

Current Trends in the Cooperation among Competing Companies in High Technology

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Abstract

The article considers the development of competitive cooperation among high-technology companies. The study aims at determining the key areas of interaction between participants in the process and ways to improve it. The authors of the article have emphasized the role of high technology in the modern economy. The analysis of trends in cooperation among competing companies is based on a number of methodological provisions. Their use makes the research process more systematic. Special attention is drawn to the dialectical approach to the development of competition. A new model of competition combines cooperation and competition. Its application lets the authors reexamine the development of high-technology companies. In the process of their cooperation, centrifugal and centripetal trends act simultaneously. The authors provide examples of positive and negative effects of such trends on the development of companies. They consider the transition from simple to more complex forms of partnership used by competing companies. They characterize the issues of interaction between companies, including their risks. Based on the analysis of the current competitive cooperation, the authors prove a shift in emphasis. Various forms of cooperation in priority areas become more and more important for the development of high technologies. The authors dwell on the specifics of these trends, substantive aspects and development directions of cooperation among competing companies. As a result, they offer

recommendations on optimizing the cooperation of competing companies, including a sequence of actions for the interaction of the parties involved. They highlight the necessity and methods of managing the cooperative competition of high-technology companies. The article presents conditions for improving forms and methods of interaction with due regard to the modern development of high-technology companies. The authors pay attention to the need to further study cooperation among high-technology competing companies.

Keywords

Competence, Cooperation, Trends, High Technologies, Development.

Introduction

High technologies are among the main factors that drive economic development in many countries. It is a relatively new but rapidly developing industry, whose achievements have a great impact on other spheres of public life. The high-tech sector embraces activities that cannot exist without the latest advances in science and technology (KZN computer, 2018). They include not only manufacturing but also social technologies. According to the current reports, high-technology companies provide about 30% of the global GDP (Levina, 2017). The high-tech level of companies serves as an indicator of their performance and research intensity. To evaluate these factors, there is a system of criteria widely used in international practice (Vostrikov, 2015).

One of the key factors that encourage companies to use high technologies is competition. The ability to compete in the high-tech market is significant not only for the development of certain companies but also for the growth of the country's economy as a whole. To maintain the existing competitive advantages and obtain new ones, it is necessary to constantly reconsider and improve the chosen industry process model (Economics: Yesterday, Today and Tomorrow, 2019). There is a need to rethink systemic competitiveness with due regard to the role of collective effects in the process of development (Meyer-Stamer, 2008). A prompt reaction to changes in the competitive environment results in the high dynamics of production processes. This is a necessary condition for survival and prosperity (Ivanova, Viktorova, 2013). Inter-company competition in the field of high technologies is characterized by a struggle for control over technology that allows obtaining scientific and technological superiority during a certain period of time. The latter is conditioned by the use of technologies that are temporarily unattainable for the main competitors and enable others to produce unique products for consumers (2011).

Being a powerful driving force, competition also causes many problems and raises a number of questions. What is effective competition? Is it always necessary to beat competitors? The search for these answers has triggered the process of reconsidering the phenomenon of competition. Currently, competition aims at not only destroying a rival or pushing them out of the market but also at creating a win-win situation for all market participants (Kotlyarov, 2010). Under new conditions, companies should not only change themselves but also alter their relations with the environment, including competitors. The policies of many companies begin to change their priorities: there is a transition from competition-oriented attitudes to cooperative strategies (Moore, 1996). Thus, the old economy based on competition transforms into a new one based on the partnership of competitors (Deming, 2006).

The use of a new competition model makes significant changes to the behavior of high-technology companies. However, some ambiguous trends arise in the process of cooperative competition. As a rule, the existing studies do not dwell on trends but rather on the problems that arise during the interaction of competing companies. In this regard, there is a need for a thorough analysis of the current trends.

Methods

To reveal the specifics of cooperative competition among companies in the high-tech sector of the economy, we should mainly determine the methodological aspects of the study. The fundamental provisions are as follows:

1. Consistency. The process under consideration goes through a systemic transformation. In this regard, the determining factor is a new paradigm of competition. In the conditions of the modern economy, the development of companies is constrained by prevailing stereotypes. Both scholars and practitioners still consider competition as a type of confrontation. However, the introduction of the "cooperation" term (cooperation and competition) destroys the prevailing scientific dogma. There is a transition from the old system of relations to a new one: the cooperation of competitors. At the same time, new approaches reevaluate views on both competition and cooperation. Instead of severe forms of integration among competing partners that make them lose their independence, there are more soft forms that allow companies to maintain their independence. A new assessment of competitive relations changes the management system and the psychology of participants.

2. Principles. The cooperative competition of high-technology companies is based on the following principles:
 - Common goals. It is a defining principle characterizing the goal of cooperation.
 - Mutually beneficial relationship. Partners determine areas of activity that bring benefits to each of them.
 - Innovativeness. Unlike other companies, high-tech businesses focus on developing brand new products. When developing the most sophisticated technologies that require high costs, one needs to seek ways to solve this problem, including through cooperation with other participants.
 - Dynamism. Like the technologies themselves, the interaction among companies is constantly being improved in accordance with new conditions. A flexible response lets better adapt to changes in a competitive environment.

3. Modeling. Competing partners do not take concerted actions spontaneously, they need to plan ahead. The collaboration of competing companies is an organizational model. Interaction can be carried out in different ways regarding a large number of factors. In each case, one should use a model of cooperation acceptable to all parties. Models can evolve and a new model becomes an updated version of the previous one. The choice of models is based on responsiveness to market challenges and the use of an initiative management system.

Results

The formation of a trend associated with the development of partnerships among competing companies was preceded by the accumulation of empirical and statistical data. The "coopetition" term emerged in the field of information technology and was introduced into the everyday discourse by R. Noorda, the founder of an IT company. Then coopetition began to be regarded as the most effective way of implementing innovations (Coopetition, 2010). A. Lafley noted that there is no such company that can quickly develop innovative solutions. It is crucial to cooperate both internally and externally (Lafley, Charan, 2008). Companies operating in the same market often cooperate in order to conduct research and study new products, while still competing for the market share of their products. For example, there is an agreement between PSA Peugeot Citroën and Toyota on exchanging components of a new city car, which are simultaneously provided

to Peugeot, Toyota Aygo and Citroën C1. Thus, companies save money on their total costs but remain competitors in other areas (Bengtsson, Kock, 2000).

Cooperative competition in each high-tech sphere has its own specifics. Distinctive features in the field of information technology are as follows:

- Open exchange of information and experience.
- Focus on creating new experience.
- Conclusion of an agreement with a partner capable of doing things that one's company cannot do (Cabrera, 2014).

Trends conditioned by the partnership of competing companies have a different level and focus. First of all, we should dwell on the trend arising from the essential characteristics of the process, i.e. the action of two opposing forces (centripetal and centrifugal). For this reason, cooperation is sometimes regarded as a paradox (the combination of incompatible elements). Centripetal forces stipulate the search for joint actions in certain areas. The strategy of collaborating with competitors is an integral part of a strategic choice. This is especially true of industries with a high degree of risk but also a great growth potential. They mostly include high-tech industries. Incentives for integration are the benefits of concerted actions. Based on knowledge and modular technologies companies can develop and sell their products much faster if they interact with other market participants. There is a "winning offer" combining competitive and cooperative activity (Kotzab, Teller, 2003). Partnerships compensate for the shortcomings of some company and, at the same, time let it benefit from the achievements of rivals. The dynamic development of high-technology companies leads to a rapid change in competitive advantages, which helps new companies enter innovative markets. In this case, the cooperation of competitors is a powerful factor in opposing the other companies. Such an interaction is exemplified by the cooperation between Microsoft and Apple. Despite periods of fierce rivalry, these two companies have been very successful in developing products for each other's platforms. As a result of their collaboration, the companies consider Google as their competitor (Zhurovich, 2010).

Regardless of centripetal forces, continued competition distinguishes between interests of certain participants. Their predominance over common goals leads to the action of centrifugal forces. However, disagreements and conflicts may arise between partners. The degree of controversy can be so high that it can even terminate their cooperation. In particular, this situation has been created in the course of collaboration between Suzuki and Volkswagen. In 2009, these companies entered into an alliance that provided for the exchange of technology and cooperation in the creation of new models. Ensuring the support of the Japanese partner, Volkswagen hoped to tap new markets. In turn, Suzuki

planned to get access to the latest global innovations. At the initial stage, the cooperation of competing companies developed successfully but later a controversy erupted. Volkswagen accused the Japanese company of violating the agreements. In 2011, Suzuki entered into an agreement with Fiat to supply diesel engines but this right had been initially vested to Volkswagen. On the contrary, Suzuki executives accused the German partner of placing pressure on their company and concealing information about new technologies. As a result, Suzuki announced the termination of cooperation with Volkswagen in 2011 (Popov, 2015).

Trends in the cooperative competition of high-technology companies include the transition from simple to more complex and diverse forms of partnership. At the initial stage of their development, cooperation was concerned with rather narrow areas, for example, the exchange of information. The organizational form of cooperation was often a joint venture. Now, such a form becomes less and less popular in the sphere of high technology due to high organizational costs, relative inflexibility and instability (Hagedoorn, 2002). More advanced forms become widely used, including innovation clusters. They represent a complex combination of cooperation and competition that complement each other. The specific of innovation technology clusters is an internal competitive environment and strong competitive positions in the high-tech market. They reassign the current investment policy to new costly types of technology. Venture investments are significant in their development (Henderson, 2007). One of such clusters is the Swiss Life Sciences. Formed on the biological market and embracing innovative companies, this cluster unites about 1,500 chemical-pharmacological and medical enterprises. The cluster is characterized by competition and cooperation. Task-oriented cooperation creates a higher added value for all market participants, even direct competitors that develop new medical technologies. This leads to an increase in their competitive advantages (Life Sciences v Shveitsarii, 2018).

The development of technology is also facilitated by such a form of cooperation as open innovation. In this regard, a company working on new technologies and innovative products relies not only on its departments involved in high technology but also actively utilizes ideas and experts from the outside. In other words, a company does not ignore external knowledge but rather tries to use it in its own activities. By attracting appropriate structures and external specialists with new ideas, a company can also improve its product (Chesbro, 2007).

While collaborating with competitors, companies consider not only positive but also negative aspects of this process. Risks are among such negative consequences. They are

associated with failure to comply with the agreements reached, loss of customers due to the competitor's activity, disclosure of know-how and other similar situations. Thus, there is a tendency to minimize the risks of cooperative competition among high-technology companies. Risk factors in combination with other negative effects undermine trusting relationships and affect the duration of cooperation. However, it is impossible to completely avoid risks since potential profits are also connected to risk situations. The sphere of high technology is a high-risk business. In this regard, companies forming a partnership should focus their joint actions at risk management. This mechanism comprises certain tools. In particular, there is risk distribution among all companies, which increases their responsibility for the results of cooperation. Another effective tool is a direct impact on risks. This refers to information about a potential partner, forecasting joint activities, careful selection of personnel, etc. Nowadays, marketing techniques in combination with insurance are gaining much popularity for risk mitigation.

Considering the current state and direction of cooperative development among competing high-technology companies, we should pay attention to a shift to priority areas of the high-tech market. Companies strive to be the key players in new segments of this market if not its leaders. At the same time, the rate of development of high technologies accelerates the process of renewing other types of technologies. The Internet industry, digital technologies, plasma systems, alternative energetics, robotics and other spheres assume much importance. The leading companies choose those areas, in which cooperation brings the greatest effect and determine the focal point of investment policy. Samsung has been investing in the development of new activities and the expansion of strategic cooperation with other companies since 2012. Experienced employees are involved in developing such areas as artificial intelligence, Digital Health, the Internet of things and cloud technologies. Samsung Strategy and Innovation Center NEXT collaborates with innovators to realize their ideas into products (Samsung Newsroom, 2017). Nanotechnology is one of the most promising areas. Its scientific discoveries provide high results and can be used in various fields of economic activity. For example, HEVĒ (a joint venture of Renova Group of Companies and RUSNANO) represents a high-tech segment of solar energy that replaces traditional energetics (Ivanova, Viktorova, 2013).

To consider all the current trends in the cooperation of competing high-technology companies, it is necessary to use a certain interaction algorithm. We recommend the following sequence of actions.

First, the identification of potential competing partners with whom to collaborate. Based on the analysis of the so-called "field of competition", it is necessary to determine spheres of intersecting interests. The main criterion is mutually beneficial relationships.

Second, the development of business proposals and the assessment of the benefits brought by joint activities. In this case, the following conditions should be taken into account: the voluntary restriction of economic interests of each market participant to achieve common goals, the need to coordinate their activities, mutual efforts and interdependence.

Third, the development of the organizational and economic mechanism of cooperation, including a number of components. First of all, it is the coordination of all goals. They can be short-term and associated with the joint implementation of a large-scale project. Otherwise, partners can plan long-term partnership and determine common strategic goals. It is crucial to define the areas where participants will cooperate and where they will still compete. Cooperative competition among high-technology companies shows that one of the most effective methods is a hybrid strategy combining features of both the competitive and cooperative strategy.

The necessary element of the cooperation mechanism is coordination. This process includes such coordinated actions as procedural coordination, market coordination, technological and professional standardization, etc.

Fourth, the transition from agreements to their practical implementation. Most problems arise at this stage of cooperation. In many respects, these processes depend on the management of business partners that regulate and direct all actions. The expansion of the existing functions requires the development of trusting relationships and coherence.

Fifth, the definition of the results achieved. At this stage, participants determine a degree of the intended and actual conformity. The above-mentioned results can be minimum and maximum. In the first case, competing partners maintain their competitive position and do not allow competitors to surpass themselves. In the second case, cooperation lets them get additional benefits and change the balance of power in their favor (Korolev, 2019).

Discussion

Issues of competitive cooperation among high-technology companies are actively discussed in various scientific works. At the same time, the practical implementation of this process is often ahead of its study. We can say that this research topic is still forming. Theoretical works discuss both substantive and applied aspects of this phenomenon. In

some cases, scholars provide the extensive interpretation of such competing partnerships. According to K. Polenske (2004), cooperation includes three rather than two concepts: competition, collaboration and cooperation. Their relationship can be demonstrated in the form of a triangle (Figure 1).

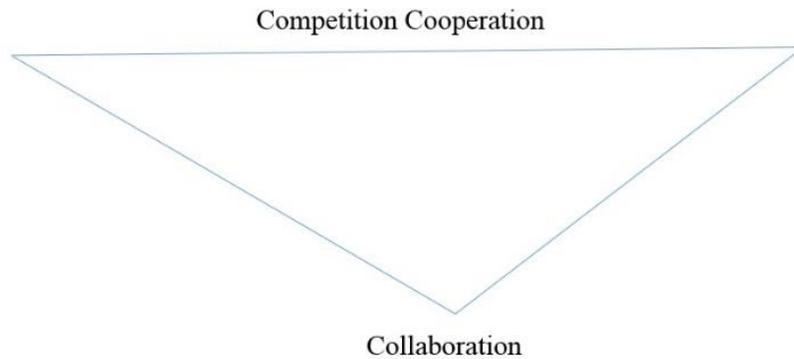


Figure 1 Triangle of cooperation

When describing general features of cooperation and collaboration, K. Polenske (2004) highlights their differences. In our opinion, this interpretation of cooperative competition cannot be considered justified. Collaboration is a fairly broad process, including cooperation among other things. These two concepts are correlated as general and specific. Their simultaneous use is tautological and confusing since it is difficult to draw a line separating collaboration from cooperation.

In modern research, attention is drawn to the fact that the development of cooperation among competing companies includes many different areas that let take advantage of the interdependence of market participants (companies, governments, suppliers, customers, scientists and partners) (Dagnino, 2009). Crowdsourcing becomes an integral component, i.e. it involves a certain circle of people into the development of innovations to use their creative abilities, knowledge and experience (Howe, 2009). Now high-technology companies focus on incremental innovation implying a qualitative change and improvement of the existing technologies (Barney, Della Corte, 2017). Creators of breakthrough technologies manage to defeat industry leaders. In particular, it refers to digital technology. The book "Digital Vortex" published by CISCO's employees (one of the world leaders in high technology) J. Loucks, J. Macaulay, A. Noronha and M. Wade notes that according to forecasts four out of nine leaders in various industries will be driven out by breakthrough companies over the next five years. Not all companies consider it necessary to cooperate in the sphere of digital technologies and do not regard them as something significant. The above-mentioned authors conducted their own research and found out that only 25% of company executives are ready to rebuild their

companies in conformity with new competition rules (Digital Vortex..., 2016). Digital corporate culture expands the company's advantages and capabilities (Kanter, 2001).

Conclusion

The study we have conducted allows us to draw a number of conclusions. A new model of competition among high-technology companies is the result of trends in the modern economy. The analysis of the current trends suggests that cooperative competition has high potential but proceeds with considerable difficulties. Overcoming such barriers mostly depends on how the mechanism of cooperation was developed and how it is implemented.

Ambiguous cooperation trends among competing companies make management systems of particular importance. They should keep the balance of parties' interests and consider their readiness to mutual concessions in case of disagreement. The necessary corrective actions arising in the course of such relationships aim at guiding them in the interests of all participants.

The analysis of competitive cooperation among companies continues our research in this area (Korolev et al., 2018). In the framework of this article, we have limited ourselves to analyzing only the most important trends in cooperation among competing companies. We have also examined their effect in one particular sphere (high technology), without expanding the current research to other areas. The further study of these trends will improve forms of cooperation among competing companies.

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