institutions centers for innovation communications and increasing understanding of the importance of innovation and communication at the university level.
	InCoSci	The practice is aimed at promoting innovation communications in research institutions.
	InCoCorp	Promotion and implementation of communication strategies in the field of innovation in private companies, including through development institutes.
	InCoEd	The practice is aimed at raising awareness of the importance of creative potential and innovation in the system of general and vocational education.
Communication in society and state	InCoGov	Promotion of innovation and communication in the field of innovation in relations with state institutions of all levels of government.
	InCo NGO	The practice is aimed at encouraging innovation and communication in the field of innovation through non-governmental organizations to form public opinion, develop creative potential of people and their integration.
	InLoCom	Development of innovative local community, creation of open, progressive regions based on innovations and sustainable development.
	InGloCom	The practice is aimed at integrating into the global InCo community.
Communication tools	InJo	Promotion of innovative journalism and the growth of understanding of innovations among journalists, editors and media experts.
	InCoArt	The practice encouraging communication in the field of innovation among and through the creative community representatives.
	WebInCo	Use of Web 2.0 resources to stimulate innovation (NewMedia specialized segment).
	InCoVisual	Development of visual communications in the field of innovation.
Current agenda	HumInCo	The practice is aimed at reflecting the problem of innovation in human psychology and the social sphere development (i-economy and i-society).
	InCoEco	Development of innovations in the field of ecology.

Source: Developed by the authors.

According to the authors, the list of the principal measures to increase the level of communication competence in the field of innovation at various levels includes:

- 1) use of the system of evaluation, indicators and factors based on the Innovation Union Scoreboard, which allows tracking the receipt of innovative proposals from third parties;
- 2) international innovation cooperation as an element of economic diplomacy, including intergovernmental cooperation, cooperation with leading international high-tech companies, international venture funds, small and medium-sized innovation business engaged in scientific, innovative and business activities, compatriots from abroad and their public organizations;
- 3) introduction of corporate technology policy that is open to the market participants and company owners (including the state), the system of open and collaborative innovations;
- 4) taking measures aimed at expanding scientific and production cooperation, including mechanisms for examining proposals for the use of new technological solutions, expanding the practice of

cooperative interaction with scientific organizations, innovation infrastructure organizations (including within the framework of innovative clusters and technological platforms);

- 5) ensuring the formation of a vision in terms of the trajectories of the domestic innovation system development, the creation of new technologies, products and services, in particular through foresight.

Conclusion

The innovation process potential is important, first of all, due to its economic, corporative, technological aspects as the “gold and forex reserves” of the economy, which is provided with an effective management system, because technological areas are characterized by the “significant investment – high risks – high profits” ratio.

One of the main problems of domestic enterprises and research organizations operating in the field of high technologies is the lack of experience in commercial realization of their developments, shortcomings in marketing strategies, legal issues, as well as theoretical knowledge in economics and marketing. InCo is designed to eliminate this gap,

which will increase the efficiency of innovation processes.

The need to use InCo practice is due to the complexity of processes in high technology sectors and the relevance of the development of appropriate organizational and economic tools for marketing relations, which will be aimed at:

- ◆ diversifying industrial policy instruments in relation to the goals and objectives of individual industries and interindustry complexes;
- ◆ focusing the state resources on priority strategic support directions (cluster) in order to avoid resources spraying;
- ◆ shifting the emphasis on support for demand and development of institutional conditions through interaction and partnership at different levels;
- ◆ industry's focus on the creation of new markets and industries capable of participating in world

technological competition at the leading world economies level;

- ◆ creating mechanisms for international cooperation and integration into global value added chains.

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