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INTERPLAY BETWEEN COOPETITION AND INNOVATION: SYSTEMATIC LITERATURE REVIEW[1]

Introduction

The phenomena of coopetition and innovation have become increasingly popular in recent years. Traditionally, both concepts have been analyzed separately. However, scholars have recognized the importance of interplay between coopetition and innovation and it seems that it has attracted the considerable attention of researcher as well as managers [Dorn et al., 2016; Klimas, Czakon, 2018]. Nevertheless, as far as the author is concerned, the concept-related literature has not been revised in a systematic way so far. Therefore, the systematic literature review of studies on the relationship between coopetition and innovation seems to be a valuable contribution in the field of management science. Thus, the paper aims to present results of the systematic literature review on coopetition and innovation as well as to identify key research problems and potential directions further studies. Author's intention is to provide the comprehensive understanding of interplay between coopetition and innovation.

The paper is organized as follows: section one presents definitions of coopetition and innovation as well as links two concepts. Section two introduces the research methods and section three presents the result of the systematic literature review.

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1. The concept of coopetition and innovation

Coopetition is a far-reaching phenomenon in the management literature. Bengtsson and Kock [1999] defined coopetition as simultaneous cooperation and competition with the same partners at the same time [Luo, 2007]. However, in a broader sense it can also include "collaboration at one time and competition at a different time with the same competitor or collaboration with some competitors to develop strengths to compete against other competitors" [Gnyawali, Part, 2009: 311]. Thus, coopetition combines two types of relationships that usually involve strongly opposing logics [Dorn et al., 2016]. Cooperation is a non-zero-sum game aimed to create and share value collectively, whereas competition is a zero-sum game meant to capture all benefits with opportunistic behaviors [Das, Teng, 2000]. Coopetition can be seen as a paradox, but it is a unique strategy that capitalizes on the benefits of cooperation with rivals. Firms cooperate in order to increase the size of the business pie and compete to divide it [Brandenburger, Nalebuff, 1996]. Coopetition is a new type of strategy showing that the pure competition in not enough to succeed on the market and cooperation with rivals is a must.

Another far-reaching phenomenon in the management literature is an innovation. In general, innovation is defined as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" [Rogers, 1995: 11]. Roger's definition pertains to the new outcome of the activity, but the concept of innovation can also signify the activity itself. The concept of innovation can also refer to a new or improved product and business process that are significantly different from the previous ones. Product innovation is a new or improved good or service that has been launched on the market, while business process innovation is a new or improved business process for one or more business functions that has been implemented into firm [OECD/Eurostat, 2018].

The management literature clearly distinguishes innovativeness from innovation. The first one refers to the organizational competence (however, innovativeness found substantial resonance on all levels of analysis, such as individual, team, industry, network, country) associated with introducing new products and processes [Hult et al., 2004]. Hence, innovativeness is seen as an organizational trait enhancing innovation performance in terms of innovation output [Shoham et al., 2012]. Thus, innovation is a result of organizational innovativeness.

Innovation processes require knowledge creation and knowledge sharing, especially from the external sources. The literature points out that competitors are important partners therein [Cruz-González et al., 2014], because they face similar challenges and they have a similar knowledge base, capabilities and strategies [Hamel et al., 1989]. Thus, cooperation with competitors helps firms to access, acquire and exploit value

knowledge for innovation and it facilitates learning that is positively associated with innovation [Bouncken et al., 2015]. Additionally, coopetition is important in high-tech industries that are knowledge-intensive, dynamic and complex [Gnyawali, Park, 2009] suggesting that firms operating under innovation pressure and technological advancement have higher willingness to cooperate with rivals as it can increase the innovation performance [Klimas, Czakon, 2018]. Hence, innovation-related antecedents on organizational and industry levels can promote coopetition and cooperation with competitors can positively impact the innovation performance. By the mean of the systematic literature review the study attempts to provide better understanding of the interplay between coopetition and innovation.

2. Research method

The systematic literature review was applied to meet the aim of the paper, i.e., to provide the comprehensive understating of interplay between coopetition and innovation and to identify key research problems and potential further studies. Fink [2005: 3] defined it as "a systematic, explicit, and reproducible method for identifying the existing body of completed and recorded work produced by researchers, scholars and practitioners". The systematic literature review is aimed at identifying and assessing relevant studies and analyzing their contents [Czakon, 2015]. It is crucial in advancing knowledge about modern organizations. The systematic literature review undercovers areas where researches are needed, facilitates the theory development, and provides closing conclusions in mature research fields.

The study follows the four-stage research process [Czakon, 2015]. First of all, the research field, and the research aim were identified. Secondly, key publications in the research field were selected, followed by the reduction of duplicated bibliometric records. Thirdly, the analysis of abstracts and full texts was applied in order to identify key contributions and further researches. Fourthly, the research report was written.

In order to select the most relevant studies on coopetition and innovation, papers including phrases "coopetiton", "co-opetition" and "innovat*" in their topic were retrieved from the Web of Science database. The sampling process was conducted on 10 February 2019. The search was limited to a paper topic to identify relevant publications. Additionally, the search was reduced to articles, books and editorials written in English (the research shows bias toward English which is the language of most papers) in social sciences research domain (research area: business economics, operations research management science, social science other topics), while other papers were excluded from the research. The research process revealed 183 papers in response to the search with the words: "coopetition" and "innovat*" and 120 papers in response to the search with the words: "co-opetition" and "innovat*". The research

was followed by the reduction of duplicated papers and as a result 219 publications were identified. The analysis of abstracts of publications allowed to limit the sample to 71 papers; author excluded units, which are not focused solely on coopetition and innovation. Table 1 presents the summary of the research process.

Table 1. Number of papers on coopetition and innovation – the research process

	Search for *"coopetition"* and *"innovat*"*	Search for *"coopetition"* and *"innovat*"*
Initial number of papers on coopetition and innovation	248	166
Number of papers including only articles, books and editorials	210	137
Number of papers written in English	203	132
Number of papers in the social sciences research domain	190	125
Number of papers in the business economics, operations research management science, social science and other topics	183	120
Number of papers after the reduction of duplicated records	219	
Number of papers focused solely on coopetition and innovation	71	

Source: own study based on records from the Web of Science database.

3. Results of the systematic literature review

The research sample consists of 71 papers and the majority of research productivity within the sample has been observed in recent years. Most of the papers have been published since 2009. It is not surprising as the concept of coopetition is a new phenomenon compared for example to innovation which has been studied for many years. Conducted analysis shows that the research on interplay between coopetition and innovation has been emerging as an interesting research field [Dorn et al., 2016; Klimas, Czakon, 2018].

The research allows to identify key contributors in the field of interplay between coopetition and innovation, they are: Gnyawali and Park as well as Ritala and Hurmelinna-Laukkanen. Publications of those authors are among the highest citied papers in the Web of Science database (Table 2) and they bring valuable insights in the analyzed research field.

The research reveals two streams of studies. The first one, more dominant accounting to 60 papers, tries to answer the question whether coopetition impacts innovation, while most of studies refer to innovation output. The second one, less dominant with 15 publications, investigates how innovation-related factors influence coopetitive behaviors. Here, innovation-related factors on industry and organizational level are seen as determinants of coopetition, while factors from an external and a competitive

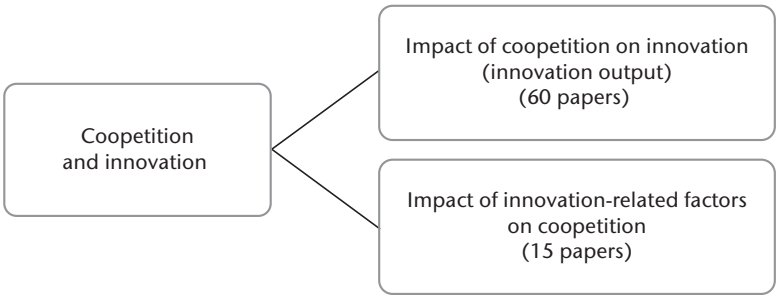
environment are analyzed more often. Figure 1 presents two research streams on coopetition and innovation.

Table 2. The highest citied papers in the Web of Science database

Author(s)	Title	Total times citied
D.R. Gnyawali B.-J. Park	Co-opetition between giants: Collaboration with competitors for technological innovation	241
D.R. Gnyawali B.-J. Park	Co-opetition and technological innovation in small and medium-sized enterprises: A multilevel conceptual model	207
P. Ritala P. Hurmelinna-Laukkanen	What's in It for Me? Creating and appropriating value in innovation-related coopetition	161
C. Quintana-García C.A. Benavides-Velasco	Cooperation, competition, and innovative capability: A panel data of European dedicated biotechnology firms	149
Y. Luo	A coopetition perspective of global competition	135
P. Ritala P. Hurmelinna-Laukkanen	Incremental and radical innovation in coopetition — the role of absorptive capacity and appropriability	121
A.-L. Mention	Co-operation and co-opetition as open innovation practices in the service sector: Which influence on innovation novelty?	120
P. Ritala	Coopetition strategy – when is it successful? Empirical evidence on innovation and market performance	111
P.E. Eriksson M. Westerberg	Effects of cooperative procurement procedures on construction project performance: A conceptual framework	105
K. Hutter, J. Hautz, J. Füller, J. Mueller, K. Matzler	Communitition: The tension between competition and collaboration in community-based design contests	97

Source: own study based on records from the Web of Science database.

Figure 1. Research streams on coopetition and innovation



Number of papers (75) exceeds the number of papers elaborated in Table 1, because four papers are accounted to both research streams.

Source: own study based on records from the Web of Science database.

Most of studies focus on the impact of coopetition on innovation, while studies on the relationship between coopetition and organizational innovativeness are scant [Shoham et al., 2012; Klimas, Czakon, 2018]. However, limited studies show that organizational innovativeness positively affects coopetition between direct and indirect rivals [Klimas, Czakon, 2018]. Nevertheless, most of studies refer mainly to relationship between coopetition and innovation performance or more narrowly to innovation output. Park et al. [2014] reported that competition and cooperation intensities have non-monotonic positive relationship on innovation performance, while balanced coopetition (i.e., moderately high competition and high cooperation) has positive effect on it. Researchers show that coopetition impacts technological innovations [Gnyawali, Park, 2011], product innovations [Hurmelinna-Laukkanen, Ritala, 2010; Bouncken et al., 2016; Estrada et al., 2016; Bouncken et al., 2018], business model innovations [Rusko, 2015] and to a certain degree innovation novelty [Ritala, Hurmelinna-Laukkanen, 2013; Bouncken et al., 2018].

The systematic literature review provides ambiguous answers to the question how coopetition impacts innovation showing that it may either promote, inhibit or be neutral to innovation output in terms of number of innovation and their novelty [Mention, 2011; Ritala, 2012; Ritala, Hurmelinna-Laukkanen, 2013; Klimas, Czakon, 2018]. Literature describes coopetition as a rewarding, but also a potentially risky relationship [Ritala, Hurmelinna-Laukkanen, 2013]. It can be associated with numerous positive effects in terms of innovation output, but also the risk of unintended knowledge transfer and spillovers. It may be argued that sharing, learning and protection of knowledge within the coopetition are recognized as key determinants of possible benefits and hazards [Bouncken et al., 2016].

The relationship between coopetition and innovation has been investigated along with the moderating effect of different variables, e.g., a model of coopetition and a coopetition experience [Park et al., 2014]; a stage in the new product development process on which coopetition is implemented [Bouncken et al., 2018]; an alliance governance [Bouncken et al., 2016]; an innovative firm's technological capability [Wu, 2014]; internal knowledge sharing mechanisms and formal knowledge protection mechanisms [Estrada et al., 2016]; an absorptive capacity and an appropriability regime [Ritala, Hurmelinna-Laukkanen, 2013] and a type of innovation project [Fernández et al., 2018]. Success of innovation projects in coopetition can be explained by the capability to match three variables: project knowledge attributes, a project governance structure, and a project partner selection [Cassiman et al., 2009]. Hurmelinna-Laukkanen and Ritala [2010] pointed out that the type of innovation, here goods and services innovations, may be also important as in the case of the first one knowledge management may be more challenging. Some studies also provide evidences that the relationship between coopetition and innovation is not linear, but it has an inverted U-shaped relationship [Wu, 2014].

Considering that the coopetition is popular in high-tech industries [Gnyawali, Park, 2009] some authors point out to industry-specific characteristics in the relationship between coopetition and innovation. Ritala [2012] indicated that the high market uncertainty as well as the low competition intensity positively impact the relationship between coopetition and innovation.

The second stream of research that has emerged from the systematic literature review focuses on the impact of innovation-related factors on coopetition. Industry and technological challenges and opportunities [Gnyawali, Park, 2011], especially increasing R&D costs, shrinking product life cycles and convergence of technologies are seen as the main external drivers of coopetition [Gnyawali, Park, 2009]. Von Hippel [1987] pointed out that the coopetition is more likely when combining multiple knowledge bases provides more advantages than solo knowledge does. The likelihood of coopetition is higher when there is a need for a technological progress. Innovation pressure exerted by the external environment and technological advancement of an industry increases willingness to cooperate with competitor [Klimas, Czakon, 2018], while lack of the innovation pressure does not promote coopetitive behaviors [Beckeman et al., 2013]. Thus, high-tech industries seem to face unique challenges and opportunities and therefore are more conductive to coopetition [Gnyawali, Park, 2011].

Industry innovation-related factors are not the only determinants of coopetition. Literature revels other external, relationship-specific and internal antecedents of coopetition [Dorn et al., 2016]. The environmental pressure and the dyadic factors between potential partners may not be enough to encourage firms to cooperate with competitors. They may facilitate the coopetition, but willingness and capabilities to enter coopetition are crucial. One of the firm-level coopetition antecedents is an organizational innovativeness. Klimas and Czakon [2018] showed that direct and indirect coopetition are depended on innovativeness. Following the study of Pallas et al. [2013] they reported that an openness and an encouragement to innovate is positively related with the indirect coopetition, while a strategic innovative promotes the direct coopetition. Thus, innovation-related factors on industry and organizational level are important determinants of cooperation with rivals.

Conclusion

The systematic literature review allowed to identify two research streams on the interplay between coopetition and innovation. The first one focuses on the impact of coopetition on innovation, especially in the terms of innovation output. Prior empirical studies provide ambiguous results showing that the coopetition may either foster, hamper or be neutral to innovation. Many studies have tried to answer the question

about positive and negative role of coopetition for innovation output, however results bring more questions than answers. Coopetition for innovation involves challenges and tensions and the existing literature has brought up new insights, issues, and research opportunities. One relatively under-researched topic relates to coopetition and organizational innovativeness. Thus, more studies accounted to this research stream should be conducted in order to provide more comprehensive understating of paradoxical nature of the interplay between coopetition and innovation.

The second research stream focuses on the impact of innovation-related factors on the coopetition. The identified studies show that innovation-related factors in the external environment as well as an organizational innovativeness itself promote cooperation with competitors. However, there are not many studies on determinants of coopetition, especially focusing on innovation-related factors. Most of them are dated to the first period of research on the interplay between coopetition and innovation. It is surprising as the call for more research on determinates of coopetition has existed in the literature for some time [Gnyawali, Park, 2009; Dorn et al., 2016]. Thus, researchers should answer this call and more systematically examine the problem.

The literature review reveals also that the problem of coopetition and innovation has been mainly analyzed on the interfirm level. Studies on individual, intrafirm and network levels are rather scant. Researches on these levels have been emerging, but still they are under-researched topics. Additionally, a lot of studies have focused on one particular industry (with domination of high-tech industries) and country. Taking into consideration that both coopetition and innovation are acknowledged as industry- [Klimas, Czakon, 2018] and country-related concepts, transferring results from one research to another is not possible. Thus, more studies covering different industries and countries, especially including industrial and international comparison, are needed.

Although the paper has reached its aim, there are some unavoidable limitations. Firstly, the method is limited to the systematic literature review omitting the requirement of triangulation of research methods. Secondly, publications included in the sample were drawn from the Web of Science database, which includes the most valuable papers that accounted only to small part of the whole body of knowledge on interplay between coopetition and innovation worldwide. Additionally, the Web of Science database is biased towards papers written in English, while neglecting valuable publications in other languages. Thirdly, the analyses of abstracts and full texts are flawed with a high level of subjectivity. Therefore, the aforementioned limitations should be reduced in further studies.

References

[1] Beckeman M., Bourlakis M., Olsson A. [2013], The role of manufacturers in food innovations in Sweden, *British Food Journal* 115(7): 953–974.

[2] Bengtsson M., Kock S. [1999], Cooperation and competition in relationships between competitors in business networks, *Journal of Business & Industrial Marketing* 14(3): 178–194.

[3] Bouncken R.B., Clauß Th., Fredrich V. [2016], Product innovation through coopetition in alliances: Singular or plural governance? *Industrial Marketing Management* 53: 77–90.

[4] Bouncken R.B., Fredrich V., Ritala P., Kraus S. [2018], Coopetition in new product development alliances: Advantages and tensions for incremental and radical innovation, *British Journal of Management* 29(3): 391–410.

[5] Bouncken R.B., Gast J., Kraus S., Bogers M. [2015], Coopetition: A systematic review, synthesis, and future research directions, *Review of Managerial Science* 9(3): 577–601.

[6] Brandenburger A.M., Nalebuff B.J. [1996], *Co-opetition*, Doubleday, New York.

[7] Cassiman B., Di Guardo M.Ch., Valentini G. [2009], Organising R&D projects to profit from innovation: Insights from co-opetition, *Long Range Planning* 42(2): 216–233

[8] Cruz-González J., López-Sáez P., Navas-López J.E., Delgado-Verde M. [2014], Directions of external knowledge search: Investigating their different impact on firm performance in high-technology industries, *Journal of Knowledge Management* 18(5): 847–866.

[9] Czakon W. [2015], Metodyka systematycznego przeglądu literatury, in: Czakon W. (ed.), *Podstawy metodologii badań w naukach o zarządzaniu*, Oficyna a Wolter Kluwer business, Warsaw.

[10] Das T.K., Teng B.S. [2000], A resource-based theory of strategic alliances, *Journal of Management* 26(1): 31–61.

[11] Dorn S., Schweiger B., Albers S. [2016], Levels, phases and themes of coopetition: A systematic literature review and research agenda, *European Management Journal* 34(5): 484–500.

[12] Estrada I., Faems D., de Faria P. [2016], Coopetition and product innovation performance: The role of internal knowledge sharing mechanisms and formal knowledge protection mechanisms, *Industrial Marketing Management* 53: 56–65.

[13] Fernández A., Le Roy F., Chiambaretto P. [2018], Implementing the right project structure to achieve coopetitive innovation projects, *Long Range Planning* 51(2): 384–405.

[14] Fink A. [2005], *Conducting research literature review: From the internet to paper*, Sage Publication, Thousand Oaks.

[15] Gnyawali D.R., Part B.-J. [2009], Co-opetition and technological innovation in small and medium-sized enterprises: A multilevel conceptual model, *Journal of Small Business Management* 47(3): 308–330.

[16] Gnyawali D.R., Part B.-J. [2011], Co-opetition between giants: Collaboration with competitors for technological innovation, *Research Policy* 40(5): 650–663.

[17] Hamel G., Doz Y.L., Prahalad C.K. [1989], Collaborate with your competitors—and win, *Harvard Business Review* 67: 133–139.

[18] Hult G.T.M., Hurley R.F., Knight G.A. [2004], Innovativeness: Its antecedents and impact on business performance, *Industrial Marketing Management* 33(5): 429–438.

[19] Hurmelinna-Laukkanen P., Ritala P. [2010], Protection for profiting from collaborative service innovation, *Journal of Service Management* 21(1): 6–24.

[20] Klimas P., Czakon W. [2018], Organizational innovativeness and coopetition: A study of video game developers, *Review of Managerial Science* 12(2): 469–497.

[21] Luo Y. [2007], A coopetition perspective of global competition, *Journal of World Business* 42(2): 129–144.

[22] Mention A.-L. [2011], Co-operation and co-opetition as open innovation practices in the service sector: Which influence on innovation novelty? *Technovation* 31(1): 44–53.

[23] OECD/Eurostat [2018], *Oslo Manual 2018: Guidelines for collecting, reporting and using data on innovation, 4th edition. The measurement of scientific, technological and innovation activities*, OECD Publishing, Paris/Eurostat, Luxembourg.

[24] Pallas F., Böckermann F., Goetz O., Tecklenburg K. [2013], Investigating organisational innovativeness: Developing a multidimensional formative measure, *International Journal of Innovation Management* 17(4).

[25] Park B.J.R., Srivastavab M.K., Gnyawali D.R. [2014], Walking the tight rope of coopetition: Impact of competition and cooperation intensities and balance on firm innovation performance, *Industrial Marketing Management* 43(2): 210–221.

[26] Ritala P. [2012], Coopetition strategy – when is it successful? Empirical evidence on innovation and market performance, *British Journal of Management* 23(3): 307–324.

[27] Ritala P., Hurmelinna-Laukkanen P. [2013], Incremental and radical innovation in coopetition — the role of absorptive capacity and appropriability, *Journal of Product Innovation Management* 30(1): 154–169.

[28] Rogers E.M. [1995], *Diffusion of innovations*, Free Press, New York.

[29] Rusko R. [2015], New business model: Intentional and unintentional degree one and degree two consumer coopetition in a branch of the Finnish game industry, *International Journal of Business Environment* 7(3): 219–241.

[30] Shoham A., Vigoda-Gadot E., Ruvio A., Schwabsky N. [2012], Testing an organizational innovativeness integrative model across cultures, *Journal of Engineering and Technology Management* 29(2):226–240.

[31] Von Hippel E. [1987], Cooperation between rivals: Informal know-how trading, *Research Policy* 16(6): 291–302.

[32] Wu J. [2014], Cooperation with competitors and product innovation: Moderating effects of technological capability and alliances with universities, *Industrial Marketing Management* 43(2): 199–209.

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Abstract

The paper aims to present results of the systematic literature review on the interplay between coopetition and innovation as well as to identify key research problems and potential directions for further studies. Author's intention is to provide the comprehensive understanding of interplay between coopetition and innovation. Both phenomena are very often analyzed as separate concepts, but researchers have also combined them in studies. The study reveals two research streams on interplay between coopetition and innovation. The first one tries to answer the question how coopetition impacts performance of firms in terms of innovation output. Empirical studies show that cooperation with rivals may either foster, hamper or be neutral to innovation and different moderators may be identified. The second one sees innovation-related factors on organizational and industry levels as important determinants of the coopetition. Both research streams are worth exploring in the future. Researches on impact of coopetition on innovation output have brought more questions than answers, while studies on innovation-related determinates of coopetition are rather scant. Thus, the interplay between coopetition and innovation is an interesting area for the future research.

Keywords: coopetition, collaboration with rivals, innovation, open innovation

JEL classification codes: O31, O36

WZAJEMNE ODDZIAŁYWANIA MIĘDZY KOOPETYCJĄ A INNOWACJAMI: SYSTEMATYCZNY PRZEGLĄD LITERATURY

Streszczenie

Celem artykułu jest przedstawienie wyników systematycznego przeglądu literatury przedmiotu dotyczącego wzajemnych powiązań między koopetycją a innowacji oraz zidentyfikowanie najważniejszych problemów badawczych i przyszłych kierunków badania. Zamiarem autora jest zapewnienie kompleksowego zrozumienia wzajemnych zależności między koopetycją a innowacjami. Oba fenomeny są bardzo często analizowane jako odrębne koncepcje, ale naukowcy łączą je również w swoich badaniach. Przeprowadzone badanie pozwoliło zidentyfikować dwa obszary badawcze dotyczące współdziałania koopetycji i innowacji. Pierwszy z nich próbuje odpowiedzieć na pytanie, w jaki sposób koopetycja wpływa na wynik działalności innowacyjnej przedsiębiorstwa. Badania empiryczne pokazują, że współpraca z rywalami może sprzyjać, hamować lub być neutralna dla innowacji, przy czym relacja ta może być moderowana przez różne zmienne. Drugi obszar koncentruje się na organizacyjnych oraz branżowych czynnikach związanych z innowacjami, które postrzegane są jako determinanta koopetycji. Oba zidentyfikowane obszary badań warto badać w przyszłości. Badania wpływu koopetycji na wyniki procesu innowacyjnego przyniosły więcej pytań niż odpowiedzi, podczas gdy badania nad determinantami koopetycji związanymi z innowacjami są raczej rzadkie. Współdziałanie koopetycji i innowacji jest więc interesującym obszarem dalszych badań.

Słowa kluczowe: koopetycja, współpraca z konkurentami, innowacje, otwarte innowacje

Kody klasyfikacji JEL: O31, O36