INTRODUCTION

Innovation is becoming an imperative for the development of enterprises and the networks created by them. Innovation processes themselves have undergone significant transformation and at present are of complex systemic nature. Current models of innovation development involve cooperation between many entities and treat the inclusion of the consumer as an essential condition if a market-oriented innovative solution is to succeed. The modern approach to innovation allows one to create a system of products that provide consumers with the expected value achieved through diverse benefits delivered at different levels of the product and in the form of a properly chosen offer. The co-creation of values by the consumer in the process of developing innovation not only increases the chance of developing a product or service tailored to existing needs, but, above all, is the basis for creating new, yet unrealized needs. This way of thinking and operating increases the chances of improving the competitive situation and long-term development.

The aim of this article is to present the ways of creating consumer values in the development of product innovation. It places particular emphasis on consumer needs and ways of including consumers in the process. The concept of value is presented, along with its attributes and ways in which it is created in the context of product structure. It will be important to present the contemporary role of the consumer in the creation of innovative products and services. To illustrate the theory presented in the literature of the subject, a case study of development of product innovation was used in which the creation of consumer values was carried out with the active participation of consumers.

THE CREATION OF CONSUMER VALUES IN PRODUCT STRUCTURE

In the subject literature, a great deal of attention has been devoted to defining the concept of customer values. The value delivered to the customer is the difference between the total value of the product for the customer and the costs they must bear in connection with
its acquisition [Łapczyński 2010, 67]. Customer value can be defined as the excess of the benefits that are subjectively perceived by the customer over the subjectively perceived costs associated with the purchase and use of the product [Szymura-Tyc 2012, 50]. The benefits the customer reaps are related to the needs he or she intends to satisfy by purchasing and using the product. Individual consumers are mostly looking for benefits associated with satisfying their existential, social, and psychological needs. Institutional buyers, on the other hand, seek benefits which will enable them, and the members of the organisation, to survive and develop the organisation as a whole. In the case of costs, a distinction may be drawn between monetary and non-monetary costs. Monetary costs include: price, cost related to searching for the offer, procurement of the product and finding the way of acting. Non-monetary costs include: costs related to relationships with others, psychological costs, time spent and physical energy expended [Łapczyński 2010, 69].

Customer value included in the product is manifested in four levels. Basic value included in the core of the product is associated with the acquisition of basic benefits for a specified price. Additional value present on the second level is created by additional benefits related to packaging, design and complementary services which the product is equipped with. The costs in this area include the terms of payment, operating costs and other costs related to purchasing the product. The extended value is services that proceed and follow the sale, including: design, consulting, delivery, service, and financial services. On the fourth level of the relationship value there is a benefit related to the quality of relationships made by the consumer with enterprise and intermediaries in distribution channels [Zabin’ski 2012, 35].

It should be noted that together with the growing importance of the value category the following phenomena have become more important:
- increase in consumer activity in the process of value creation;
- increased interest in the creation of system products as a set of customer values.

Including the consumer in the process of co-creating values has become an important challenge for modern enterprises. Especially challenging are, first and foremost, recognition of constantly changing and diverse consumer needs, the creation of an appropriate set of values responsive to their needs and expectations, reaching customers with information about the enterprise’s offer and the provision of the expected values at the right place and at a specific time. Moreover, changes in methods of collecting, processing, and, in particular, providing information have become the basis for searching for new solutions in coordinating and controlling value creation processes for the consumer.

The co-creation of values envisages consumers adopting actions that affect the final composition of values that they themselves or other clients receive from the enterprise [Doligalski 2010, 277]. Consumers co-creating values themselves is to undertake actions to obtain values tailored to individual needs and expectations. Mass customisation is an isolated activity of one client, which is targeted at one product; it is not a common activity undertaken by many customers seeking to modify certain types of products [Doligalski 2010, 277]. According to the definition, the customers themselves participate in the exchange of values with the company, resulting in a personalised composition of values. Creation of a value targeting other consumers means that a single consumer participates in the creation of values for other consumers. Typically, a large group of consumers co-creates value for an equally large group of recipients.
As already indicated, customer values are also affected by the structure of the product. In the case of traditional products, the consumer acquires single and specific values, whereas in the case of system products they simultaneously obtain a number of equal values without having to compose them on their own [Zabiński 2012, 23].

In the subject literature, a shift from the classical model of creating customer values by the company to their co-creation with consumers through their participation in the development of a product or service is being more frequently observed. This product co-creation takes place on many levels and should lead to the fast and possibly overall acceptance of this product in the process of purchasing and using it. In view of the above, it should be noted that the interaction is formed in response to the desire to meet the companies’ and consumers’ prospects.

In the case of the consumer, this concerns meeting the needs and expectations as accurately as possible and providing satisfaction. The company, on the other hand, can proceed to build a sustainable competitive advantage on the market. Also of importance is that, thanks to the cooperation, the company gains knowledge which allows it to optimise the structure of the product and the offer for the customer. The enterprise provides the customer with the expected benefits and thus optimises the cost of operations. This way, value is created for the customer value and the company alike.

THE CONSUMER IN THE PROCESS OF DEVELOPING PRODUCT INNOVATION

Drucker noted that innovation must always be close to the market, focus on the market, and, in fact, be inspired by it [Drucker 1992, 42]. The traditional approach to innovation based on long-term and precise research, building teams in which each member has very specific tasks, and creating excessive monitoring and control structures is no longer effective. As indicated in the literature, the traditional approach to creation of innovation takes too much time and brings negative market outcomes. Therefore, enterprises use new models of value creation for customers, engaging them more and more in the processes of product innovation development. The research conducted by Allen Hamilton shows that the need to “listen to the customer” is one of the key success factors in innovation [Chesbrough 2003, 31]. The satisfied but still demanding consumer is an important link in the creation of product innovation in a company. Proper identification of needs and new ideas is becoming crucial in the context of the approach to the process of innovation.

The first attempt to involve the consumer in the process of innovation was presented in the context of the creation of the “prosumer” – consumers who have partially become producers to satisfy their own needs [Toffler 1997, 409]. The next concept was that of the leading user. Von Hippel believed that in every society there are people who are able to anticipate market needs – prominent individuals that form solutions before the needs for them are created [Oleksiuk 2012, 45].

The demand approach to innovation – User-Driven Innovation (UDI) is at present an important method of implementing innovation focused on creating ideas and solutions on the basis of knowledge and consumer needs. UDI is based on the use of consumer knowledge in the development of product innovations. Special focus is placed on discovery of
the real needs and systematic study of the consumer [Wise and Hogenhaven 2008, 21]. The combination of consumers’ in-depth knowledge with the resources and capabilities of companies in the area of creating innovative products may significantly facilitate the creation of value for the consumer. Operating while using the concept of UDI requires the company to better understand, identify the stated and hidden needs, and decide on the scope of the consumer’s participation in the development process of product innovations (direct or indirect involvement). Therefore, UDI uses two theoretical approaches:

- “Voice of the customer”, which is most commonly used with product innovations and based on identifying hidden needs as well as determining qualitative and features desired by the users of an existing product offer. It is also based on specialised methods that encourage consumers to express their thoughts, which constitute the basis for creating new solutions.
- The “lead user” means searching for, identification and development of new solutions whose co-creators are consumers; or more frequently it constitutes the commercialisation of ready ideas and solutions proposed by clients (Table 1).

TABLE 1. The UDI concept of innovation development

<table>
<thead>
<tr>
<th>Specification</th>
<th>Voice of customer</th>
<th>Lead user</th>
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<tbody>
<tr>
<td>Aim of the innovation process</td>
<td>identification of consumer needs</td>
<td>identification of solutions</td>
</tr>
<tr>
<td>Location of innovation process</td>
<td>an enterprise supported by external partners</td>
<td>outside of enterprise</td>
</tr>
<tr>
<td>Research method/means of implementation</td>
<td>Focusing on the product:</td>
<td>Cooperation with consumers:</td>
</tr>
<tr>
<td></td>
<td>– observation</td>
<td>– creating platform for product development</td>
</tr>
<tr>
<td></td>
<td>– brainstorming</td>
<td>– development of tools and initiating processes that involve consumers in innovation development</td>
</tr>
<tr>
<td></td>
<td>– reiterative testing</td>
<td></td>
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<tr>
<td></td>
<td>– implementation</td>
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</tbody>
</table>

Source: [Wise 2006].

Whichever approach is followed, the consumer plays a very important role in the innovation-creation process. Numerous studies on new product development show that mistakes are usually made at the beginning of the process; that is, at the idea- and concept-creation stage, and that the consumer is often included only at the last stage of testing and implementing product innovations. The concept of User-Driven Innovation call for consumers to be included at every stage of the product innovation development process, starting from the creation of the idea and concluding with their assessment of the product launch. This approach not only increases the chances that the product will be accepted by consumers and hence succeed on the market, but above all allow the expected customer values to be created.

The consumer’s importance to the product innovation development process is fundamental and visible in three main areas (Table 2): the initiation of new product development, test sequences of the new product development process, and final verification/approval of the product brought to market [Sojkin 2012, 44].

Including the consumer input at the stage of searching for ideas and concept creation focuses primarily on discovering unrealised needs. Promoting “the voice of the customer” (VOC) provides the following benefits [Griffin and Hauser 1993, p. 4]:
Creating consumer values...

The concept of the voice of the customer in particular refers to the essence of the needs, their structure and prioritization [Griffin and Hauser 1993, 5].

When using VOC, methods of ethnographic research and in-depth individual interviews conducted in a consumer-friendly environment take on special significance. In the case of ethnographic research, these methods consist in long-term observation of consumers, which provides detailed knowledge about their behaviour, the problems they express and their hidden needs. In-depth individual interviews as well as ethnographic research are conducted in consumer-friendly places (workplace, house etc.). Using a carefully prepared script of interviews, the researcher looks for unsolved problems, unmet needs and expectations of new products [Cooper 2008, 3]. According to Cooper, including innovation leaders and enthusiasts at the concept-creation stage significantly increases the chances of obtaining essential knowledge necessary to conduct an initial assessment and verification of developed ideas [Cooper 2008, 4].

At the stage of product development, consumer expectations are transformed into functional requirements, design and technical parameters. As a result of the actions described, the concept of product architecture is created and mapped in a product prototype. The prototype should be consumer-tested at the moment the creation is described, and continue until a product is fully developed [Cooper 2008, 14]. Any significant changes introduced by the consumer should be subjected to further evaluation. Properly matched consumer prototype testers should be involved in this process. They may come from the group of innovation leaders, the enthusiast community or potential customers (especially in the case of single copies of finished products).

The stage of product development is important in the context of creating customer value. The active participation of the client in creating a product’s structure and then testing the developed functionality affect the sense of self-agency and the potential of the benefits occurring. At the same time, participating not only in the creation and testing of the

<table>
<thead>
<tr>
<th>Stages of development of product innovation</th>
<th>Testing methods of the customer</th>
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<tr>
<td>Development of concept:</td>
<td>ethnicographic research methods</td>
</tr>
<tr>
<td>– searching for ideas</td>
<td>individual in-depth interviews</td>
</tr>
<tr>
<td>– selection and evaluation of ideas</td>
<td>(usually at a location convenient</td>
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<tr>
<td></td>
<td>for consumers)</td>
</tr>
<tr>
<td></td>
<td>group interviews</td>
</tr>
<tr>
<td></td>
<td>brainstorming</td>
</tr>
<tr>
<td>Product development:</td>
<td>identify consumer expectations</td>
</tr>
<tr>
<td>– developing product assumption</td>
<td>of the product’s essential</td>
</tr>
<tr>
<td>– developing prototype</td>
<td>characteristics</td>
</tr>
<tr>
<td>– developing product</td>
<td>analysis of functional</td>
</tr>
<tr>
<td></td>
<td>expectations</td>
</tr>
<tr>
<td>Product launching:</td>
<td>testing the prototype</td>
</tr>
<tr>
<td>– marketization of new product</td>
<td>(performance and functionality)</td>
</tr>
<tr>
<td></td>
<td>testing the product on the</td>
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<td></td>
<td>marketization of new product</td>
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Source: the author, based on Cooper and Edgett [2008].
prototype, but also in establishing marketing tools such as price, method and form of sales and promotions can significantly optimise the cost of purchasing and using the product.

A similar situation with the participation of the consumer applies to the launching of an innovative product onto the market. The implementation of planned marketing activities in order to introduce the product into distribution channels, communication with the target market and the price point should constantly be checked against the expectations of potential buyers. In the context of the results, the moment of implementation is of particular importance, since it verifies the earlier assumptions and often exposes the resulting weaknesses. The level of sales realized in the implementation phase is a reflection of customer acceptance of the benefits.

It seems logical that, at the stage of the finished product, it is more difficult to introduce changes when customer expectations have not been met. Hence, the need to involve the consumer in the full development process of product innovation becomes justified. Creation of value is carried out through continuous cooperation with consumers since their participation in this process co-creates the expected value. It increases the chance that the costs related to the acquisition and use of an innovative product will be lower while benefits obtained in the same process will gain in value.

AN INTEGRATED SECURITY SYSTEM – A CASE STUDY

The aim of the examples presented below is to present opportunities to create customer values at various stages of the creation of product innovation by including partners and customers in the process.

An Integrated Security System is a combination of services and tangible goods that carries specific values that allow the consumption of services such as transmission, storage and processing of data related to the current place or location of a specific person. The system was created to ensure valid and highly accurate data for position location and thus ensure the safety of people who may need such protection because of:

- health (the chronically ill with frequent periods of memory loss);
- being in a hostile and volatile environment (people staying in the mountains, water regions, forests etc.);
- traveling alone or moving in different and unexplored directions.

The main initiator and promoter of the network was an enterprise with many years of experience in providing products and location-based services. The strength of the promoter was its excellent knowledge about the market of purchasers of products and location-based services, both businesses and individual customers. The promoter’s partners in the project have become:

- a manufacturer of dedicated localisation devices (locators);
- a provider of GSM services;
- selected commercial affiliates;
- representatives of organisations providing security to people (people staying in the mountains and water regions);
- representatives of organisations involved in helping chronically ill people (temporary loss of memory or consciousness);
- representatives of end users (enthusiasts of location-based solutions).
The main theme of cooperation between the above stakeholders was the use of the synergistic effect of human resources and their competence in the scope of knowledge and experience in the areas described. Access to the latest technology allowing the development of a product that would satisfy the needs of existing and new buyers was also crucial.

The development of the above-described solution was divided into three basic phases: concept development, product development, and launching the finished product onto the market. The way the activities were implemented in different phases illustrates the possibility to create customer values by using the concept of inclusion of the consumer at various stages of the process.

CONCEPT DEVELOPMENT PHASE

The concept and idea for product innovation were created within the company of the promoter, while the key source were former employees of development and marketing departments. The employees were inspired by the promoter’s partners, including intermediaries in distribution channels who willingly participated in the research groups.

The following issues were discussed during the group interviews:
– the possibility of using available technology;
– the purchasing behaviour of individual clients;
– the potential directions of telecommunications, location-based, and IT service development.

Representatives of the emergency and law enforcement services were another important group among the partners. Cooperation at the development phase of a new product concept with the above group focused on observing the work of rescue workers (mostly mountain rescue workers) on duty in natural conditions. First, it was important to identify the problems faced by rescuers carrying out their duties. Of particular importance was observing a rescue operation (establishing contact and determining the position of the injured person).

Equally important for the idea of the innovative solution were meetings with the representatives of consumers – GPS solution enthusiasts who formed an active group popularizing the technology in society. The meetings were casual conversations moderated by one of the representatives of the study group.

As a part of the secondary research, data on the following were analysed: disappearances (elderly people, children, people who emigrate for economic reasons), accidents in mountainous areas; statistics on the incidence of dementia and metabolic diseases causing temporary or permanent memory loss; reports on the quality of life in Poland and Europe, including the structure of society and anticipated trends.

The primary research shows that there is a greater tendency for society to move or change the place of residence and activities, which increases the number of accidents, disappearances, and life-threatening situations. Furthermore, the secondary data allowed for three important factors in the industry influencing the style and character of Polish society to be identified:
– the constantly growing amount of economic emigration, resulting from increased travel outside the country;
the ageing population means there is a growing number of older and single people;

the increasing number of people with dementia and metabolic diseases which result in
the temporary loss of memory or unconsciousness.

The information obtained was a starting point for the development of the system prod-
concept using IT, localization and telecommunications solutions in order to determine
and control the current position of a person who may be in a situation of potential danger.
The concept describing these assumptions takes into account the following measures:

- development of an online platform that would collect and process location data;
- matching appropriate localization devices to the expectations of the system (promot-
ing accuracy and detail measurement);
- selection of appropriate telecommunications services that meet the requirements of
the system (the reception and amount of charges for voice calls and text).

Essential for the completion of the first phase of the development of product innova-
tion were:

- assessing available technologies and their use;
- selecting of potential partners for the later stages of the project;
- conducting a preliminary financial analysis of the project;
- conducting a market analysis including of the existing competition and the possibility
of new rivals emerging;
- selecting potential market segments.

PHASES OF INNOVATIVE PRODUCT DEVELOPMENT

Numerous laboratory and market tests were done during the developmental stage of
the security system. Each new change in the structure of the product was subjected to
market tests with the participation of a target group. The development process was con-
stantly supported by information obtained from the testers.

In the first stage, the system’s basic functionality was developed. This included select-
ing and configuring a locator (launching an SOS feature and voice calls in case of emer-
gency), an online platform on which registered users could see the position of the person
in possession of the locator and the trace the device left during one full day.

The following groups of potential users were chosen for the first tests: people hiking
primarily in the mountains, people at risk of losing consciousness caused by metabolic
diseases, and elderly people living alone or at risk of memory loss. The constituent groups
included representatives of the emergency services, mainly mountain rescuers and repre-
sentatives of the community (enthusiasts) of localisation technology.

During the tests, the degree of integration, as well as the continuity and clarity of the
transmitted signal, accuracy of mapping, efficiency of the locator and battery life were
verified. At the same time, together with trading partners, forms and methods of deliver-
ding devices for customers were analysed.

As a result of the activities completed, during the development process the structure
of a new system product was developed using modern GSM and GPS technology and
telecommunications services. The architecture of the developed product system is as fol-
ows: the basic value the customer purchasing a locator acquires is the ability to transmit
a signal showing the current position (the user’s location), and alert the competent services or people about the danger by using the appropriate message. Therefore, the core of the product becomes useful thanks to an online platform, a locator, including telecommunications and location services as a part of the system.

The actual product, which is what determines the perception of solutions, consists first and foremost of the design and size of the locator, its effectiveness and usability of the online platform, and the price of the locator and telecommunications services.

The extended product was provided with: the possibility to rent a locator and availability of points offering this type of service, the opportunity to purchase the locator in instalments, telephone support, a 24-hour helpline, training in how to use the system for all user groups. The extended product also includes additional functionalities related to storage and archiving location data for a longer time than provided for in the basic usability, and the ability to build special security zones. If these are breached, an alarm text is sent to a device (a phone or a computer). It is also possible to create groups and communications within groups of system users.

In the light of the definition of customer value, in the case of the emergency location product, it was important to link the available functionality with the price of the device and the fee to be charged for data transfer. Given the scale of the new product and difficulty potential buyers would have in estimating the benefits of using the system, the development of suitable forms of purchase or device rental are important, as are the differentiation in prices that would be required due to the scope and functionality offered, the advisory services in the scope of properly operating the device. However, it should also be noted that the information accumulated during the development phase about the preferences and expectations of customers towards the new product concerned also: the promotional methods, how and where the product was sold, and even what it was called.

**LAUNCHING PRODUCT ON THE MARKET**

The product was launched on selected target markets after an offer was prepared for each at the level of the expanded product functionalities corresponding to the consumer expectations from the given market. During the launch, the opinions of representatives of the target groups were examined using group interviews. The information obtained during the launch phase indicated the market potential that existed for the product as well as emerging issues. Distribution channel efficiency presented problems. The most anticipated form of purchasing a locator by the consumers was rental, especially among people temporarily using the service. The creation of rental networks proved costly in practice.

Another example in which value has been co-created with the consumer in the process of innovation development is the Electrolux – Ergorapido vacuum cleaner. When the company was developing ideas for a new product, consumer ethnography, brainstorming with users and interviews with experts were all enlisted. During the ethnographic research, carried out by both professionals and employees, the following was established:

- consumers preferred to clean apartments more often but for a shorter time and looked for appropriate measures and equipment (fast but good) to do so;
- they were willing to pay more for a product that had a more sophisticated design and form.
In addition, the research conducted among users through brainstorming showed that substitutes available on the market garnered little interest because of their (perceived) inferior design, they were too loud or were useless (hardly replaceable filter). A significant customer contribution during the development of the idea for the product was drawing attention to the need for easier filter replacement as well as the introduction of a telescopic handle.

The product conceptualization stage was concluded with the establishment of guidelines on the product’s shape and colour, its functionality and the business model to be used. The mission of the above stage and the task of the researchers was to develop a uniform language of communication in a company in the area of interpreting consumers’ needs and expectations. The prototype developed in the next stage of product development was subjected to numerous tests. The obtained results were used to design the finished product. During the implementation process, particular attention was paid to benefits developed together with the consumer, thus endowing the vacuum cleaner with significant value. Guided by the above project, Electrolux implemented a client-inclusion approach to innovation as a key factor for achieving success.

Another example of creating customer value in the process of developing innovation is the that of the company Swarovski. The company decided to create a community of designers and innovative consumers from different parts of the world. The members of this community were invited to submit their own projects and evaluate others that were presented. Voters could evaluate the ideas presented and suggest changes. The participants were provided with Internet-based tools to design jewellery: using 108 different stones, among other components, they worked on new designs for Swarovski watches. Thanks to the participants being so highly productive, 2,000 different projects of watches were created, and the top-rated projects were presented at international exhibitions and produced. This example confirms that the actions taken by the consumers co-creating an innovative product had a significant impact on the creation of values.

CONCLUSIONS

As indicated at the beginning of the article, the co-creation of values requires consumers to take actions affecting the final composition of the product a company is to bring out. The study presented in this paper has demonstrated how this concept works in practice. As can be seen at every stage of development of an innovative product, the participation of consumers and other market participants brings tangible benefits in the form of concrete solutions typical for the given stage.

In the case of the integrated security system described, inclusion of the consumer from the beginning of the process has enabled the development of necessary functionalities, which filled the product’s architecture. At the end of the development phase, the structure of the innovative product, which met the needs of the consumers belonging to different segments of the market, was presented. In addition, based on the information collected, an action plan based on product marketisation was developed. The exact structure of the price offer and the methods and location of product distribution were created. Knowledge
of the client developed during the entire development process allowed the structure of client side costs to be determined, thus better enabling their reduction or elimination.

Building customer value while developing product innovations is becoming a necessity and a challenge for today’s businesses. A failure to include consumers or including their comments only at the implementation stage can significantly reduce the development potential of many products and services.

REFERENCES


Summary. The article examines the building of consumer values in the process of developing product innovations at various stages. Values are created in cooperation with the consumer in the process described. Customers may be included in two ways: first, it can be an interpretation of thoughts and a way of action being an expression of hidden needs that is the voice of the consumer, or, second, it can be through the concept of the lead user – which consists in consumers sharing their own suggestions and ideas during the development process. In both cases, including consumers in the innovation development process at its every stage increases the degree of acceptance of the finished product and the chance to satisfy the buyer, which in turn creates value for both the customer and the company.

Key words: customer values, innovation development process, system products

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Corresponding author: Anna Szwajlik, University of Szczecin, Faculty of Management and Economics of Services, Department of Service Management, Cukrowa 8, 71-004 Szczecin, Poland, e-mail: anna.szwajlik@wzieu.pl