Creating value for customer in business networks of high-tech goods manufacturers

Abstract

The main paper goal is to recognize the category of value for customer with respect to high-tech products, and to propose a model of creation of this value in business networks established by manufacturers. The research methods include critical analysis of the literature, documentation method, as well as the case research method and observation method. The results of the research proved that the value offered to buyers is characterized by growing multidimensionality which results in increasing complexity of the creation process of this value by their manufacturers. Due to the fact that they do not have complex skills and resources to create the value independently, they form business networks. These networks include increasingly larger group of entities, in which the importance of individual cooperants is highly diversified.

Keywords: value for customer, business networks, high-tech goods.
JEL classification: M31.

Introduction

Dynamically changing external and internal conditions of functioning of high-tech goods manufacturers force them to implement improved and new products faster on market. Because of their multifunctionality they can satisfy increasingly broader and more complex bundles of consumers’ needs associated with their personal and professional life. To gain customers’ approval these products should be the carriers of value searched for by them (innovative and preferably not offered by competitors). Manufacturers usually do not have ap-
propriate knowledge, competences and resources at their disposal to create individually such a value for customers in an effective and efficient way. This is why they establish business network involving various entities (their number is constantly growing). Consequently, the high-tech products develop their systemic character.

Research concerning systemic products created in strategic business networks has been undertaken relatively seldom and more frequently concerned the sphere of services. The goal of this paper is to recognize and describe the category of value for customers of high-tech goods and also to propose a model of creation of this value in business networks created by manufacturers of these goods. With reference to the goal formulated in this way, the following research questions have been formed: How can value for customer be defined in marketing approach with reference to high-tech goods (in the context of theoretical approach)? What is the specific nature of value of high-tech goods for buyer? What subjective structure does a business network (creation of value for customer) of high-tech goods have? Which entities of this network, apart from final producer have the key contribution to the value proposed to the customer (including its enhancement)?

The method of critical analysis of the literature of the subject (based on major academic books and journal articles predominantly in the field of relationship marketing, value-based marketing, open innovation, business networks, marketing of high-tech products and innovations), and documentation method (based on source materials from high-tech goods manufacturers and their suppliers, distributors, etc. as well as on studies and reports of institutions monitoring high-tech goods market and sector) are applied in the paper. Additionally, qualitative research based on own research method concerning cooperation between high-tech goods manufacturers and their cooperation partners in the field of creating value for customers and on the analysis of scientific case studies (which showed the best marketing practices associated with creating value for customer in business networks of manufacturers) is used together with observation method (that performs an auxiliary function).

1. Value for customer in marketing theory

Value, as an interdisciplinary category, is defined in different ways in various sciences and scientific disciplines such as philosophy, sociology, psychology and economic sciences (including science of management). The lack of unequivocal way of defining the notion of value shows its complex and multifaceted character as well as relativism.
In economics, the notion of value refers to usability, the so-called usage value, and is directly associated with a product. Usage value represents the ability of a product to satisfy specific consumers’ needs. In other words, usage value is “a perceived assessment that is based upon the perceived benefits of a product” [Kenyon & Sen 2015]. It is composed of the whole of physical and chemical qualities of a product (offered at a specific price) thanks to which it can satisfy these needs. This value is subjectively perceived by every customer [Samuelson & Nordhaus 1994].

In the theory of marketing (located in the discipline of management sciences) the notion of value is approached in a broader sense because it refers to consumers’ life in particular environment (e.g. their functioning in definite external and internal conditions) and the needs satisfied by them, and not only to their direct relationship towards the product. According to theoretical assumptions of contemporary marketing concepts, e.g. value-based marketing [Doyle 2000], relationship marketing [Gummesson 1987; McKenna 1991; Payne 1991] and marketing 3.0 [Kotler, Kartajaya and Setiawan 2010], a product has a specific value for every consumer, the so-called value for the customer. Depending on the marketing concept, this value has various dimensions or includes different elements.

Table 1 shows most important definitions of value for customer found in the marketing theory. The concept of added value chain developed by M. Porter was the inspiration for research, and consequently, for formulation of many definitions.

Table 1. The more important definitions of value for customer in the marketing theory

<table>
<thead>
<tr>
<th>Year</th>
<th>Authors</th>
<th>The definition of value for customer</th>
</tr>
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<tbody>
<tr>
<td>1988</td>
<td>V.A. Zeithaml</td>
<td>“The consumer’s overall assessment of the utility of a product based on perceptions of what is received and what is given.”</td>
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<tr>
<td>1991</td>
<td>K.B. Monroe</td>
<td>“The ratio between perceived benefits and perceived sacrifice (includes all the costs the buyer faces while making a purchase).”</td>
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<tr>
<td>1994</td>
<td>B.T. Gale</td>
<td>“Market-perceived quality adjusted for the relative price of product.”</td>
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<td>1996</td>
<td>A. Ravald &amp; C. Grönroos</td>
<td>“A function of both episode value and relationship value, where there exists a special relationship between the element in the function (total episode value = episode benefits + relationship benefits / episode sacrifice + relationship sacrifice).”</td>
</tr>
<tr>
<td>1997</td>
<td>R.B. Woodruff</td>
<td>“A customer’s perceived preference for and evaluation of those product attributes, attribute performances, and consequences arising from use that facilitate (or block) achieving the customer's goals and purposes in use situations.”</td>
</tr>
<tr>
<td>2000</td>
<td>P. Doyle</td>
<td>“The customer’s estimate of the product’s or service’s ability to satisfy their needs (emotional, economic, or, more likely, some combination of both).”</td>
</tr>
<tr>
<td>2005</td>
<td>M. Szymura-Tyc</td>
<td>“Surplus of benefits subjectively perceived by customer over subjectively perceived costs related to buying and using a particular product.”</td>
</tr>
<tr>
<td>2010</td>
<td>Ph. Kotler &amp; G. Armstrong</td>
<td>“The customer’s evaluation of the difference between all the benefits and all the costs of a market offering relative to those of competing offers.”</td>
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Source: Based on: [Zeithaml 1988; Monroe 1991; Gale 1994; Ravald & Grönroos 1996; Woodruff 1997; Doyle 2006; Szymura-Tyc 2005; Kotler & Armstrong 2010].

1 Cf. [Sagan (red.) 2011].
2 The notion of value for customer was introduced into management sciences by Drucker in 1954 [Drucker 1993].
3 According to this concept, shaping and providing value for customer is a condition for establishment of competitive advantage of the company [Porter 1985].
Creating value for customer in business networks...

On the basis of definitions of value for customer common features of this category can be indicated. Generally, they include a group of benefits obtained by the customer (functional, emotional, cognitive and social) the carriers of which are objective and subjective qualities of a particular product in comparison with the costs (financial and non-financial [Woodall 2003]) incurred on its purchase and use. This value reflects the level of capability of a particular product to satisfy a specific need or a bundle of needs of consumer in its whole lifecycle at the customer.

Comparing definitions of value for customer, differences can also be noticed. They particularly concern the type of value (the notions of expected value and value obtained by customer are not synonymous) as well as elements and costs of value.

While creating value, companies can apply one of five basic strategic options based on relationship between benefits and costs perceived by consumer (Figure 1).

**Figure 1. Options of creation of value for customer by company**

![Value Options Diagram](image)

Source: Based on: [Weinstein 2004, p. 112].

According to B. Gale [1994], the fair-value (FV) line is "the line of points at which competitors would neither gain nor lose market share with respect to price-quality trade-offs". In the case of this option discount, fair and expensive values perceived by buyer coincide with the costs incurred to obtain them. Best value option (that includes the area above FV line) generally means that benefits perceived by buyer are significantly higher than the costs. This allows companies to achieve a strong competitive advantage and therefore this option is most beneficial for them. On the other hand, poor value option (the area below FV line) refers to the situation in which the consumer perceives benefits as consid-
erably smaller in comparison with the costs incurred to obtain them. This option is not recommended for companies because it brings failure on market.

Summing up, in marketing theory, the category of value for customer is recognized as one of the key ones. Its fundamental importance results from the fact that the value of the product and actually its subjective perception by consumer is the major element of the process of making buying decision by them. This value determines demand and consequently, competitive position of the company.

2. High-tech goods and their characteristics

Selected high-tech products belonging to two out of four groups identified according to OECD classification, i.e. high-technology, or in other words advanced technologies (usable electronics and radio & television equipment), and medium-high-technology products, in other words medium-advanced technologies (cars and household equipment) are the research subject of this paper.

Analyzed high-tech goods are highly diversified with respect to their qualities and usability, and consequently the scope and possibility to satisfy consumers’ needs. They are also characterized by various degrees of technological complexity which makes it necessary for companies to have other elementary skills and key competences while designing, manufacturing and selling them. They are also diversified with respect to conditions of purchase and use by customers. This distinctness of high-tech qualities affects their potential in the sphere of systemic nature (particularly considering the possibility to provide them with additional services), and consequently the structure of value creation.

Currently, majority of high-tech goods are multifunctional goods that allow for meeting many customer needs of diversified character (made of basic, psychological and self-fulfillment needs), for example bundles of housing needs, related to education, rest, health protection and professional career. This makes them increasingly more important elements of consumers’ life.

Products studied in this paper are in majority produced by global corporations, including Samsung Electronics (radio & television, and household equipment), Matsushita (radio & television equipment of Panasonic brand), BSH

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4 The very level of technological advancement of particular products (even goods of the same category) frequently differs in a significant way which may affect perception of value of a particular offer by customer.

5 New discoveries in the sphere of molecular and genetic engineering, biotechnology, etc. result in the fact that the number of needs satisfied by means of these goods is systematically growing. New needs also occur as a result of implementation of further innovations on market, e.g. controlling household devices while being away from home.
Hausgeräte (household equipment of Bosch, Siemens and Zelmer brands), Amica Wronki (household appliances), Daimler (Mercedes brand cars) and Toyota Motor (Toyota and Lexus brand cars). Some of the entities are diversified companies operating in several sectors that are usually complementary. Their internal subjective structure already constitutes some integrated network within which value is created and delivered to various target segments.

The markets of high-tech goods belong to most dynamically developing markets in the world and their growth is determined mainly by development of knowledge and technology. Analyzing markets and sectors of high-tech products analyzed in this paper the following major trends in their development can be identified:

- departing from the concept of mono-products in favor of systemic products⁶ that form a set of many complementary goods and services occurring as a result of cooperation of many entities functioning in various sectors,
- shortened lifecycles of products, innovations and technologies as a result of faster implementation of new goods on market (due to increase in intensity in hypercompetition⁷, and also application of flexible systems of designing and production of goods, among others),
- extending and developing assortment (under the influence of growing demand heterogeneity that results from individualization of consumer lifestyle, among others) that results in growing market fragmentation (producers aim at serving microsegments, market niches or even individual customers, the so-called segment of one⁸),
- growing ecological demands towards high-tech goods and the process of their production as well as recycling, and also in the sphere of safety that also brings increase in production costs,
- progressing competition between producers in the sphere of productivity (also at growing surplus of productive capacity, e.g. in the sector of car industry),
- creation of global and/or glocal business networks for the purpose of acceleration of development of products and their elements scattered all over the world and growth of efficiency and effectiveness of R&D work.

⁶ See more: [Zabiński (red.) 2009].

⁷ Competition, particularly the price-related one is intensified both by expansion of low-cost Asian products on global market (e.g. Huawei, Foxconn, Xiaomi, Tata Motors, Qoros) and also development of private brands of international commercial chains of retail trade (e.g. Media Markt and Saturn, Walmart) in some categories of high-tech products (including radio and television as well as household equipment).

⁸ The necessity of larger diversification of marketing activities brings growing pressure on costs.
3. Composition of values for high-tech goods buyers

Creation and delivery of values for customer takes place within a specific system. It includes defining values for customers, shaping value proposition adjusted to their needs, communicating and delivering value propositions to customers and controlling the use of the value obtained by customer [Kotler 2005]. This system also includes all impressions customers have before obtaining the value and then their experiences while using the product. The company should appropriately manage such a system to make the value delivered to customers the best in their view. Furthermore it should be higher than the value offered by competitors. According to R.S. Kaplan and D.P. Norton [2004] the proposition of value should have an exceptional/unique character.

In the presence of dynamic changes occurring in the environment, manufacturers of high-tech goods look for innovative solutions that will allow for offering consumers a unique value at simultaneous decrease in costs and increase in flexibility of this process. High-tech products as goods forming an important element in the sphere of consumers’ life and their self-fulfillment should make life more comfortable, happier, safer, more exciting, productive, etc. Hence, using a particular high-tech product should provide them with a value that is experienced by them as special. This value is composed of a bundle of benefits expected by consumers that will improve their everyday functioning in private and/or business sphere. This is about the so-called total value proposition [Kotler 2012]. Figure 2 shows an example structure of values for customer of a premium brand car.

Figure 2. Structure of values for customer on the example of premium brand car

Source: Based on: [Herrmann & Huber 2009, p. 32; Kotler 2005, p. 60].
Value proposed by producers can be perceived in diversified way by consumers. It depends on the high-tech goods category, situation in which consumers make buying decisions (for example purchase for the first time, for the second time), how they use the product and also the time of purchase (perceived value of a product can change for example together with experience acquired during its use or under the influence of the course of interaction/relationship with company or brand). For example while buying a Mercedes car, consumers do it not only because of its qualities and functional benefits (e.g. performance and innovativeness of solutions), but also to find themselves in the circle of wealthy people (the brand is perceived as a symbol of luxury and prestige). Choosing Mercedes brand, and not a similar offer of other Premium brands (BMW or Audi), the buyer probably assesses its perceived total value the highest, for example because of a larger range of additional services, lower costs of use, etc.

Creation of innovative total value for high-tech goods buyer demands application of many various ideas, innovative technologies and other solutions. The most important elements that must be indicated include remote control of radio, television and household equipment while being out of home, access to information (e.g. advice and suggestions of use) thanks to connection with the Internet, capability of proactive cooperation with the user and other devices, attractive packages of financial, insurance, service, telecommunication and loyalty services (mainly including economic and emotional benefits), etc., and also flexibility in individual configuring of product qualities by the buyer. It can be noticed that the degree of complexity of high-tech goods is successively growing which makes operating them more complicated. Already nowadays, majority of products have remarkably larger number of functions than are needed by an average buyer. If operating them is not intuitive (but requires reading the operating manual several times) the phenomenon of feature fatigue is observed among customers [Thompson, Hamilton & Rust 2005]. This lowers value perceived by them which may result in unwillingness to buy a particular product. Therefore, high-tech goods manufacturers should consider this aspect in the process of creation of value for customer.

4. Business networks of high-tech goods manufacturers

Growing complexity of high-tech products results in the fact that while wishing to create and provide buyers with the value they expect, manufacturers

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9 High-tech goods are developing towards the so-called smart products that are characterized by built-in knowledge, artificial intelligence and communication capabilities. This development trend is determined by implementation of the concept of the Internet of Things.
must establish and/or strengthen cooperation with increasingly larger number of entities from the environment, including suppliers, producers from other sectors, distributors and resellers, companies providing services of various profile of activity, banks and even with competitors and the very consumers. This is because majority of producers do not have complex knowledge and resources at their disposal to individually create and deliver innovative value for customer. This is why they have to acquire them in the environment. Some product innovations demand application of such technologies or solutions that a particular producer does not have, e.g. solutions in the sphere of electromobility or communication technologies in new vehicles (e.g. car-to-car, car-to-infrastructure and car-to-home/office type), efficient technologies of energy and water saving in household devices as well as teleinformation technologies in radio & television equipment (e.g. Smart TV that can perform the function of home entertainment centre). On the other hand, cooperation with service-providing companies creates the possibility to develop the value for customer as a result of ‘providing’ a physical product with various services.

Formation of networks of shaping and delivering value for customers, also referred to as strategic business networks, and sometimes also the network of innovations\(^\text{10}\), was a consequence of acquisition of knowledge and resources by high-tech goods manufacturers. This means that they created their own business eco-system in which they constitute the core/focal firm or an orchestrator. Business network is perceived here as a system of contacts based on partnership and alliances that a particular company established for the purpose of growth of resources and increase or implement its offer [Kotler 2005]. Considering the aspect of relationships, strategic business network constitutes a system of long-term formal and informal connections that occur between the core firm and cooperating entities [Ricciardi 2014]. Such network emerges as a result of longer process of development of relationships and interactions occurring within interactions [Ford, Gade, Häkansson and Snehota 2003] (between the core firm and its suppliers and service providers supplier partnerships); past and current buyers (customer/buyer partnerships); competitors, supporting entity (e.g. banks, consulting firms, etc.), regulation authorities, non-profit organizations, and strategic alliances (external partnerships), as well as employees, functional departments or business units of the company (internal partnerships)\(^\text{11}\). It must be added that competitive advantage is achieved by the producer that has created a better network of value creation and at the same time is able to manage this entire system appropriately.

\(^{10}\) Creation of value for customer in the network is based on the model of open innovations suggested by H. Chesbrough [2003].

\(^{11}\) Cf. [Woodside (ed.) 2010].
It can be noticed that the number of entities engaged by producers of studied categories of high-tech goods in the process of creation of values for customer within business network is growing together with the increase in the level of complexity of benefits expected by consumers. This results in the fact that value gains a systemic character. Figure 3 shows the model of business model of high-tech goods manufacturer in which a value for customer is created.

**Figure 3.** Model of creation of value for customer in business network of high-tech goods manufacturers

Business networks of studied entities are mainly open type networks. They are characterized by remarkable flexibility which allows for adjustment of their subjective structure to changing conditions in the environment. Growing complexity of the network is their consequence.

Analyzing the entities that the studied manufacturers cooperate with in business network, it can be noticed that car manufacturers and then producers of household devices have the largest number of co-operators. This particularly concerns strategic partners (they often establish alliances of a vertical nature with them, e.g. with suppliers and/or of horizontal nature, e.g. with producers...
from other sectors and also with competitors\textsuperscript{12}). Suppliers of key sub-units and solutions (including technological, teleinformation, communication, electronic and electric as well as ecological solutions) for final products are strategic partners for high-tech goods manufacturers. The value perceived by the consumer significantly depends on the quality and innovativeness of elements provided by them. In the case of automotive concerns, they are, among others, producers of software, electronic systems, propulsion systems, communication technologies, safety modules, etc.\textsuperscript{13}.

Independent distributors and retailers, including specialist commercial chains are important partners in business network for studied companies, mainly the producers of radio, television and household equipment. This is because they perform the major part of sale of these products. Having a direct contact with the customers, they can provide the producers with information about their preferences and expectations. This favors better adjustment of offered value to customers’ needs. However, acquisition of information from independent distributors and retailers is difficult and additionally this data may be incomplete or not fully reflect the reality. This is why some producers develop their own brick-and-mortar channels of sales in the form of brand showrooms, e.g. Samsung Brand Store and Sony Centre. These showrooms provide buyers not only with the possibility of acquisition of knowledge about complete offer in an attractive way, and professional consulting, e.g. in the sphere of selection of solutions best adjusted to their needs, but also testing a particular device, acquisition of knowledge about technological innovations applied in it and checking the potential in the sphere of cooperation with other devices of a specific brand. This type of possibility of product experiencing by brand showrooms significantly increased value proposed for the customer.

Creation of own electronic sales channels has become a common practice of producers of household, radio and television equipment. This allows them to

\textsuperscript{12} In 2011 Daimler company started cooperation with entities of another alliance, e.g. Renault-Nissan. Its goal is to develop designs of passenger cars and light vans (including electric ones) together, share propulsion units and their collaborative development, and exchanging best practices. The alliance is to facilitate increase in competitiveness for partners in the segment of small and compact cars while maintaining the identity of individual brands. More at: [\textit{Renault-Nissan Alliance...} 2010].

\textsuperscript{13} Recently, the number of defects in cars caused by errors in software (and not in production of parts or their assembly) is growing. This results from the fact that cars are increasingly more ‘filled’ with electronics while becoming somehow ‘electronic gadgets’ (e.g. connected cars). Already now software controls majority of car sub-units. This type of defects has occurred in the case of majority of car makes (including Toyota, Prius and Mazda 6) which unfavorably affects the value perceived by the buyers. In luxurious cars the costs of electronics and software constitute even over 50% of price and in electric cars around 75%. More at: [\textit{Oprogramowanie stanowi...} 2014].
operate flexibly and fully control the value proposed to customer (similarly to brand showrooms).

On the other hand, automotive companies conduct sales for example in Poland only through their own showrooms (Mercedes, Toyota and Lexus) and/or in franchise system controlled by them (Toyota). Own electronic channels support sale of cars (e.g. they give access to product configurators, allow for making preliminary offers and making an appointment for test drive) and additionally they enable purchase or free downloads of various applications, navigation maps and software updating.

Service-providing companies, including guarantee and post-guarantee service providers (licensed and independent), banks, insurance companies, telecommunication, installation companies, etc. perform a growing role in business networks of high-tech goods manufacturers. Starting cooperation with this group of entities makes it possible for the producer to expand the ‘pure’ high-tech product of a set of services adjusted to the needs of a particular market segment and even individual buyers. It is important that a set of such services can be modified according to customers’ expectations faster and at lower cost than the very physical qualities of a product.

Together with development of modern designing and communication technologies, consumers are becoming an increasingly more important entity in business network of high-tech goods manufacturers. They are engaged in the process of value creation more frequently than before\(^{14}\). However, for the time being the approach in which the producer mainly exchanges value with consumers, while creating it in cooperation with other entities functioning in their business network is still predominant. It results from the fact that majority of consumers do not have sufficient knowledge and competences. Consumers also cannot clearly indicate own needs towards specific technologies because it is difficult for them to predict what benefits it can bring. This is why producer finds it difficult to define and create value together with consumers. So far, customers are mainly engaged in designing non-technological qualities of high-tech products (they are often secondary qualities at purchase), such as e.g. the size, the look, design, color, etc. Consumers also participate in composing a set of functions, accessories or additional services out of modules made accessible by the producers. This is a result of application of the mass customization concept by manufacturers.

\(^{14}\) The outline of a new concept of creation of value for customers, with their participation, was developed by [Prahalad & Ramaswama 2004].
**Conclusions and further research**

Results of conducted studies allow for answering the questions raised in the research. High-tech products, as increasingly more important elements of consumers’ private and/or business life, must provide them with the value that is unique in their opinion. This value should include a bundle of profits expected by consumers, of diversified character that will improve their everyday functioning. It ought to be emphasized that consumers constantly look for new goods and services compatible with their lifestyle. Proposing such a value makes producers apply more and more developed technologies and other solutions. The process of creation of value for high-tech products buyer is consequently becoming more and more complicated. This firstly results from growing complexity of these goods and consequently their growing multifunctionality which makes it possible for them to satisfy increasingly more diversified consumers’ needs. Secondly due to the fact that producers do not have comprehensive competences and resources at their disposal to create multidimensional value for customer individually and in an effective way, they must cooperate with increasingly more numerous group of entities from the local and global environment. Because of the necessity to coordinate activities of all entities, they create business networks.

Business network model presented in the paper actually takes into consideration all groups of entities with which high-tech goods producers already cooperate or will have to cooperate in the future. Therefore it can be assumed that in this sphere it has a universal character. However, the number and type of cooperants operating in the network and their role in creation of value depends on product category. Nowadays, the networks of car manufacturers include most entities (due to potentially most multidimensional value proposed to customers) and slightly fewer the networks of producers of household, radio and television devices. On the other hand if the share and importance of individual entities of business network is considered, the largest impact – due to well-developed R&D infrastructure – on value proposed to customer, particularly of radical innovation nature, is observed among the very producers of high-tech goods and suppliers of key components (because they determine the value proposed to customer in a large degree). The role of service-providing companies (they create large possibilities of flexible value development) and the very consumer (mainly with reference to creation of incremental innovations) is successively growing in this process.

The value for customer, created by high-tech goods manufacturers in their business networks are characterized among others by growing systemic character and changeability in time. Further technological progress and evolution of consumers’ lifestyle towards its individualization and ‘networking’ can intensify
these features. Therefore, it might be worth undertaking further and/or more detailed research into these categories also with reference to other types of high-tech products (offered not only by global but also local, non-diversified companies) in the future. In view of marketing, recognition of the possibilities of increasing the level of engagement of high-tech goods buyers in the process of value creation, e.g. reasons, scope of their share in individual stages of the process of creation of values as well as methods and tools of cooperation with producer and other entities in business network) would be an interesting research trend.

References


