

Furniture companies cooperation and their innovativeness – industrial network approach

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Summary: *Furniture companies cooperation and their innovativeness – industrial network approach.* The aim of this article is to identify the potential of business networks in terms of their impact on innovation in the furniture industry in Poland.

The article characterises the network approach to cooperation among firms in the furniture industry from the perspective of innovation in this industry in Poland. The basis for the conceptual framework was the desk research carried out during 2013-2014 as well as consultations with experts from the wood sector. This gave the starting point for the creation of a conceptual framework for business networks and cooperation among its participants as a source of innovation. Within the conceptual framework, the relationships between firms and entities from the surrounding business environment based upon the ARA model (Actors-Resources-Activities – the basic model used for analysis under the network approach) are used as a reference point. The furniture industry is chosen as the subject of analysis due to the limited areas for innovation in the furniture industry resulting from the properties of utilised materials, product diversity, fragmented dispersion of firms within the furniture industry as well as multi-stage production processes. Conducted research may be a starting point for assessing the sources of this innovation from the perspective of a firm operating as part of a business network.

Keywords: network structure, furniture industry, innovativeness, cooperation, network approach.

INTRODUCTION³

Networked economies characterised by, among others, multifaceted interactions between firms are more frequently becoming an inseparable element of running a business. As a result this impacts both firms in terms of their business models and management decisions as well as the industry within which it operates. The effects of operating within a network can be visible in various areas of a firm's operations. These include impacts on a firm's economic condition, the firm's image, competitive position etc. One of the positive effects stemming from being networked includes increases in innovation. It is believed that "the source of innovation are often found rather between firms, universities, research laboratories, suppliers, and customers than inside them" [Graf 2006] and "firms do not generally innovate in isolation" [Edquist 2001].

Due to the fact that the furniture industry⁴ (as one of the industries from the wood sector⁵) is classified as a low technology industry (that is, the industry in which outlay on

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⁴ The term "furniture industry" refers to firms engaged in the manufacture of furniture and related products of any material except stone, concrete and ceramic as in the Division 31. of the Polish Classification by Activity (the fourth level of the 2007 NACE classification is in line with the European NACE Rev. 2), [Rozporządzenie 2007].

⁵ The term "wood sector" used in the article includes: wood industry, that is manufacture of wood and of products of wood and cork, except furniture (the Division 16. of the Polish

R&D is 1% or less of the sales value [Hatzichronoglou 1997]) the potential for innovation growth, including that resulting from network membership is especially important for firms in this industry. Especially that for the furniture industry it is characteristic to utilise a natural raw material, which can be processed relatively simply. This, to a large degree, limits introduction of significant modifications and increase in the share of modern techniques and technologies [Herbec 2012b]. The outlined specificity of the furniture industry along with the significant dispersion of furniture producers and multi-stage production processes means that in the case of those firms searching for innovation in close cooperation with other market participants can be specifically important for building a competitive market position. The creation of innovation thanks to cooperation in furniture networks can apply to entities cooperating with furniture manufacturers, that is companies from both the furniture industry, whole wood sector (e.g. sawnwood producers, producers of wood-based panels) and other sectors (e.g. suppliers of tools, machinery & equipment, components and accessories, firms from the chemical and textile industries as well as IT) [Ratajczak-Mrozek, Herbec 2013]. There are, however, questions which need to be answered: what is the potential of the innovation achieved in this way and what factors lead to its creation?

In the literature the analysis concerning business networks in the furniture industry includes industry clusters [Roolaht 2005; Pikul-Binieki 2009; Herbec 2012a], networks within supply chain (supply networks) [Tunisini, Bocconcelli 2008], transportation agreements [Audy et al. 2011], production orders [Biniasz 2004]), resource networks & resource interaction [Soderlund et al. 2001] and social structures [Dibben, Harris 2001]. In turn, publications regarding firms' innovation in the furniture industry from the perspective of participation in business networks [Boon-Knee, Thirichelvam 2012] do not fully cover the issues related to this field of research. There is a lack of analysis in the field of process innovation in furniture networks, factors influencing the creation of innovative solutions and the impact of the specificity of the furniture industry on the innovative potential of firms within the industry operating in business networks.

For this reason the aim of this article is to identify the potential of business networks in terms of their impact on innovation in the furniture industry in Poland.

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INDUSTRIAL NETWORK APPROACH TO COMPANIES COOPERATION

“Firms should not be seen in isolation but as being connected in business systems” [Ritter et al. 2004]. The essence of business enterprise is tied to constant interactions and trade exchange.

Classification by Activity), pulp and paper industry, that is manufacture of paper and paper products (the Division 17. of the Polish Classification by Activity) and furniture industry, that is manufacture of furniture and related products of any material except stone, concrete and ceramic (the Division 31. of the Polish Classification by Activity [Rozporządzenie 2007].

A comprehensive approach to the analysis of the aforementioned issues is offered by the industrial network approach. This approach is linked to research carried out by the Industrial Marketing and Purchasing Group [IMP Group]. This concept stresses the significance of all the formal and informal, direct and indirect contacts (network relationships) a company has with the entities (companies and institutions) in its surrounding environment which constitute an extended network. Thus a business network (an industrial network) is a set of repetitive transactions based upon structural and relational formations with dynamic boundaries comprising interconnected elements (actors, resources and activities) [Todeva 2006]. Network relationships may be characterised by different strength [Morgan, Hunt 1994; Hausman 2001, Medlin 2003; Kenny, Fahy 2013]. It is said that the strongest relationships are characterised by the occurrence of both behavioural and economic variables [Donaldson, O'Toole 2000; Barry et al. 2008]. The relationships may be also characterised by the co-competition. The term co-competition describes mutual relations of business entities based on co-operation, where at the same time competition conditions are maintained [Bengtsson 2000; Ratajczak-Mrozek 2010; Herbec 2012b].

The basic framework for the analysis developed within the industrial network approach is the ARA model (Actors-Resources-Activities) [Håkansson, Snehota 1995; Håkansson, Johanson 1993]. According to the ARA model, relationships are made up at the same time of actor bonds, activity links and resource ties, which create three overlapping networks [Lenney, Easton 2009]. In the case of the ARA model, it has to be made clear who the actors are, what their activities are and with which resources they interact when analysing data and network structure [Lenney, Easton 2009; Ratajczak-Mrozek, Herbec 2013].

The network structures may be analysed from two perspectives [Ratajczak-Mrozek, Herbec 2014a]:

1) from the perspective of studied focal companies according to industrial network approach,

2) from the perspective of more formalised networks with limited membership, where all members may be defined, e.g. industry clusters, purchasing networks.

The first perspective of the analysis is consistent with the already mentioned industrial network approach. Here the company's business network is an effect of historical, mainly long-term close cooperation with the entities from its environment and a series of interactions going beyond single buy-sell transactions which in turn create cooperation norms and build trust and result in strong network relationships [Turnbull et al. 1996; Ford et al. 1986; Ratajczak-Mrozek 2013]. The analysis of a network is held from the perspective of a so called focal company (a company from which perspective a network is visualised, not necessary the most powerful entity in a network) [Ratajczak-Mrozek, Herbec 2014a].

The second perspective of the analysis is the most popular definition of the network structure. Here a business network involves a formalised (e.g. in a form of association, company's internal structure) group of business entities with limited membership collaborating for specific purposes [InterTradeIreland 2011]. According to this understanding of a network, we refer to the following network structures: multinationals, industry clusters, trade associations, strategic alliances but also, manufacturing networks (such as suppliers collaborating to provide goods to a large manufacturer), purchasing networks (collaboration to buy things together) and service networks (collaboration to offer a common service) [Todeva 2006]. In each of these network structures one can exactly indicate the limited number of network members [Ratajczak-Mrozek 2013; Ratajczak-Mrozek, Herbec 2014a]

Significant benefits flowing from cooperation and network relationships are important from the perspective of firms, as well as specific industries or the economy as a whole (improvement in competitiveness). It is so at least due to an improvement in the market results achieved [Håkansson, Snehota 1995; Gadde, Snehota 2000; Ritter et al. 2004;

Ratajczak-Mrozek, Małys 2012; Ratajczak-Mrozek 2012]. Other such a positive effect may be an increase in innovation.

NETWORKS AND COOPERATION WITHIN THE FURNITURE INDUSTRY

The nature of cooperation between firms may vary depending upon the network structure, the relationships between their actors, the types of available resources and many other factors. There are three types of networks observable within the Polish furniture industry: [Ratajczak-Mrozek, Herbec 2014a]:

- industry clusters,
- purchasing groups,
- cooperation analysed from the perspective of an individual company, institution or the supply chain.

Based upon analysis carried out with the aim of identifying and characterising networks within the furniture industry in 2013 [Ratajczak-Mrozek, Herbec 2013; Ratajczak-Mrozek, Herbec 2014a, Ratajczak-Mrozek, Herbec 2014b] it can be stated that clusters are one of the most popular forms of cooperation and network structures (e.g. The Szczecinek Furniture Cluster (Szczecinecki Klaster Meblowy), Wielkopolskie Furniture Design Cluster (Wielkopolski Klaster Mebel Design). In most active clusters in the furniture industry the associated members include network actors which are not only companies from the furniture industry but also representatives from other industries (e.g. an insurance company, a visual advertising firm or experts in production the specialist materials for the furniture production), institutions of higher education and those from the surrounding business environment. The most popular activities within such structures are such as meetings, trainings, other activities linked with attempts to animation of cooperation and the activities aimed at obtaining the European Union funding.

Another type of cooperation between companies in the furniture industry can be seen in purchasing groups. This type of network brings together actors utilising shared resources for the purpose of consolidated procurement or for making a purchase through one entity wishing to achieve economies of scale or a stronger negotiating position with suppliers (e.g. the Polish Furniture Traders Group (Grupa Polskich Kupców Meblowych). In the case of the furniture industry, the purchasing groups are created largely by trading companies which purchase furniture from producers and suppliers through these structures and then sell the products to the end user. These types of actions can provide common benefits for both sides. For the producers of furniture these are, new distribution channels for finished goods, the possibility of increasing production as well as the optimisation of produced goods. For members of the group this means improved effectiveness of advertisements and the distribution of various types of products on the market [Hryniewicki 2012; Ratajczak-Mrozek, Herbec 2014a].

Cooperation between furniture companies can be also analysed from the perspective of each individual company from the industry or entities from the surrounding business environment by examining their interactions between actors, resources and activities (the ARA model). For example a network of a subsidiary of an international group includes both formal organisational structure of a multinational company (which parts are located in Poland and abroad) and relationships with other business entities which formally do not belong to organisational structure. Such subsidiary cooperates with its suppliers, sub suppliers, service providers, customers or even research & development institutions. In such a case, the network structure can be to some extent based upon even informal activities on behalf of the actors which are often the result of long-term close cooperation [Ratajczak-Mrozek, Herbec 2014a].

The analysis of the furniture networks can be made also from the perspective of the supply chain. The dominant form of joint activities are the purchase/sale transactions,

repetitive actions with mainly formal cooperation. Under these activities actors can use own or other entities' resources (e.g. furniture producer's vehicles used for the transport purposes). Simultaneously the scope of cooperation for the supplier of focal actor – the furniture producer will be different from other actors of analysed supply chain.

It is also possible to refer to certain institutions from the surrounding business environment which are particularly important from the perspective of the furniture industry which can release strong network and cooperation potential (e.g. Warsaw University of Life Sciences – Faculty of Wood Technology, The Wood Technology Institute). By definition these institutions focus around them those actors towards whom their activities are directed [Ratajczak-Mrozek, Herbec 2014a]. The cooperation between these actors focus mainly on commercialisation of research results and knowledge and technology transfer to industry which involves the resources of many actors and contributes to joint operations.

Research [Ratajczak-Mrozek, Herbec 2014a;] suggests that generally, in business practise in Poland cooperation within the furniture industry is based on long-term transactional exchange and adaptation of bought input resources and not on mutual adaptation or mutual creation of resources. Due to the dominant share of micro and small enterprises in the structure of the furniture industry, distinctive is the desire of many furniture manufacturers to produce the final product on their own. As a result, relationships of furniture companies with service providers are varied and in many cases characterised as weak, short-term relationships. This means that the potential of the close cooperation is not fully utilised [Ratajczak-Mrozek, Herbec 2014b]. The exemption may be the production of tailor-made products for individual customer orders requiring e.g. the development of new technical solutions or parts in collaboration with suppliers [Ratajczak-Mrozek, Herbec 2013].

NETWORKS AND COOPERATION OF THE FURNITURE COMPANIES AS A POTENTIAL FOR THE GROWTH OF INNOVATIVENESS – A CONCEPTUAL FRAMEWORK

The phenomenon of innovation is analysed in various contexts within the subject literature. One of the first definitions of innovation in economic sciences was introduced by Schumpeter [Schumpeter 1960]. One of the most popular approaches to the issue of innovation is the classification proposed by the Organisation for Economic Co-operation and Development (OECD). According to the OECD innovation „is the implementation of a new or significantly improved product (good or service) or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations” [OECD 2005].

Research in the field of firms' innovation has also included business networks – analysed as potential sources of economies of scale achieved as a result of cooperation between network actors and the mutual utilisation of resources. It is underlined that innovation does not occur within individual firms but within the whole network in which it operates [Powell et al. 1996; Porter 2001]. However, it is hard to characterise innovations in networks due to the characteristic variability of the process as well as the strong cognitive and social aspects of its interactions [Ahrweiler, Keane 2013]. The issue of business networks and their impacts on the innovation of firms, the industry or the economy is often presented from the perspective of innovation policy included in regional or national strategies [Breznik, Dermol 2011], the heterogeneity of resources and partners [Raesfeld et al. 2012] and management innovation [Johnsen, Ford 2000; Ojasalo 2004]. This phenomenon is also analysed from the perspective of the firm [Freytag, Clarke 2002; Espelid et al. 2013], relationship structures [Ahuja 2000] or the behaviour of innovation networks throughout the phases of the innovation process [Pyka, Küppers 2002 cited after: Calia et al. 2007]. Business

networks are also viewed as the sources of innovation, which includes resources [Ostendorf et al. 2012] and relationships [Hara et al. 2012], including supplier-customer relations [Oinonen, Jalkala 2012].

The process of innovation in business networks can be characterised by the following four stages [Ostendorf et al. 2012]:

- 1) detecting – “(...) the exploitation of new ideas and analysis of problem statements in order to achieve a consensus concerning further development that could lead to an innovation outcome”,
- 2) developing – “(...) the process of further exploring ideas in order to create new knowledge and develop (...) innovation”,
- 3) contracting – “(...) multiple actions including the representation (...)” of innovative solution to potential customers, receivers, the evaluation of those and the achievement of a final agreement concerning the matter of innovation,
- 4) launching – “(...) the necessary preparations and allocation of resources for the launch”.

Ostendorf and co-authors proposed the framework for studying innovation in business network to examine how companies’ resources are leveraged in each of the stage within this process [Ostendorf et al. 2012]. The aforementioned stages of the innovation process can also be applied to the furniture industry. The subject literature, however, lacks a comprehensive analysis of this process, including the way in which the nature of the furniture industry impacts the innovation of firms operating within network structures, as well as course of the innovation process within furniture networks.

In light of the research in to innovation and business networks it can be deduced that cooperation among furniture firms and their active participation in business networks creates more beneficial conditions for innovation in comparison to the potential of an isolated firm [Feldman, Florida 1994; Powell et al. 1996; Porter 2001; Freytag, Clarke 2002]. Figure 1 shows the proposed conceptual framework for the innovation process from the perspective of a firm operating as part of a business network, using the Polish furniture industry as an example.

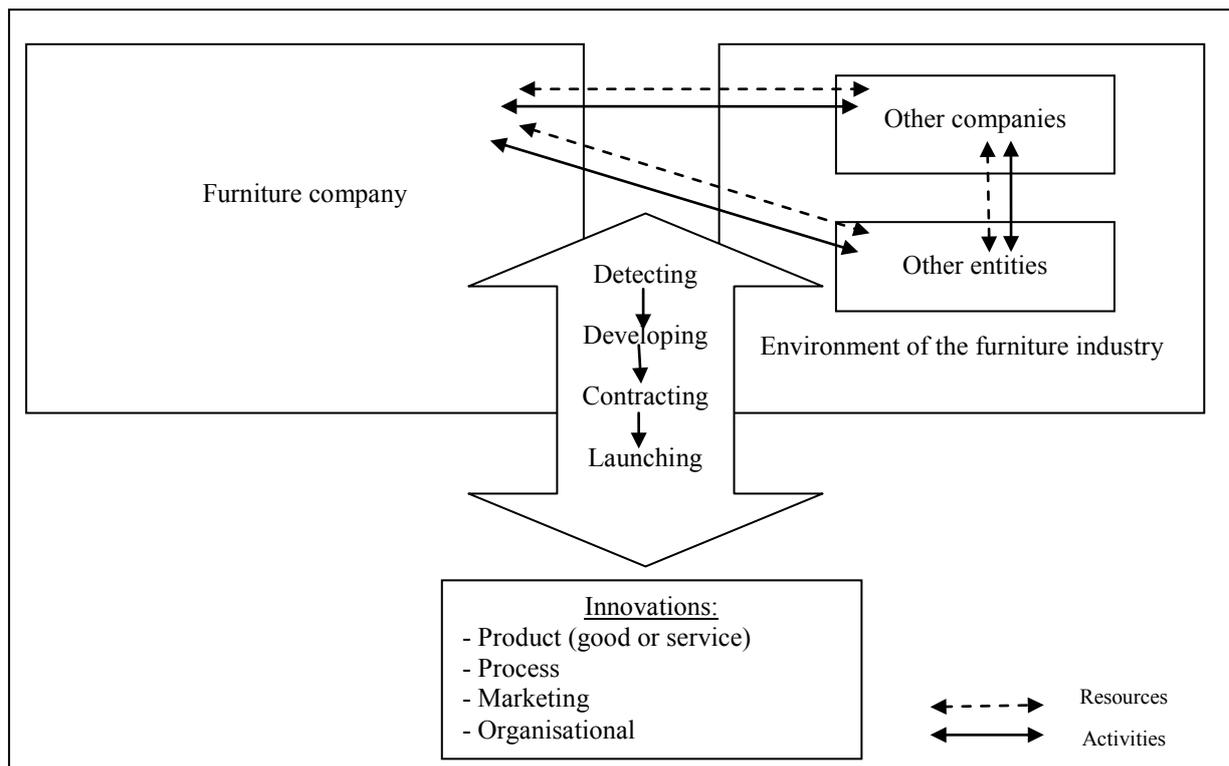


Figure 1. Conceptual framework for the innovation process from the perspective of a firm operating as part of a business network, using the Polish furniture industry as an example

The starting point for the conceptual framework is the ARA model. Every firm (actor), as a result of its business operations is tied to multifaceted interactions with entities from the immediate and distant environment, from within the industry and beyond it (forming the environment of the furniture industry). As a result of the actions undertaken by firms, arises the utilisation of the resources of one or more entities. Activities supporting innovation may result from the interaction of firms with entities from the surrounding environment, including bilateral (dyadic) relations, exchanges of information, experience and knowledge, as well as the involvement of resources.

The presented framework assumes that the process of innovation in a business network may be characterised by four stages: detecting, developing, contracting and launching (proposed by Ostendorf, Mouzas and Chakrabarti [2012]). At the same time, specific stages of this process often overlap and therefore it is often impossible to point to the moment in which they began or finished due to the fact that the innovation process subject to discussion is elastic and could be subject to constant change. The conceptual framework assumes that innovations may be both shaped under the influence of the current situation in a firm, as well as impact the decisions taken by the firm in terms of activities and allocated resources. A firm's innovation activities lead to product & process innovations as well as innovations within marketing activities or organisational processes (within the scope adopted by the OECD [OECD 2005]). Regardless of its nature, the result of innovation may apply to both one firm as well as a group of entities which decided to engage joint resources in innovative activities, in this way expecting to benefit from economies of scale. As a result, innovations may be the property of one firm or many actors.

The presented conceptual framework may be applied to every industry, however, particular importance may be placed on the furniture industry. Due to the limited areas for innovation in the furniture industry resulting from the properties of utilised materials, product diversity, fragmented dispersion of firms within the furniture industry as well as multi-stage

production processes and therefore extensive supply logistics, an increase in innovative potential (includes the identification of sources of innovation and its stages of creation) is crucial for the firms within this industry.

Participation in a furniture industry network may neutralise the negative effects stemming from the nature of the furniture industry and create a basis for generating economies of scale, including the prospects of increasing innovation both for the firm in question as well as entities from the surrounding environment. Cooperation within business networks may make it easier for a firm to access knowledge about the market and new resources. This is particularly important due to the fact that the entity structure of the furniture industry is dominated by micro and small firms (about 91% of firms employed up to 9 people and 7% between 10 to 49 employees [CSO 2013]) which usually have limited capital resources at their disposal and limited access to information (e.g. information regarding the availability of additional sources of finance, new techniques & technologies, interpretation, legislative solutions etc.), whilst firms within a business network have the possibility to cooperate and utilise resources which are often beyond the reach of an isolated firm.

Moreover, the multi-stage furniture production process and the complicated assortment structure constitutes a potential for engaging in joint activities and the utilisation of varied resources by many actors. It is typical for entities within network structures in this industry to operate service-based businesses or those engaged in both providing services and producing goods [Ratajczak-Mrozek, Herbeć 2014b]. Such a differentiated entity structure within the surrounding environment may foster the development of all of the aforementioned types of innovation. Entities from the surrounding environment offering furniture projects & design or IT services may have a significant contribution in this respect. Cooperation with the former often occurs at the primary stage of furniture production, where the shape, functionality and appearance of a product is established, which has a significant impact on the innovativeness of materials used or the production process itself [Feliksik 2013]. In the case of the latter (companies providing software which may be used in every stage of the production & management processes in the furniture industry) are responsible for, among others, controlling technological processes and their regulation, supporting management processes (e.g. the provision of HR or reporting software), supporting marketing activities (e.g. administration and management of web-pages) as well as training [Ratajczak-Mrozek, Herbeć 2014b]. An important stimulus for innovation in the furniture industry may also be cooperation with actors from the surrounding business environment e.g. Research & Development centres or institutions of higher education. The offering of this group of entities for the furniture industry boils down to carrying out basic research which is used in the development of the furniture industry, providing services related to accreditation and certification, providing qualified human resources, knowledge transfers and training [Beer 2013].

The examples of exchanges in knowledge and experience, joint activities and utilisation of resources may be one of the incentives for undertaking innovative activities. The stages of innovation adopted in the conceptual framework are somewhat simplified (due to volatility in the process and therefore the difficulties in establishing the points at which each stage is completed). However, one of the first tasks undertaken by actors within a furniture industry network in order to achieve innovative solutions (“detecting stage”) include such activities as: identifying the need to improve a product or service, an analysis of the current situation whilst looking for a manner in which to change or improve it etc. An example may be the need to change the upholstery used in the production of upholstered chairs to a material containing particles of nano-silver which makes the material more durable and safe, thereby modifying the properties of the end-product. In turn, work tied to task planning and the specification (or modification) of initial ideas, the creation of new solutions (e.g. in terms of techniques and

technologies), improvements in the production process, product improvements or the definition of new marketing methods and product distribution are examples of activities which can be classified as being in the second stage – developing. In the case of the process of introducing new upholstery with particles of nano-silver, typical activities are those associated with the identification of suppliers of such materials and the possibility of applying them in the production process, the design of a new product, analysis of preparatory work required to adapt the production processes, forecasting demand for these types of products, other calculations in terms of economic benefits etc. The next stages of the innovation process (contracting & launching) cover the verification of the results achieved as a result of the tasks carried out to-date in terms of their application, market practices, acceptance of potential customers, users and all other tasks required for their final implementation and finally – implementation. In our example, these stages include the presentation of the planned product to potential customers (e.g. hotels), profitability assessments, receiving orders and finally, initiating production.

All of these activities and the allocation of resources may give rise to innovations in terms of products (e.g. significant improvements to products or services in terms of materials), processes (e.g. significant improvements in production or supply methods), marketing (e.g. the implementation of significant changes in product construction or packaging, distribution or promotion) as well as in terms of organisation (e.g. the implementation of new organisational methods with respect to the surrounding business environment).

Firms from the furniture industry are characterised by differentiated ties with entities from the surrounding business environment (in terms of their durability and level of formalisation), which impacts any joint-activities and resource sharing. These factors are different also depending on the type of network in which a firm operates. The aforementioned examples of cooperation between various entities from the immediate and more distant business environment in the case of the furniture industry occur, among others, within clusters operating on the furniture market. In turn, innovation in purchasing groups is largely tied to the distribution and promotion of products. In the case of supply chains, the requirements of end customers regarding the quality of services and goods is a factor influencing the level of innovation in a firm (including production technologies and techniques). It is significant that due to the nature of the innovation process, namely its elasticity and unlimited potential, the types of innovation mentioned above can occur in all types of furniture network structures.

CONCLUSIONS

The level of innovativeness of production processes and manufactured goods is an important factor in the process of building companies' competitive position in the market. That is the reason why innovativeness needs special attention.

In the case of the furniture industry its specific nature has a significant bearing on the innovation potential. The basic raw material used by the analysed companies, i.e. wood, is a natural raw material and its supply, to a large degree, depends on natural factors, independent from the specific company. However, this industry which is classified as being traditional (low-technology) actually is engaged in many activities and utilises the resources typical of a more high-technology one. This includes specialised machinery (e.g. machines used for modelling three-dimensional curved fronts, machinery for staining and varnishing wood based panels and solid wood elements using ultraviolet radiation [Ratajczak 2009]) and software (e.g. used in retooling production lines). Diverse level of modernity of particular production processes utilised by the furniture companies, i.e. from traditional woodworking

techniques and technologies to highly technologically advanced processes in the furniture industry, deserves one's attention. These resources and activities diversified in terms of technological advancement constitute a high potential which through network relationships and cooperation can be better utilised, which in turn can translate into growth of innovation. Network relationships and cooperation can significantly contribute to creation of innovation in the furniture industry. The conceptual framework proposed in the article for the innovation process from the perspective of a firm operating within a business network may be a starting point for assessing the sources of this innovation.

In the future, both network processes as well as the significance of innovation will become increasingly important, hence the outlined research area requires further, detailed analysis. Above all, an empirical analysis is required in order to verify the proposed framework and dependencies. An analysis of the sources of innovation in specific types of business networks in the furniture industry is required, as is an analysis of the problem of collective ownership of jointly developed innovation in a network.

ACKNOWLEDGEMENT

The paper was written with financial support from the Polish National Centre of Science [Narodowe Centrum Nauki] - Decision no. DEC-2012/05/D/HS4/01138. Project "The global and local dimensions of business networks" (project leader Milena Ratajczak-Mrozek, PhD).

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Streszczenie: *Współpraca przedsiębiorstw meblarskich i ich innowacyjność – podejście sieciowe.* Celem artykułu jest identyfikacja potencjału sieci biznesowych dla wzrostu innowacyjności przedsiębiorstw przemysłu meblarskiego w Polsce. W artykule przedstawiono podejście sieciowe do współpracy przedsiębiorstw w przemyśle meblarskim w kontekście innowacyjności przedsiębiorstw z tej branży w Polsce. Podstawą dla modelu koncepcyjnego były przeprowadzone w latach 2013-2014 badania typu desk research oraz konsultacje z ekspertami z obszaru sektora drzewnego. Stanowiło to punkt wyjścia do stworzenia ram koncepcyjnych dla ujęcia sieci biznesowej i współpracy pomiędzy jej uczestnikami jako źródła innowacyjności. W modelu koncepcyjnym za punkt odniesienia przyjęto relacje przedsiębiorstwa z podmiotami z otoczenia w oparciu o model ARA (Actors-Resources-Activities; Aktorzy-Zasoby-Działania), podstawowy model analizy w ramach podejścia sieciowego. Wybór branży meblarskiej do analizy jest podyktowany ograniczonymi obszarami dla innowacyjności w meblarstwie wynikającymi z właściwości stosowanych materiałów, różnorodności struktury asortymentowej produkowanych wyrobów, rozproszonej struktury podmiotowej przemysłu meblarskiego oraz wieloetapowego procesu produkcji. Przeprowadzona analiza może stanowić punkt wyjścia dla oceny źródeł innowacyjności z perspektywy przedsiębiorstwa funkcjonującego w sieci biznesowej.

Słowa kluczowe: struktura sieciowa, przemysł meblarski, innowacyjność, współpraca, podejście sieciowe

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