

EDITED BY
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**INNOVATIVENESS
DETERMINANTS
OF NETWORK
ORGANISATIONS
IN THE KNOWLEDGE
ECONOMY**



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Reviewer

Krystyna Poznańska

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Chapter VI. Innovativeness determinants of network organisations

6.1. Introduction

Innovation is an important driving force of economic growth because it leads not only to the emergence of products and services but it also contributes to improvement of the quality and reduction of the prices¹ of goods and services. It is crucial to point out that the countries with a high level of innovativeness have higher levels of economic growth. Also enterprises implementing innovations obtain, in this way, a competitive advantage and increase the value of the company. Many factors, which may provide an opportunity for innovative activity or they may restrict it², affected the innovative behaviours of enterprises and thus their evaluation in terms of their entrepreneurship. Innovations are strongly connected with the knowledge economy. Created and implemented innovations are based on the current state of knowledge, in order not to lead to the stagnation of technological progress, the progress of knowledge is essential.

Modern innovative processes are closely related to knowledge and this relationship has a dual nature. Development of knowledge enables to create innovations, and they then become the basis and the source of new knowledge.

Today knowledge is like human capital, a key corporate asset and it determines its competitiveness. Acquisition and use of knowledge are activities in enterprises that have become not only elements of the strategy, but the foundation of innovativeness strategy or innovation management. Acquisition of knowledge in its various forms is a necessary step of influencing and innovativeness management in the enterprise. The skilful use and processing of knowledge in order it to be a fundament of growth of enterprises' competitiveness, is also very important.

¹ P. Romer, *Endogenous technical change*, "Journal of Political Economy" November 1990, vol. 7, no. 4, p. 71–103; B. Bosworth, S. Collins, *The empirics of growth: An update*, Brookings Institution and Georgetown University, 2003; N. Bloom, S. Van Reenen, *Patents, real options and firm performance*, "Economics Journal" November 2002, vol. 7, no. 4, p. 629–632.

² Szerzej: B. Bojewska, *Zarządzanie innowacjami jako źródło przedsiębiorczości małych i średnich przedsiębiorstw w Polsce*, OW SGH, Warsaw 2009.

The purpose of this chapter is to analyse a broad spectrum of innovative activity of Polish network organisations, to identify the sources and conditions conducive to the development and implementation of business innovation in network enterprises and an attempt to diagnose the impact of innovation on the functioning and development of network organisations.

The following research questions related to the innovativeness of network organisations in the empirical study were raised:

1. Why do network organisations create and implement innovations?
2. Are the network organisations innovative only through the implementation of new and improvement of existing products and technologies or through other type of improving actions?
3. Which types of network organisations have a higher innovative activity?
4. What sources of innovation dominate in network organisations?
5. What are the benefits of implementing innovations in network organisations?

Is the increase in income a really dominant factor around which the benefits of the use of innovation gather in network organisations or maybe are there more differentiated advantages perceived by the participants of the network, which make implementation of innovation an important and cost-effective factor?

Enterprises which are the network organisers and participants at the same time are the analysed population in the study. Respondents answered to the same questions in two ways: by referring to the company in which they work, or that they are the owners and the network in which the company operates. In practice, this meant that the respondents involved in the network organisation answered to the questions relating to the company and to the network, which the company coordinates or is a participant in it.

It is important to point out that the respondents should have accurate and detailed knowledge of their own business and they can provide specific and credible answers. Respondents answering to the questions about the network used their observations and assumptions how network operates in the context of its innovativeness. In the analysis of research problems, one focused on these results, which indicated significant relations and allowed to conduct inference. Therefore, the analyses with similar distributions of responses that do not identify neither significant differences nor draw conclusions were omitted.

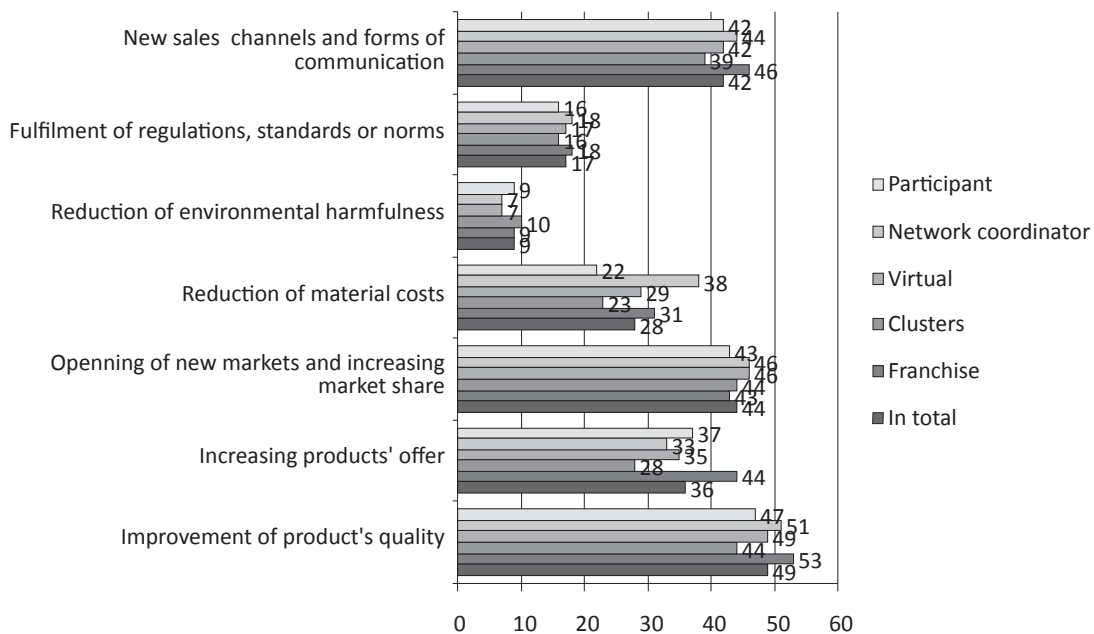
6.2. Premises for implementing innovation in network organisations

Referring to the first research question, an analysis of reasons why the enterprises and networks implement innovations was conducted. Respondents were asked about the reasons for the implementation of innovation in network organisations.

Analysing obtained results, it should be noted that companies introduced innovations in order to: improve the quality of products (49% of responses), open new markets or increase market share (44%) and create new sales channels and forms of communication (42%) (Fig. 6.1). It can be concluded from obtained results that the reduction of harmfulness to environment is not a significant motive for the surveyed companies (9%).

Some differences in terms of the relevance of these reasons for different types of network organisations are visible. Based on these data, one can conclude that the respondents of franchise companies often pointed to improvement of product's quality, increase of the range of products and new distribution channels. However, the opening of new markets or increasing market share was more essential for virtual organisations than to other organisations. There is a clear dominance, for all types of organisations, of improvement of products' quality and expansion of business by opening and exploring new markets, and also offering diversification through expansion of product's range.

Figure 6.1. Reasons for implementation of innovation in network organisations in %



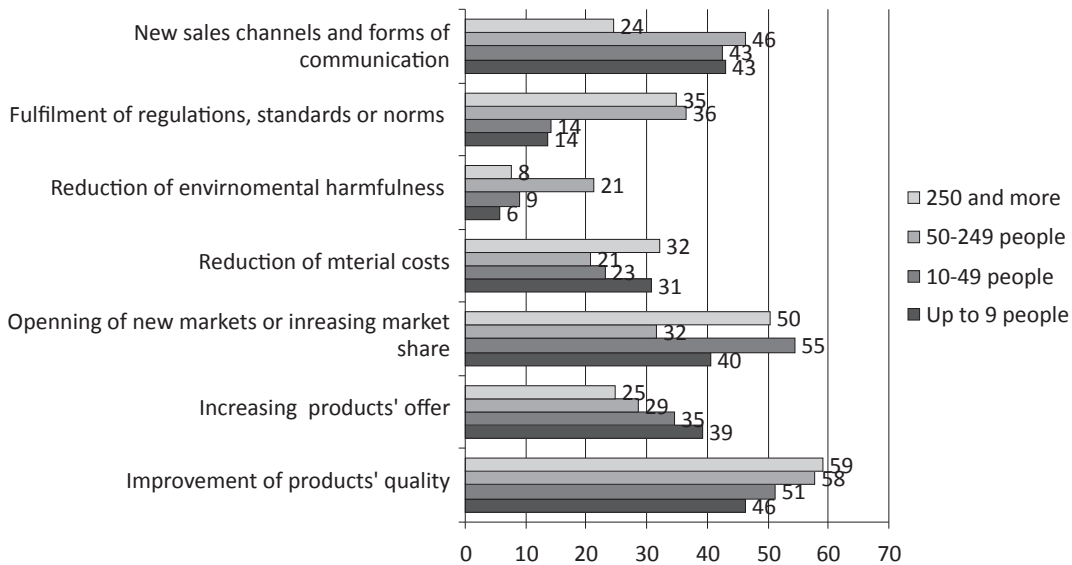
Source: Own research 2013, Department of Enterprise Management, Institute of Management SGH, N=363.

Slight differences in the significance of these reasons and the role of the network were also seen in this analysis. The following reasons, such as: improvement of the quality of products, opening new markets or increasing market share and reduction of material costs were more important for network coordinators. In contrast, network participants more often pointed to such factors as increasing the range of products. Network participants more often implemented innovations in order to expand the

range of products; the reduction of material costs has significantly higher importance for the creators than for the participants.

It is important to underline the relationships occurring between the implementation of innovation and the number of employees in the company. Examining the reasons for the implementation of innovation in network organisations, one can conclude that they are similar for micro and small enterprises. 46% of micro companies' representatives stressed the quality of products and 55% of small businesses indicated the opening of new markets or increasing market share (Fig. 6.2).

Figure 6.2. Number of employees and the reasons for the implementation of innovation in network organisations in %



Source: Same as 6.1.

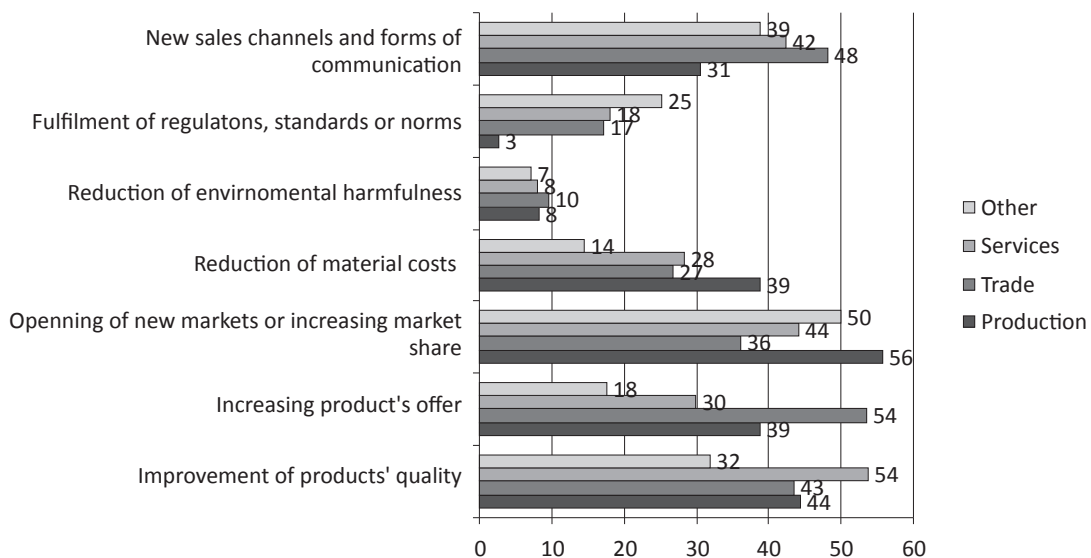
Medium-sized enterprises indicated the motive of improvement of the quality of products (58% of responses). The ecological context appeared in the respondent's answers from medium-sized enterprises. It is interesting that enterprises from this category declared the introduction of innovations in order to reduce harmfulness to the environment (21% of responses) and the fulfilment of the regulations, norms or standards (36% of responses). It should be noted that these are high indications compared to much lower indications of other types of enterprises.

The quality of products (59%) and the opening of new markets (50%) play the dominant role for large companies in terms of implementing innovations. It is worth mentioning that the fulfilment of regulations, norms or standards as the reason of implementing innovations was more important for medium and large enterprises than for micro and small businesses. These groups of companies introduced innovation

more often than others because of adaptation to standards and regulations, and compliance with standards of activities. An interesting fact is that for micro, small and large enterprises the least indications were obtained in terms of the reason of reducing the harmfulness to environment. In all three cases, the percentage of indications exceeded 10%. This could mean that the ecological approach was not a meaningful issue in development strategies and strategies of innovation management and implementation of innovation in Poland. New sales channels and forms of communication were less important for large enterprises compared to enterprises with different size. This may mean that these companies have already have a significant level of market expansion, built on the basis of a significant sales network, innovative methods and ways of acquiring customers, as well as use of modern communication channels so that further investments and activities in this direction are not a strategic direction.

It was also necessary to recognise the importance of particular motives of implementation of innovations and their diversity in terms of the type of business (Fig. 6.3).

Figure 6.3. Type of business and the reasons for the implementation of innovation in network organisations in %



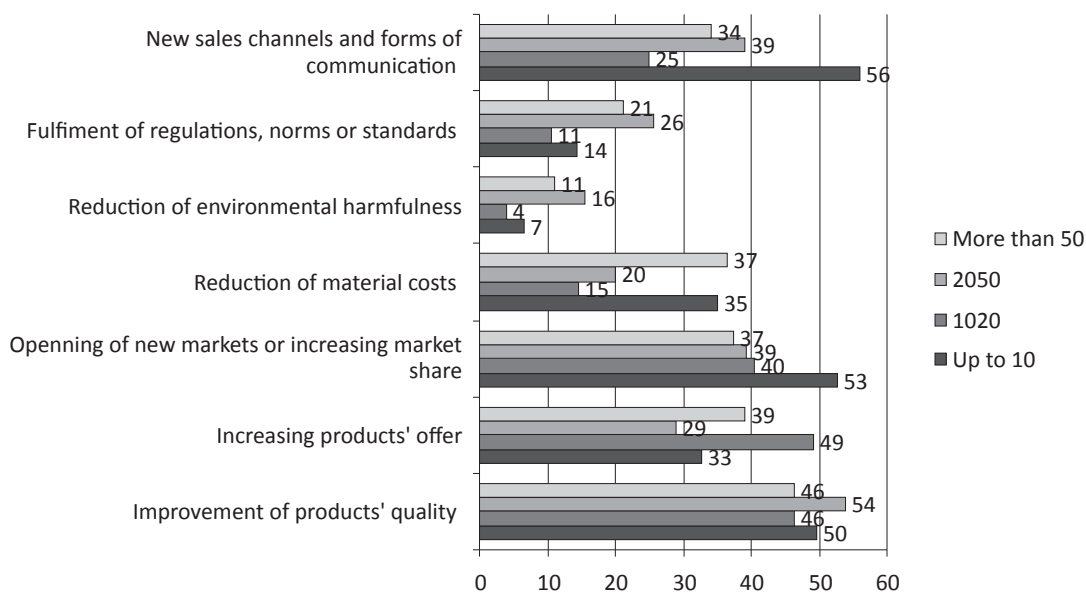
Source: Same as 6.1.

56% of manufacturing companies declared the opening of new markets or increasing market share. Increasing the range of products was the main reason for the introduction of innovative solutions for the trade sector (54%). In turn, service industry most frequently indicated the improvement of the product's quality (54%). The study also showed that the opening of new markets or increasing market share

was the most important for other sectors (administration, education, culture, local governments) – 50%.

Further analysis of the results showed the relationship between the size of the network to which the enterprise belongs and the reasons of implementing innovation (Fig. 6.4). The companies belonging to the small franchises frequently pointed to new sales channels (56%) and the opening of new markets or increasing market share (53%) as reasons of implementing innovative solutions. Improvement of the product's quality (50%) was essential for participants of the small networks – up to 10 participants – in order to increase the competitive position in the market.

Figure 6.4. Network's size and reasons for introduction of innovation in network organisations in %

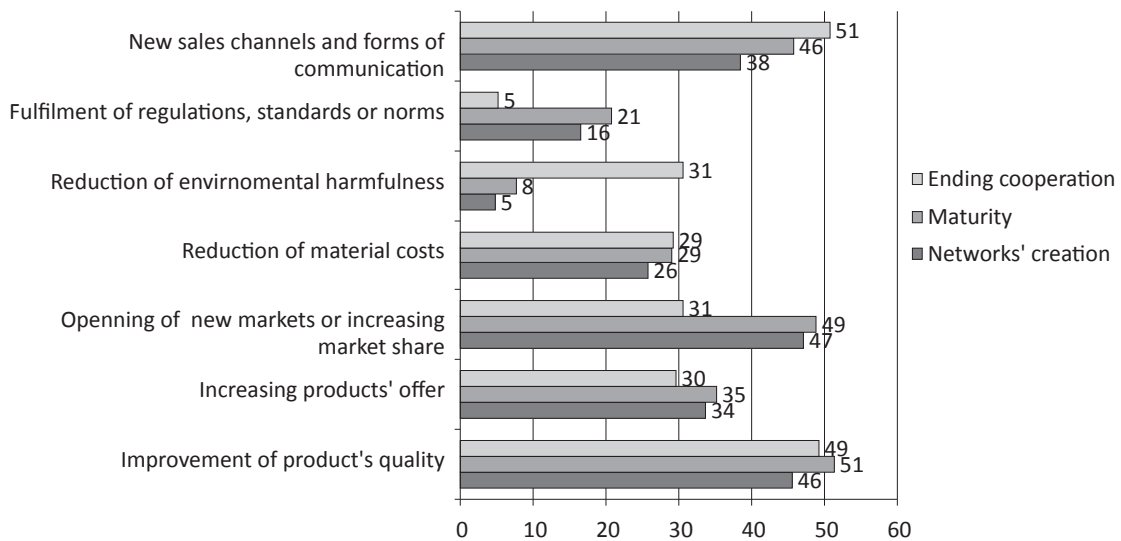


Source: Same as 6.1.

The product's quality and offer were significant for larger networks (46% and 49% of responses). What's more, enterprises belonging to the networks consisting of 20–50 participants pointed to the improvement of the quality of products (54%). 16% of respondents stressed the reduction of harmfulness to the environment. The quality and offer of products (46% and 39%) were the most meaningful factors to the large networks.

Dependence observation between the reasons of implementation of innovation and the stage of network's development to which the company belongs helped to draw the following conclusions (Fig. 6.5).

Figure 6.5. Reasons of implementation of innovation in network organisations depending on the stage of network's development in %



Source: Same as 6.1.

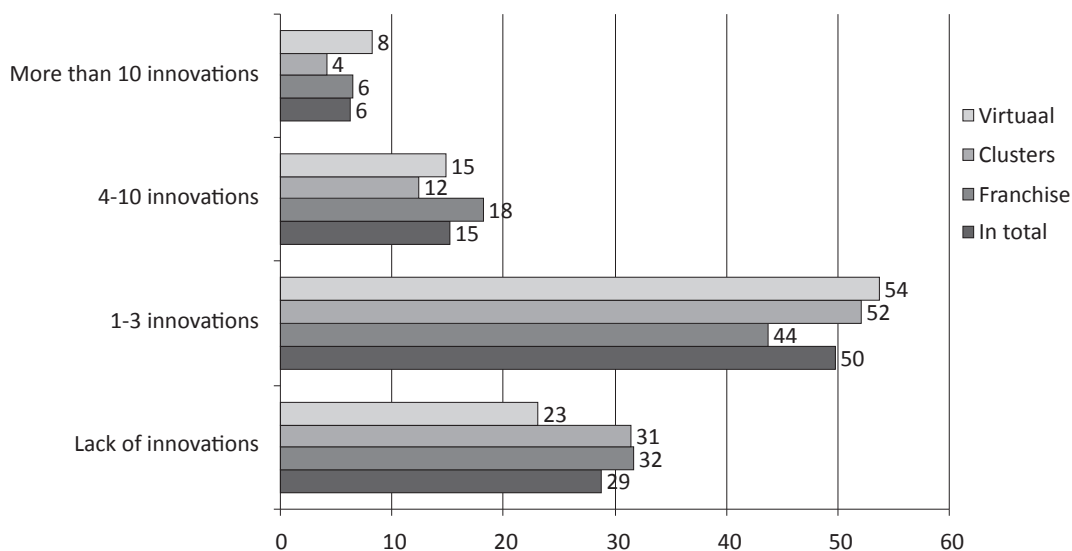
The quality of products (46%) and the opening of new markets or increasing market share (47%) were the main reasons for enterprises belonging to the networks of introduction of innovative solutions. On the other hand, improvement of the products' quality (51%), the opening of new markets or increasing market share (49%) and new sales channels (46%) were the most significant factors from the point of view of respondents from mature networks. In contrast, respondents from franchise companies, functioning in the networks which reward cooperation within the network, indicated primarily new sales channels and forms of communication (51%) and improving the quality of products (49%). Respondents from this group compared to others pointed to the reduction of harmfulness to the environment, as a reason of using the innovation.

6.3. Innovative activity of network organisations

The analysis of the innovative activity of the network organisation measured by the number of implemented innovations (Fig. 6.6) is the next stage of research. Based on these data, one can say that half from the total number of respondents, implemented from 1 to 3 innovations (50%) in the period 2007–2012. The study also showed that with the increase in the number of innovations, the number of respondents decreases. Only 21% of respondents declared the implementation of more than 4 innovations in network enterprises. The remaining 29% of network organisations

did not introduce any innovative solutions. This means that one third of companies do not use innovations in business activity and they do not achieve through this way a better competitive position in the market.

Figure 6.6. Innovative activities of network organisations in %



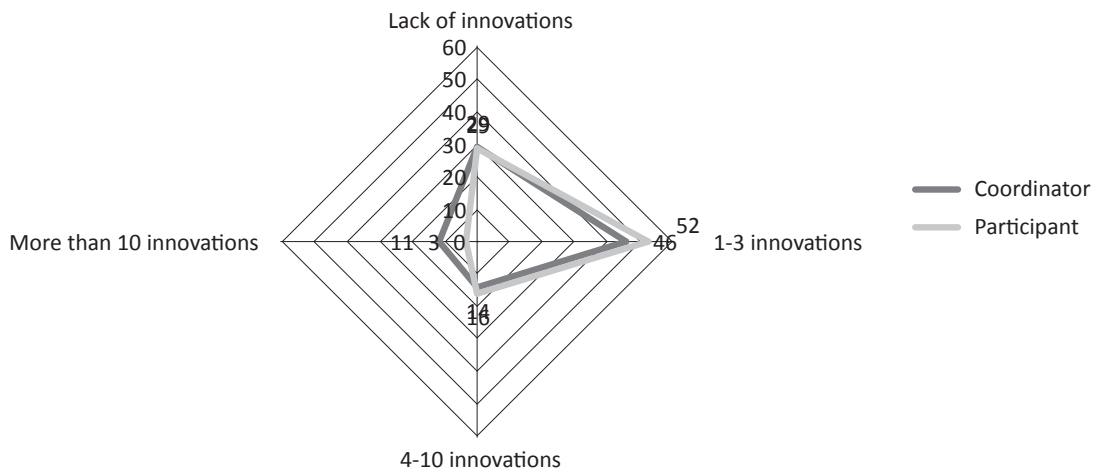
Source: Same as 6.1.

Analysing innovative activity depending on the type of network in which the company operates, one can distinguish virtual organisations, which most often implemented several (1–3 innovations) – 54%. Research showed that a frequent phenomenon was that no innovations were implemented in franchise companies and clusters (32% and 32%). This means that virtual organisations most frequently implement innovations in enterprises which belong to them. 18% of respondents from franchise companies pointed to 4–10 innovations' implementation in enterprises.

It is puzzling that in franchise companies, innovative solutions are more often introduced in the whole network than in a single enterprise. These innovative ideas are applicable in the franchise system and bring improvements for all network participants. Similar situation is in clusters, where network solutions have greater usage than innovations in single enterprises. In contrast, virtual organisations build weaker network ties than in franchises or in clusters. For this reason, innovations are more often implemented in enterprises belonging to virtual organisations.

The analysis of innovative activity is also important in network organisations, depending on the role in the network (Fig. 6.7).

Figure 6.7. Innovative activity of network organisations depending on the role in network in %

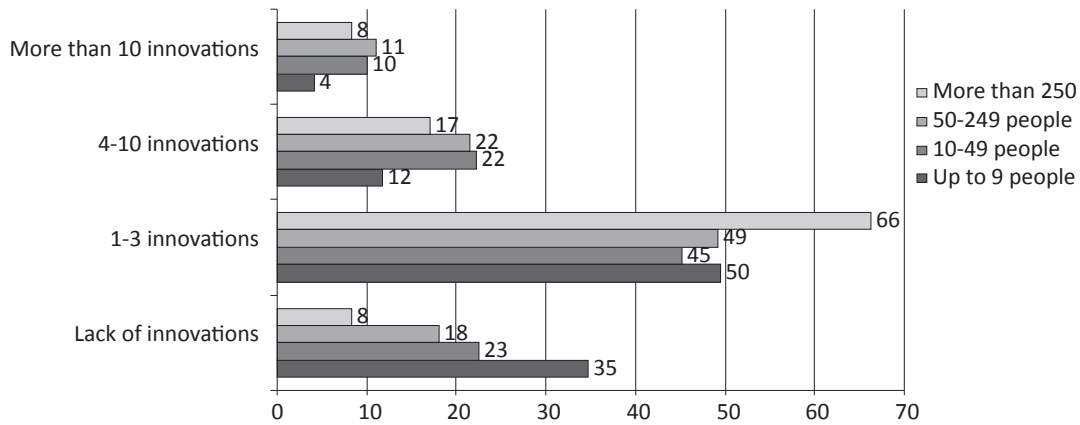


Source: Same as 6.1.

The distribution of responses shows that the same number of network enterprises, playing either the role of coordinator or network participant did not implement any innovations in the analysed period (29%). A statistically significant difference was in the category of introducing more than 10 innovations. It stems from the role which the coordinator plays in the network enterprise. 11% of network coordinators implemented more than 10 innovations in the analysed period in comparison to network participants (3%). Network coordinator implements innovations in his company but also in the network, which he organises. In franchises, innovations are tested in the franchisor's company (network's coordinator), and their diffusion into the franchise system comes after.

Dependences in the area of innovative activity taking place in terms of diversification of the number of employees are visible in the surveyed enterprises (Fig. 6.8). On the basis of the analysed results, one can conclude that no innovations were implemented in the micro enterprises (35% of responses). In contrast, only 8% of large companies didn't introduce any innovations in the analysed period. These enterprises, most often of all respondents, which represent other categories of companies, indicated the implementation of 1 to 3 innovations (66%). 40% of small enterprises usually declared implementing up to 3 innovations. Small enterprises declared the biggest problems with the implementation of innovations that are the least noticeable for large enterprises.

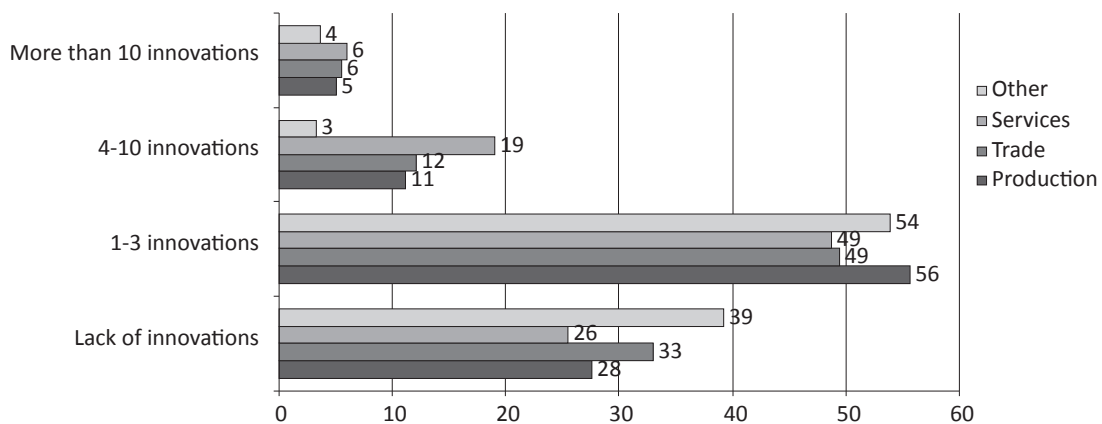
Figure 6.8. Innovative activity of network organisations depending on the number of employees in %



Source: Same as 6.1.

Dependences in the area of significance of innovative activity of network enterprises in terms of the type of business are noticed (Fig. 6.9). The distribution of responses shows that most manufacturing companies declare that they have implemented up to three innovations in the analysed period (56%). What's more, several innovations (4–10) were introduced in the service sector – 19%, which is the highest indication in this category. Analysing the results 39% of entities from such sectors as: administration, education, culture and local governments did not implement any innovations. This shows the trend of limiting growth and the increase of level of innovation in public institutions and education sector, where funding and understanding the need for innovation management is lowest.

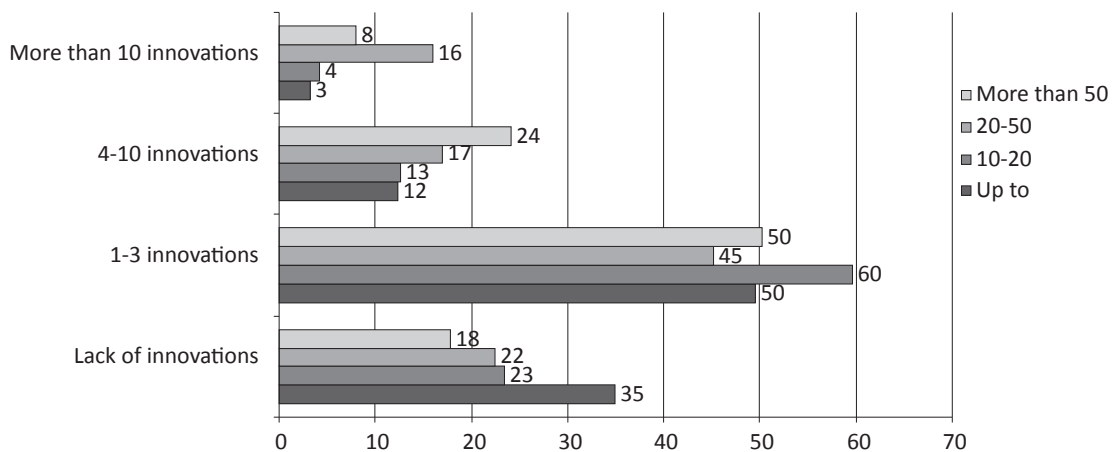
Figure 6.9. Innovative activities of network organisations depending on the type of business in %



Source: Same as 6.1.

Taking into account the relations between innovative activity (Fig. 6.10), and the size of the network, one can state that the least innovations are introduced in small enterprises – up to 10 participants (35%). Based on these data, 60% of respondents belonging to a network of 10 to 20 participants pointed to the implementation of several innovations (1–3 innovations). It is worth mentioning that in the medium-sized networks (20–50 participants) 16% of enterprises indicated that they implemented more than 10 innovations, which is more than in other networks. Furthermore, companies belonging to the group of the largest networks, most often declared that they implemented 4–10 innovations (24%). They also least likely stressed the lack of implementation of innovation in the analysed period (18%).

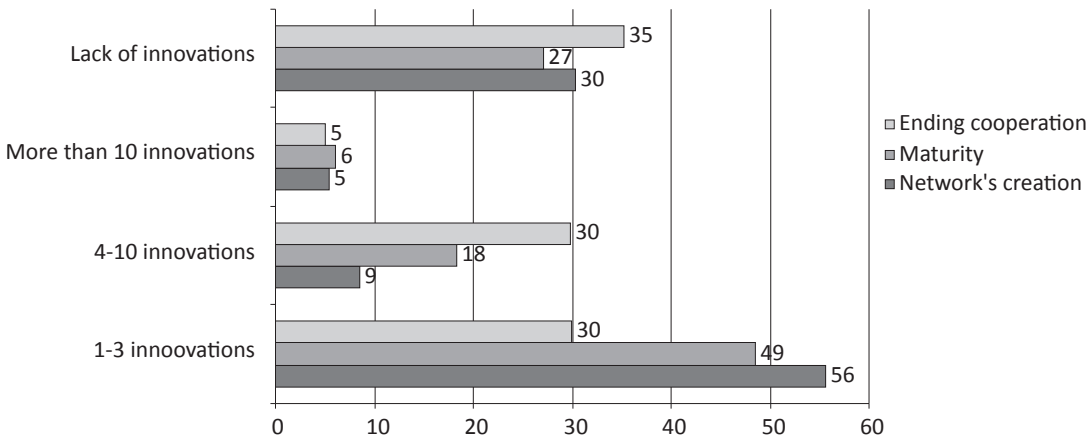
Figure 6.10. Innovative activity of network organisations depending on the size of network in %



Source: Same as 6.1.

The innovative activity depending on the stage of network's development to which the enterprise belongs (Fig. 6.11) was taken into account in further analysis. From the analysis concerning networks which are in the stage of their creation, one can conclude that these enterprises implement up to 3 innovations (56%). Further results show that in the networks ending cooperation most often, compared to the other types of networks, one pointed to the lack of implementation of any innovations (35%). On the other hand, in these networks one stressed the implementation of several (4–10) innovations (30%). Based on these data, one can conclude that companies belonging to the mature networks, showed the highest tendency to implement innovations (73% of responses).

Figure 6.11. Innovative activity of network organisations depending on the stage of network's development in %



Source: Same as 6.1.

6.4. Types of innovations in network organisations

The types of innovations implemented in network organisations are the next stage of the study.

Figure 6.12. Types of innovations implemented in network organisations depending on the role in the network in %



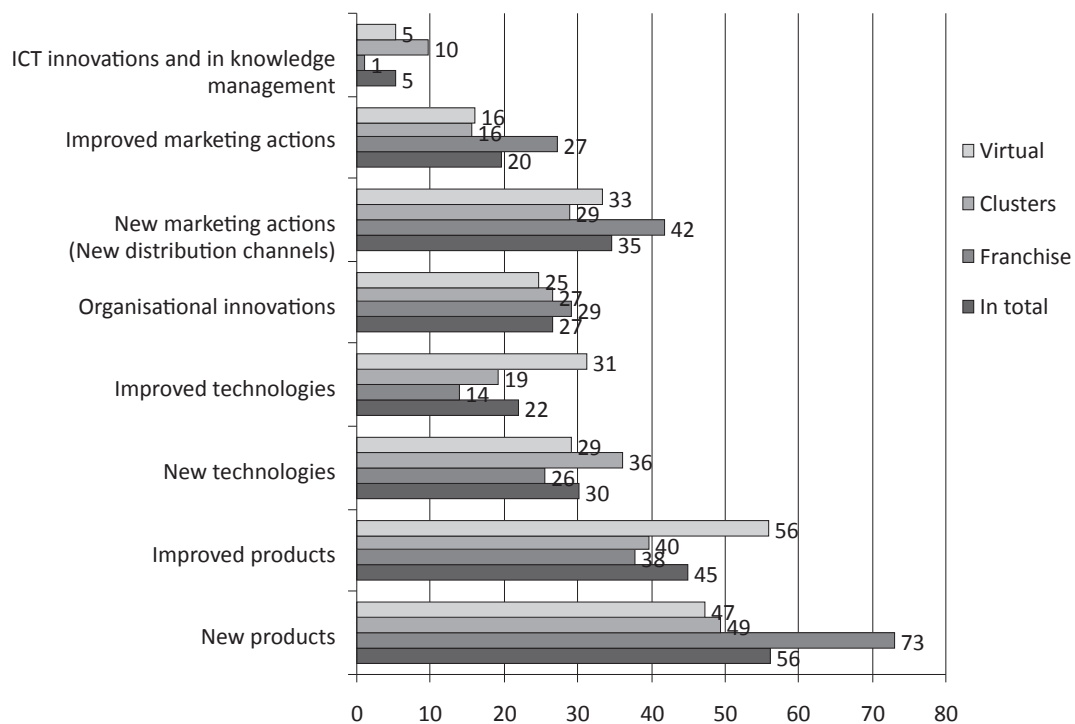
Source: Same as 6.1.

The results showed that both coordinators and participants of the network, indicated similar certain categories of innovation, depending on the role in the network. These types of innovations, such as new products (60% and 54%), improved products (42% and 47%) – Fig. 5.12 got the high number of indications. In further analysis new and improved technologies are distinguished due to the fact that they received significantly more indications among network coordinators. However,

new and improved marketing actions were more important for participants of the networks. ICT innovations and in knowledge management were less significant for both groups of respondents. It is not the type of innovation often used in network organisations.

Differences in the types of innovations implemented in the different types of network organisations are also seen below (Fig. 6.13).

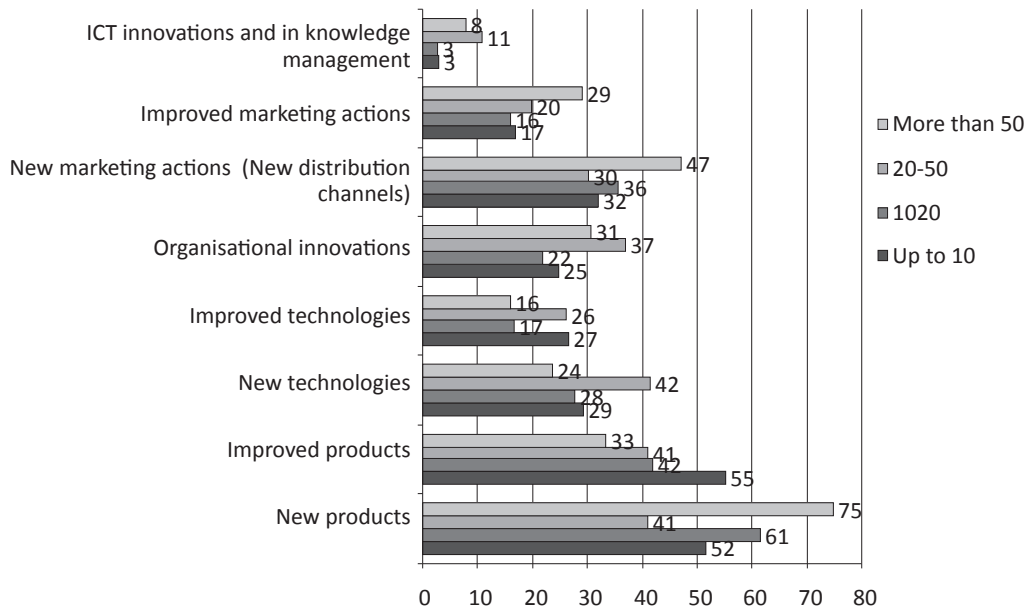
Figure 6.13. Types of innovations implemented in network organisations in %



Source: Same as 6.1.

Research has shown that new and improved products (56% and 45%) and new marketing actions (35%) were used by the largest group of companies in analysed period. In contrast, ICT innovations and in knowledge management were the least important and they received only 5% of responses. New products (73%) and new marketing actions (42%) were the most significant for franchise companies. New products (49%) and new technologies (36%) were distinguished in clusters. The study also showed that innovations regarding: improved products (56%) and new products (46%) were the most meaningful in virtual organisations. One should also indicate the type of innovations implemented in network organisations showing some variation relative to the size of the network (Fig. 6.14).

Figure 6.14. Types of innovations implemented in network organisations depending on the size of the network in %



Source: Same as 6.1.

Interestingly, a large number of respondents, from all sizes of the networks, pointed to the new or improved products. New technologies are more significant in networks with the number of participants from 20–50 (42%). New and improved marketing actions (new distribution channels) are more significant for large networks, with more than 50 participants (47% and 29%).

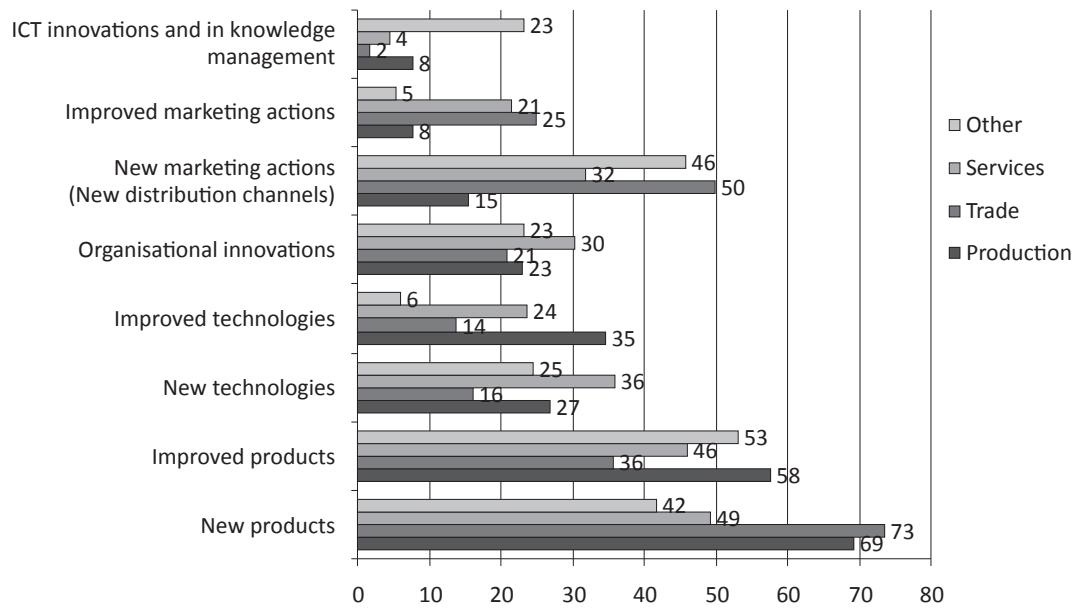
The analysis of results regarding the types of innovation due to the type of network's business is presented below (Fig. 6.15).

Based on these data, one can conclude that the new products and marketing activities are most relevant to trade entities (73% and 50%). On the other hand, product innovation or new and improved products are also important from the point of view of the service and manufacturing sectors. Innovations related to new and improved technologies (16% and 14%) were the least important for network enterprises, which results from the nature of this type of activity. What is worth mentioning is that respondents from sectors: administration, education, culture, and local governments, among others, pointed to the implementation of innovations in the field of ICT and knowledge management (23%). However, only 6% of respondents from this sector indicated improved technology.

The recognition of the different types of implemented innovations depending on the number of employees in the enterprise (Fig. 6.16) was also crucial. In all groups of enterprises, respondents stressed innovations in the field of new and improved products. But 37% of respondents from large enterprises indicated new technologies.

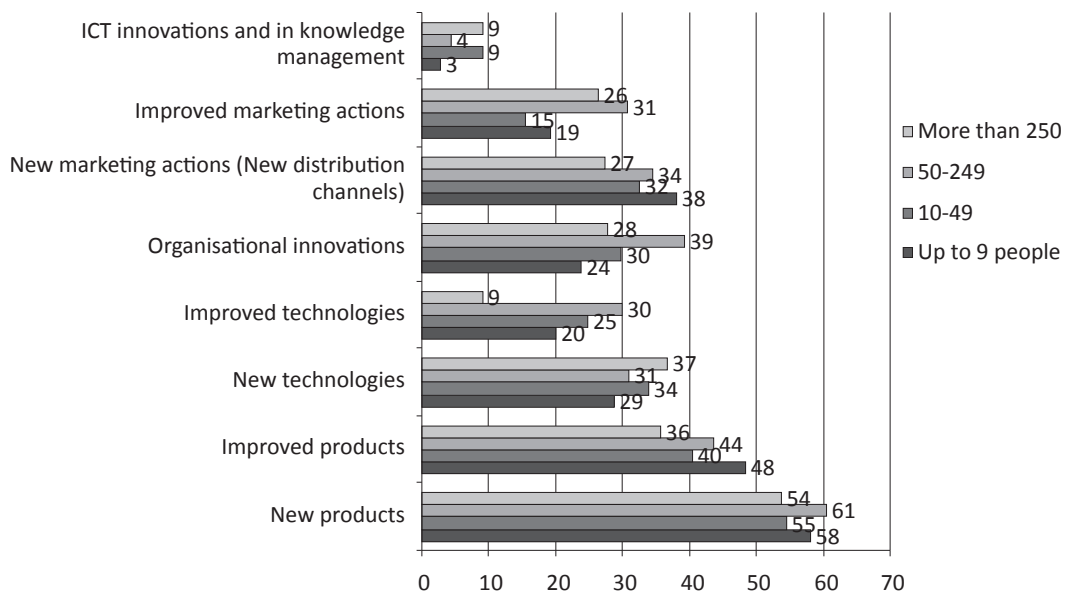
Large companies tend to invest in new technologies and they spend on them a lot of money. On the other hand, from the point of view of medium-sized companies, organisational innovations were the most important ones (39%).

Figure 6.15. Types of innovations implemented in network organisations depending on the business sector in %



Source: Same as 6.1.

Figure 6.16. Innovative activity of network organisations depending on the number of employees in %

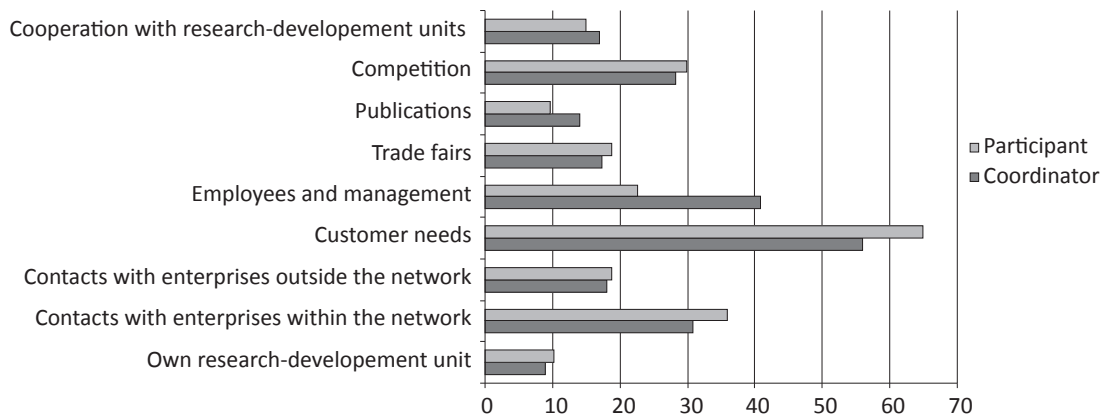


Source: Same as 6.1.

6.5. Sources of innovation in network organisations

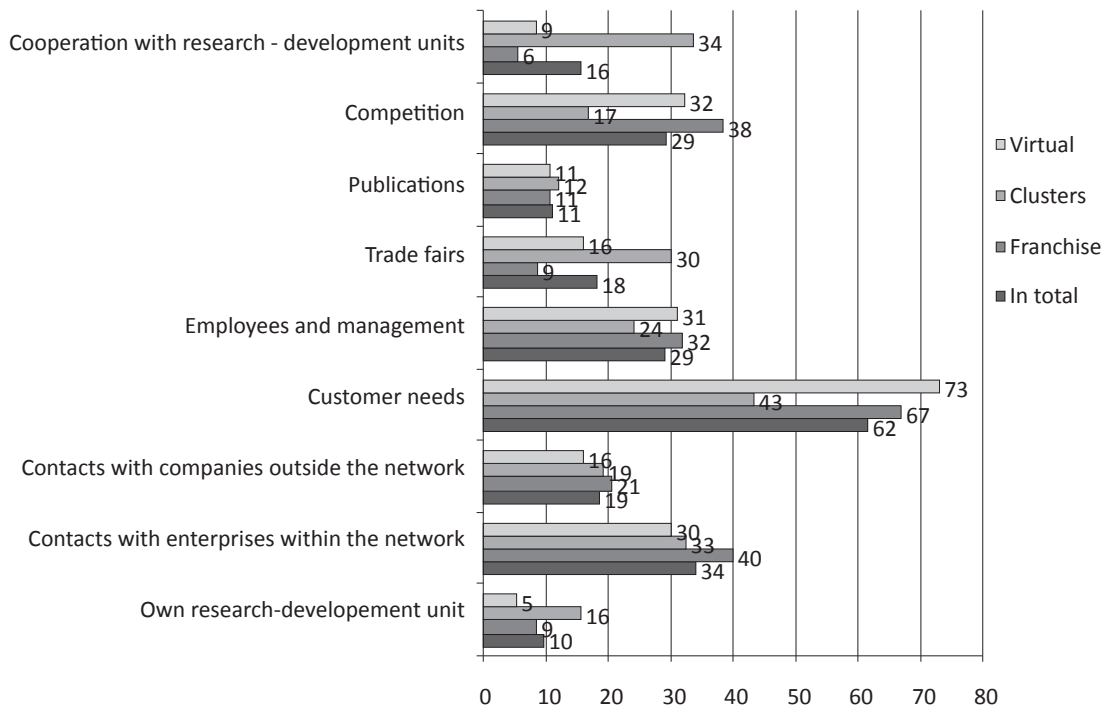
Research regarding sources of innovation in network organisations is very important to verify the research questions. One must therefore identify the sources of innovation from the point of view of the role played in the network (Fig. 6.17). Research has shown that for the coordinator and the participant of the network the sources of innovations are similar. Interesting is that employees and management are more often the sources of innovation for the network coordinators (40%) than for network participants (24%). On the other hand, customer needs are more important for network participants than for the coordinators. It is worth mentioning that the contacts with the companies within the network play a greater role as a source of innovation for the network participants than for their coordinators.

Figure 6.17. Sources of innovation in network organisations depending on the role in the network in %



Source: Same as 6.1.

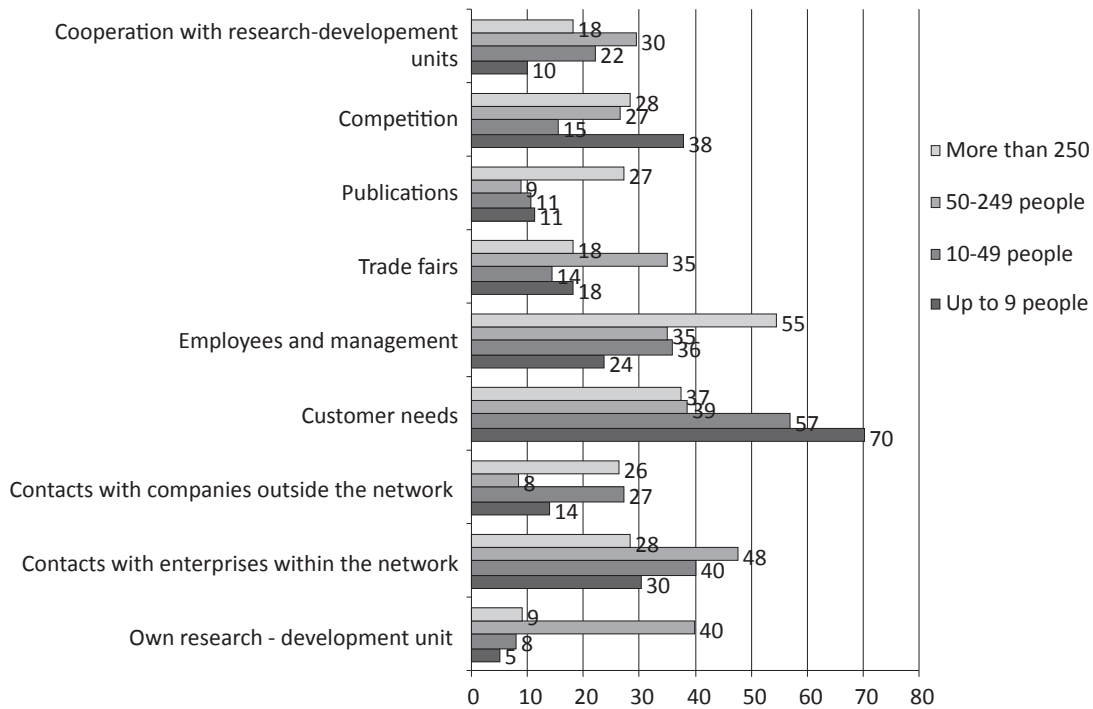
Some differences regarding sources of innovation, depending on the network to which the surveyed enterprise belongs (Fig. 6.18) are seen below. The results highlighted that customer needs are the dominant sources of innovation in network organisations. Companies belonging to virtual organisations (73%) most often pointed to this category. Contacts with enterprises within the network are the next source. Interestingly, they were the most important in franchise organisations (40%). Competition as a source of innovation was more often declared by the franchise companies than the others (38%). Cooperation with own research and development units (16%), trade fairs (30%) and cooperation with R&D units (34%) were more significant for clusters than for other networks.

Figure 6.18. Sources of innovation in network organisations in %

Source: Same as 6.1.

Based on these data one can conclude that the clusters are characterised by creating innovation with the use of R&D units. In contrast, franchise and virtual organisations are mainly focused on the search for sources of innovation among customers and competitors. One should also indicate the relations regarding the sources of innovation in terms of number of employees. An analysis of the sources of innovation in enterprises belonging to the network due to the number of employees in the company was presented below (Fig. 6.19). Based on the obtained results, one can state that, sources of innovation defined as: customer needs (70%) and competition (38%) were the most essential in the companies belonging to the category of micro. On the other hand, from the perspective of small businesses, customer needs (57%) and contacts with companies within the network (40%) were the most important factors. In contrast, medium-sized enterprises as the origin of innovation indicated their research and development units (40%) and the customer needs (39%). It is interesting that the trade fairs and cooperation with R&D units were most often indicated by respondents from medium-sized enterprises (35% and 30%). Employees and management (55% of responses) and publications (27%), as the source of implemented innovations, were very crucial only for large companies.

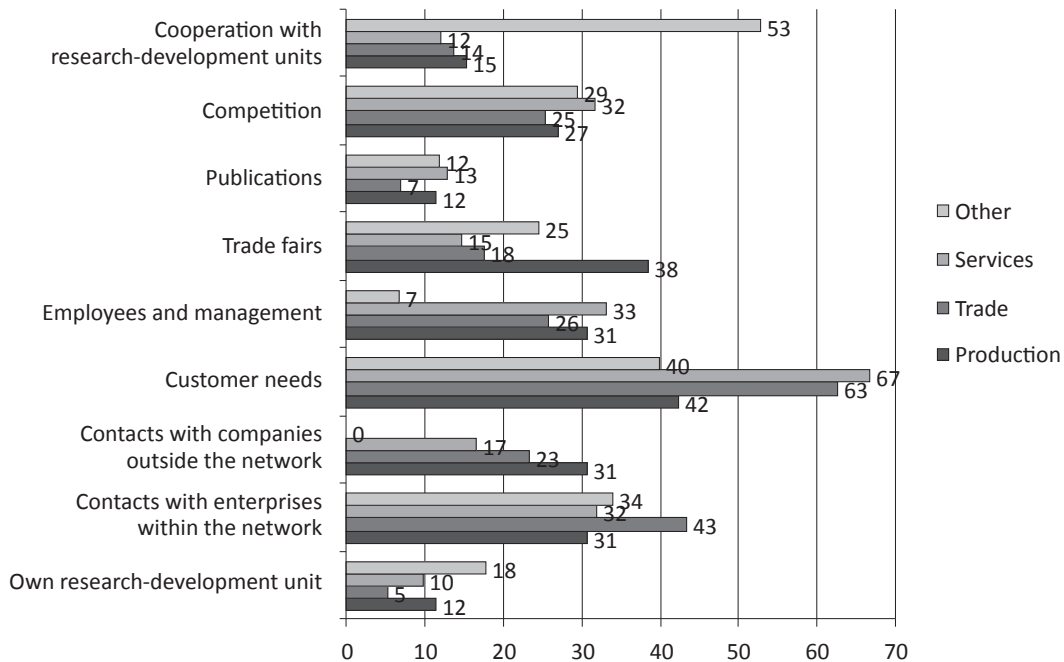
Figure 6.19. Sources of innovation in network organisations depending on the number of employees in %



Source: Same as 6.1.

Another area of research concerned the sources of innovation in terms of type of conducted business by companies belonging to the network (Fig. 6.20). According to indications of production enterprises, innovations implemented during the analysed period derived from the analysis of the needs of customers (42%) and trade fairs (38%). Customer needs (67%) and contacts with companies within the network (43%) were very important for trade companies. According to the analysis of data, customer needs (67%) and employees and management (33%) were significant for the service sector. Employees and executives (33%) were the most meaningful. In contrast, administration, education, culture and local governments pointed to cooperation with R&D units (53%) and the customer needs (40%), as the sources of innovation. An interesting fact is that the public sector does not treat employees and managers (9%) and contacts with companies from outside the network (0%) as sources of innovation.

Figure 6.20. Sources of innovation in network organisations depending on the sector of business in %

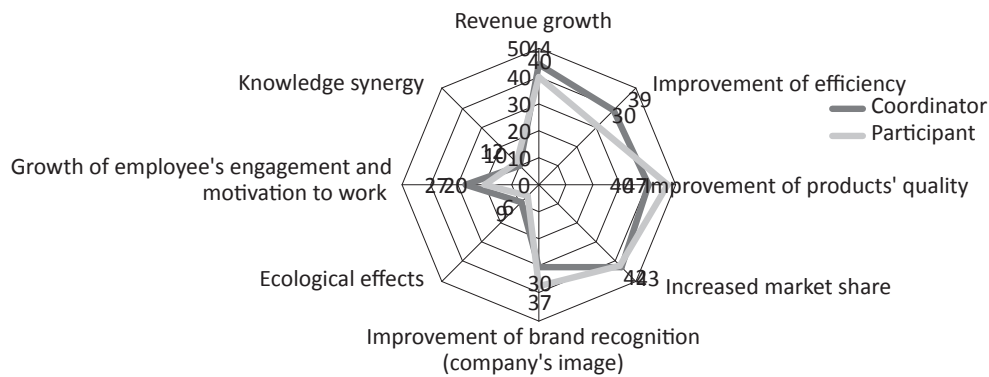


Source: Same as 6.1.

6.6. Benefits of implementing innovations in network organisations

Another area of research concerned the benefits of implementation of innovations in the surveyed network enterprises (Fig. 6.21). The results indicated that the coordinators of network's connections and their participants pointed to the same individual categories of benefits. Benefits such as: increase in revenues, improvement of productivity, increased market share, ecological effects, increase in employees' engagement are very important for network organisers. In contrast, network participants more often pointed to the improvement of product quality, improvement of image and brand recognition and synergy of knowledge.

Figure 6.21. The benefits of implementing innovations in network organisations depending on the role in the network in %



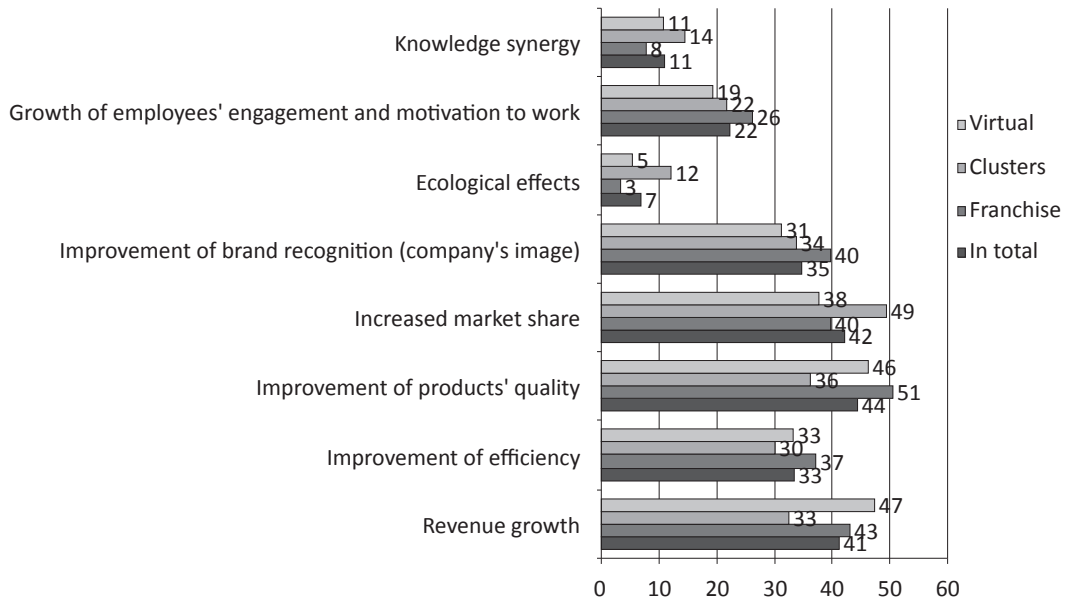
Source: Same as 6.1.

According to results indicated by the respondents on the benefits of implementation of innovation in 2007–2012, one can conclude that improvement of the quality of products has the greatest importance (44% of responses), (Fig. 6.22). Increased market share (42%) and the growth of revenues (41%) were distinguished in further analysis. Ecological effects (7%) and the synergy of knowledge (11%) were not mentioned as benefits of implementing innovation.

The results highlighted that the improvement of the quality of products (51% and 46%) and the revenue growth (43% and 47%) were very important for franchise and virtual organisations. On the other hand, from the point of view of clusters, the benefits can be defined as: increased market share (49%) and improvement of product's quality (36%). It is worth noting that respondents from analysed companies mainly declared the ecological effects and synergy of knowledge as the benefits of enterprises belonging to the clusters.

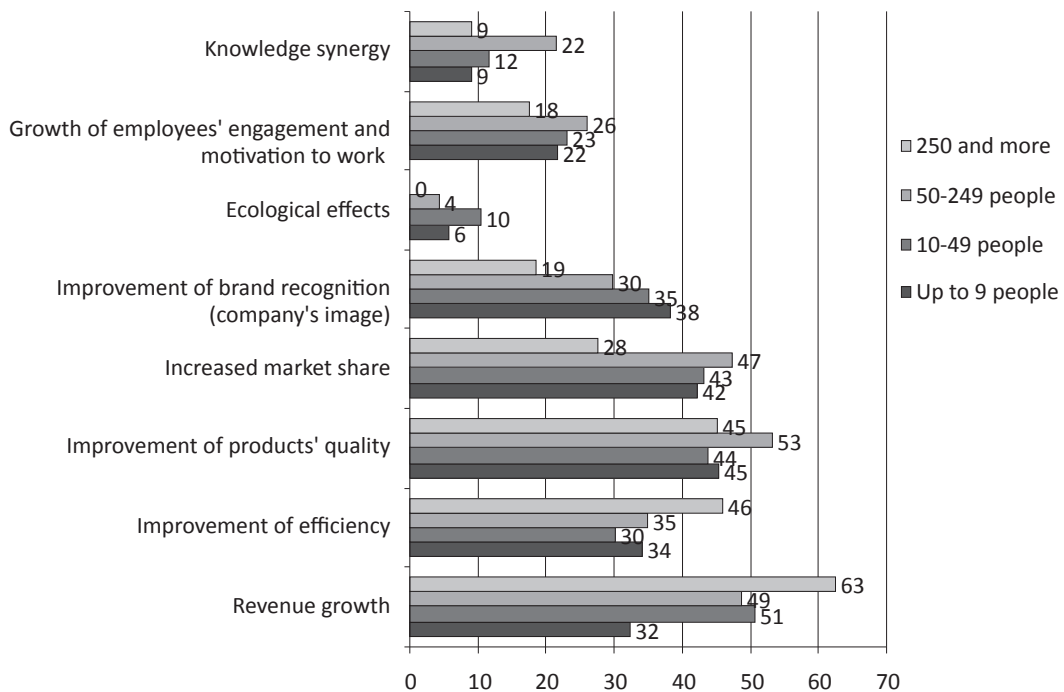
One should also indicate the distribution of the benefits of implementing innovations due to the number of employees in the enterprise (Fig. 6.23). The distribution of responses showed that benefits from implementing innovations for micro enterprises were focused around improving the quality of products (45%) and increased market share (42%). It is worth mentioning that a group of these companies is paying the most attention to improving the image of the company, as the benefit from the implementation of innovation.

Figure 6.22. The benefits of implementing innovations in network organisations in %



Source: Same as 6.1.

Figure 6.23. The benefits of implementing innovations in network organisations depending on the number of employees in %

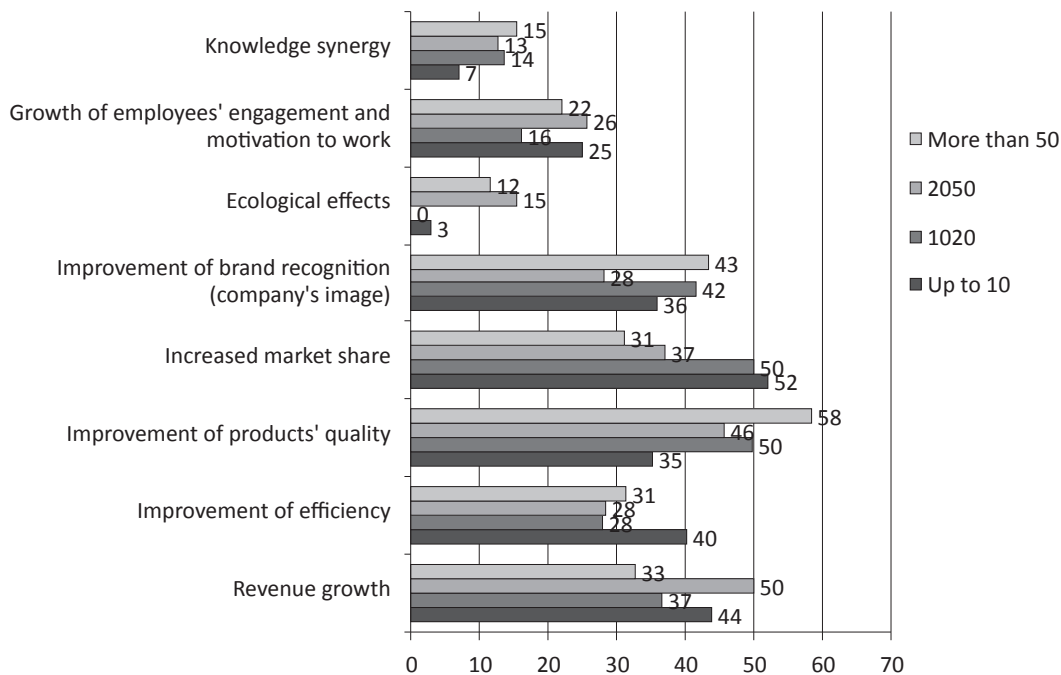


Source: Same as 6.1.

The studies also showed that small enterprises appreciate the benefits such as revenue growth (51%) and improvement of product's quality (44%). In further analysis one distinguished medium-sized enterprises, which pointed to improvement of the product's quality (53%) and revenue growth (49%). Noteworthy is the fact that a group of these companies most frequently among others indicated a growth of employees' engagement (26%) and the synergy of knowledge (22%), as the benefits coming from the use of innovation. In turn, from the point of view of large enterprises, revenue growth (63%) was essential. Worth noting is the fact that only 28% of large enterprises noted the increased market share as a result of the implementation of innovations. Also, the improvement of recognition and brand's image was not significant for large companies.

Another area of research was to analyse the distribution of answers to the question relating to the benefits of implementing innovation, depending on the size of the network to which analysed enterprise belongs (Fig. 6.24).

Figure 6.24. Benefits of implementing innovations in network organisations depending on the size of the network in %



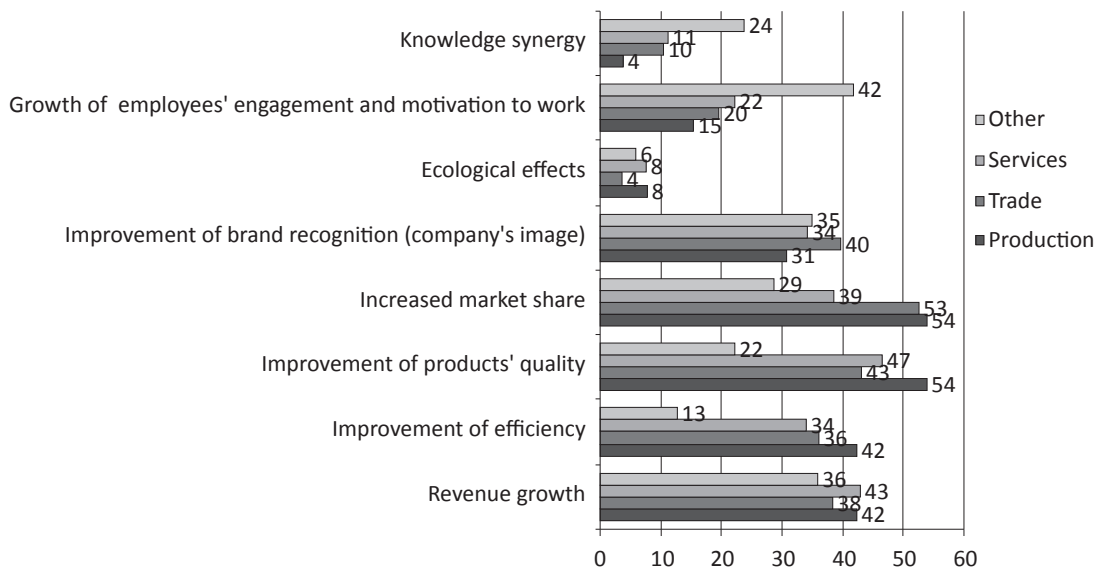
Source: Same as 6.1.

The distribution of responses shows that the increased market share (52%) is very important for small networks, while increased market share (50%) and improvement of product's quality (50%) are significant for networks of 10 to 20 participants. In contrast, medium-sized networks mainly indicated revenue growth (50%) and

large ones pointed to the improvement of product's quality (58%). Interestingly ecological effects are useful for enterprises belonging to the medium-sized networks (20–50 participants).

Figure 6.25 shows the importance of the various benefits of using innovation and its diversity in terms of the type of business.

Figure 6.25. The benefits of implementing innovations in network organisations depending on the business sector in %



Source: Same as 6.1.

The responses highlighted that improvement of the product's quality (54%) and increased market share (54%) are benefits of implementing innovations in manufacturing and trade companies. In contrast, companies operating in the services most frequently pointed to the improvement of product's quality (43%) and revenue growth (50%) (Fig. 5.28). On the other hand, from the point of view of administration, education, culture and local governments a growth of the engagement of employees is the greatest benefit from the implementation of innovation (42%).

6.7. Summary

Innovations are the most important driving force of economic development. They are essential tools of entrepreneurship, and this entrepreneurship is expressed in constant search for new combinations of production factors in order to become the engine of economic progress. In order to introduce innovations and adapt better

to the market's needs and to the changing environment, the openness to changes is very significant. The condition of existence and development of each enterprise is the ability to adapt its own volatility to environmental changes. This volatility is also associated with various types of corporate restructuring (creative, anticipatory, adaptive and repair), which forces changes in all spheres of enterprises' business.

Innovations have become a key issue on a global scale, as well as the scale of micro in particular enterprises and network organisations. Innovativeness is a key condition for increasing the attractiveness of goods and services, which entails the development of the market and exports, and thus determines the competitive position of the enterprise. At the present time in the global economy innovations are implemented by all companies: reputable, with well-established position in the market, and new – entering the markets. Some companies conduct comprehensive innovative activities by creating network organisations to exploit the potential, resources and skills of all participants of the network. In the modern economy, companies that devote time and effort to search for innovation in all areas of their businesses and implement them more often are successful in the market. Innovativeness can be regarded as the most important challenge of the future. The aim of competing companies may be to create a system of innovation control, in this way the implementation of innovation would be the permanently inscribed in the strategy of the enterprises.

The presented research shows that innovation plays an important role in network organisations. They are an important element contributing to improve the range and quality of products, but also they create new sales channels and forms of communication.

To sum up, one can state that most often, just a few innovations were implemented in network organisations in the years 2007–2012. This is an element that should be stimulated in the enterprises functioning within networks, so that they can strengthen their market position. Innovations regarding new and improved products and new marketing actions, which could also apply to new distribution channels, strongly dominate. It should be noted that the ecological approach is not the motive for the implementation of innovation for the network enterprises. It is important to point out that the reduction of material costs is not the dominant factor which promotes the implementation of innovation in network enterprises.

Analysis of the results showed that network companies are innovative by using various types of innovative solutions. First of all, they use product and marketing innovations, which allow the companies to improve product's quality and the use of modern activities and marketing tools.

According to the analysis of innovative activity of analysed types of networks, one can conclude that virtual organisations are extremely innovative. They, as well as individual organisations belonging to the virtual organisations, introduce the most diverse innovations.

To sum up, it should be noted that during the analysis of the studies, one found that sources of innovation are not significantly varied in different types of analysed network organisations. Customer needs are the dominant source of innovation. Further categories of sources of innovation are significantly less indicated by the respondents. An interesting continuation of this study would be to check from where this structure of prioritising the sources of innovation arises and what the specific reasons of this behaviour are.

When it comes to the benefits of the implementation of innovation in network enterprises, the revenue growth is the third category indicating the benefits of implementation of innovation in enterprises belonging to networks in the period 2007–2012. The most important factors are: improvement of the product's quality and increased market share, constituting the positive effects of implementing innovative solutions in network organisations.

An important conclusion from the study is a lower innovative activity in the educational sector than in other sectors, fewer sources of innovation and number of implemented innovations. This leads to the use of activities aimed at the development and implementation of strategies leading to change of this situation and to gaining experience from other sectors. What's more, the situation of differentiation of innovative activity of large and small enterprises is very important. Rarer and weaker enterprises' participation in the network can be an important factor of their limited involvement in the management of innovation strategies.

An analysis of innovation activity due to the maturity of the network leads to interesting conclusions. Particularly interesting is the fact that the companies belonging to the matured networks showed the greatest tendency to implement innovations, which may result from the high level of awareness and experience of the whole network and the individual companies in the implementation and recognition of the importance of innovative activities on their own and in cooperation with partners. This means that smaller companies should derive benefits from participation in the network, to which one can also include a growing awareness. Innovation is an important, if not the most important factor contributing today to the growing competitiveness of the company in the market.

Bibliography

- Bloom, N., Van Reenen, S., *Patents, real options and firm performance*, "Economics Journal" November 2000, vol. 7, no. 4.
- Bojewska B., *Zarządzanie innowacjami jako źródło przedsiębiorczości małych i średnich przedsiębiorstw w Polsce*, OW SGH, Warsaw 2009.
- Bosworth, B., Collins S., *The empirics of growth: An update*, Brookings Institution and Georgetown University, 2003.
- Romer, P., *Endogenous technical change*, "Journal of Political Economy" November 1990, vol. 7, no. 4.