

ARTICLES

CENTRAL EUROPEAN REVIEW OF ECONOMICS & FINANCE
Vol. 48. No 3 (2024) pp. 37-50
DOI <https://doi.org/10.24136/ceref.2024.010>

Ewa Ferensztajn-Galardos¹, Renata Krajewska²

DESIGN THINKING AS A CONCEPT FOR INSPIRING INNOVATION

Abstract

The article presents information on the method of creating and implementing innovative solutions in the form of new products, innovative technologies, services, strategies, processes, educational programs and even business models, among others. The method of Design Thinking was characterized as a method of design thinking that supports the development of innovations and providing a guarantee of out-of-the-box solutions, juxtaposed with examples of how to use the knowledge gained in professional practice. Modern companies are increasingly competing with each other in the battle for the customer, using various techniques to do so. One such technique is the concept of design thinking (Design Thinking). The article introduces the essence of Design Thinking and describes the activities of the various stages with an indication of selected tools.

Keywords: design thinking, innovation, creative design, business models.

JEL Classification: O31, O32.

¹ PhD, Casimir Pulaski Radom University, Faculty of Transport, Electrical Engineering and Computer Science, 26-600 Radom, 29 Malczewski St., e.ferensztajn@uthrad.pl.

² PhD, Casimir Pulaski Radom University, Faculty of Transport, Electrical Engineering and Computer Science, 26-600 Radom, 29 Malczewski St., r.krajewska@uthrad.pl.

Introduction

It is increasingly common to read in the business press about Design Thinking as a new method for solving the problems that business organizations face in supporting innovation and growth in the last few years. However, the specific mechanisms through which companies can improve their innovation performance have so far received little attention from scholars, and little attention has been paid to the Design Thinking method in the Polish scientific literature.

Modern companies are using modern techniques to conduct their activities thereby competing for customer consideration. One of the techniques is the Design Thinking method, a creative problem-solving method. Design Thinking, as one of the most effective methods of innovation, has many definitions, but according to Tim Brown, one of the authorities on modern design, Design Thinking is "a discipline that uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity" (Brown, 2015, s. 15).

Design Thinking is a new method of problem-solving in business organizations in support of innovation and development, and is used to stimulate creativity and innovation in the creation of new products and services and the development and improvement of existing ones. By experimenting and building prototypes – focusing on the needs of the user – so-called "tailor-made", it is possible to transform good ideas into an innovative product or service much faster than by traditional means. Design Thinking is not only methods and tools, but first of all a specific way of acting and perceiving reality.

In the Polish literature, Design Thinking is also referred to as design thinking, defined as "A concept that uses the designer's sensibility and working methods, combines people's needs and desires with that which is technologically feasible, creating a strategy that realizes customer-relevant values and creates new market opportunities" (Gawronski, 2012, p. 15).

Thomas Lockwood points out that Design Thinking is a process centered around people and their needs. Design Thinking can be used to create new products, services, but also to solve business problems and challenges" (Lockwood, 2009).

Another definition states that it is "a discipline that uses common sense and designer methods to meet people's needs with that which is technologically possible and which a sound business strategy can turn into customer value and market opportunity" (Brown, 2008, p. 86).

Nowadays, the direction of development of modern enterprises, taking into account such elements as product, service, communication, information and environment, includes strategies based on design and innovation. This approach is not limited to visual aspects only, but integrates many

disciplines such as technology, ergonomics, technology, economics, marketing, psychology, sociology, management to create innovative value from the viewpoint of the recipient.

Design Thinking is characterized by working in multidisciplinary teams, and consequently, thanks to this diversity, it is possible to stimulate creativity (Starostka, 2015, p. 1071). A design team for problem solving and new product development should include people from production, research and development, marketing, sales, as well as designers. Because their competencies are diverse, they have a chance to develop out-of-the-box solutions (Bruce, Bessant, 2002, p. 49).

Design thinking is an intuitive working method that produces innovations in multidisciplinary teams by combining elements of engineering, business, design and social science. It helps produce an innovative product or service, improve customer service processes or develop new ways to communicate with consumers. The method is defined in many ways. It can be used to produce an innovative product or service, improve a customer service process or develop new ways of communicating with consumers.

The method originated from design studies, which, among other things, created the prototype of the computer mouse, came up with revolutionary solutions used in Apple products, or, for example, toothbrushes for young children equipped with a comfortable, thicker handle.

1. Stages of design thinking

In view of the flexibility that design thinking introduces, it is impossible to clearly define a framework for action based on this concept. Instead, it is possible to distinguish action stages on the basis of which the progress of the work is monitored. In practice, there are various design stages and their nomenclature, which are reduced to an analogous path of activities.

The stages of the design thinking process allow exploring many possible ways to solve the problem. They assume the ability to look at a challenge from many different perspectives without favouring any of them, while allowing inspiration from a wide variety of often non-obvious areas and thus enabling a specific solution to be found using available resources. The process of Design Thinking is shown in Table1.

Table 1. Design Thinking as a process

| Specification | Characteristics |
|-----------------------------|---|
| Duration of the process | Time is the most precious resource, the course of which we have no control over |
| Participants in the process | User/client Design team Designer Sponsor |
| Purpose of the process | Determination of what will be a measurable outcome of the process defined in concrete and understandable terms |
| Project team and its size | People associated with the organization, i.e., employees, consultants, partners, who know the organization, its strengths and weaknesses, the challenges it faces, its internal structure and its customs |
| Personality tests | Personality types - personality traits of people involved in the work of the project team |
| Space | Working conditions in which the project team works – comfortable working conditions support creativity |
| Formulas and work rules | Materials used Time discipline |
| Stimulators | Methods of activating the attention of participants |

Source: Own compilation based on: desingthinking.co.uk [access: 20.02.2023]

The Design Thinking process should begin by analysing and understanding the audience's problems through conversation and observing their behaviour. Based on the analysis of the audience's opinions and behaviour, the right direction can be defined as to the search for a solution to a problem. The search for effective, innovative, novel solutions as well as the invention, creation and creation of big ideas to meet the needs that were previously identified constitute stage three of the process. Stage four is prototyping, where preliminary versions of solutions are selected and created from among all the ideas. The final step is testing, which is presenting the solution to the user and seeing how it works in practice. Depending on the situation, there is a backtracking to an earlier stage or the launch of the final product.

The most common breakdown of the Design Thinking process is as follows:

1. Discovery – empathy – who are we designing for?
2. Defining the problem – defining the challenge (identifying needs) – why are we doing this?
3. Creating a solution – generating ideas – what are we proposing as a result?
4. Prototyping – how does it work?
5. Testing – does it work?
6. Implementation planning – is it implementable?

The Design Thinking process, divided into 5 stages, according to which one should go through the creative design flow (Table 2).

Table 2. Stages of the Desing Thinking process

| Specification | Characteristics |
|-------------------------|--|
| Discovering | Exploration of information about the user through direct interaction - conducted during this stage of the research – interviews, observations help to "step into the shoes of the customer" and learn about their situations, including their needs and expectations. |
| Defining the challenge | All the information gained, about who our user is – what are his/her needs and expectations, what are his/her biggest life challenges and daily problems, what he/she needs in the context of the designed solution must be analysed and narrowed down to one sentence, representing a design challenge. |
| Creating a solution | During this stage, which results in the selection of several ideas for prototyping, a wide variety of tools are used, including brainstorming and creative techniques to generate ideas that respond to predefined design challenges. |
| Prototyping and testing | At this stage, the selected ideas are turned into prototypes, i.e. objects in the form of mock-ups, diagrams, which show their most important functionalities and how they could be used by users; then the prototypes are subjected to testing, which is aimed at selecting from the resulting prototypes those features and functionalities of the solutions that will be further developed, and eliminating those that did not receive customer approval. |
| Implementation planning | As the final stage of the process, it aims to prepare as concrete a plan as possible to implement the tested solutions, and then to implement the solution as soon as possible and release it to the market with minimal risk of failure. |

Source: Own compilation based on: desingthinking.co.uk [access: 20.02.2023]

Empathization aims to delve into a problem, from the perspective of the people who feel it. According to the method's creators, innovation begins with empathy, which allows for a deep understanding of users' needs. The most important thing is to diagnose and identify the "hidden motivations" that influence people's behaviour, as well as to understand the market or technological conditions of the project. At the empathy stage, tools and methods such as empathy maps, interviews and exploratory surveys, user observations are used, and an analysis of the environment in which the problem or need for a new product is occurring is conducted. It is also worthwhile to conduct observations of user behaviour, as users may use their own amateur improvements that can contribute to the design of new products (Helman, Rosienkiewicz, 2016, p. 63).

Defining the problem as the second stage of the process focuses on summarizing the messages obtained during empathization and clarifying what specific problem and goals will be pursued. Techniques such

as re-framing, 5 Why, mapping the problem on the how-to-why axis can be used to define the problem.

Idea generation is the stage in which the team first works conceptually on the most diverse solutions that could work, and then decides which solution idea is best. The basic tool used at this stage is the popular brainstorming – brainstorming, as well as the 6 hats method. It is important to remember that these methods are not an end in themselves, but only a starting point for determining the next courses of action.

Building prototypes – at this stage a physical prototype is created. Its purpose is not to create complex models with features similar to the final product, since the most important thing is to be able to visually present the idea to users and quickly gather feedback on the solution. At this stage, visualizing prototypes are created to refine the solution. All sorts of materials can be used to build prototypes – paper, cardboard, foam, plastic, they can also be cut out of Styrofoam or wood or use existing products. Prototyping using 3D printing is becoming increasingly popular. The prototype doesn't always have to be an object – in the case of services, a comic strip, storyboard or user path drawing can be used.

Testing – at this stage the designed solution is tested in a real environment where the product will be used. The resulting prototypes are subjected to evaluation by other groups or individuals associated with the problem.

This process approach reduces the risk of potential failure of the implementation of a product or service that is not adapted to the needs of end users. It also allows for the introduction of modifications and upgrades even at the initial stage of development, which in turn not only influences broad consumer satisfaction, but also translates directly into the quality of goods offered. The effect of this approach is undoubtedly the reduction of costs associated with minimizing the risk of producing a solution that does not meet the original requirements of customers, as well as the ability to take into account the necessary corrective actions to achieve the planned results and continuous improvement. The process approach, using Design Thinking, makes it possible to identify the interdependence of the processes analysed in the company, establish criteria for their verification, evaluation and regular monitoring (Wawak, 2016).

The results of the Design Thinking process are creative, comprehensive, innovative solutions of the problems. Such solutions can be:

- new products and services,
- processes and their optimizations,
- strategies,
- business models,
- scientific and technological innovations.

Solutions created through the visual thinking process bring improvements to almost every industry. They are responsible for the success or failure of advertising campaigns, the creation of certain corporate images, or the development of start-ups.

2. Design Thinking Techniques

There are many research tools and techniques possible with the Design Thinking method. Some of them do not require expert knowledge and specialized competence and can be successfully applied independently. This is because the reliability and relevance of the data obtained in the course of research determines their functionality and usefulness in the process of design work. Design Thinking uses a number of techniques, such as realtimeboard, empathy map, context map, Ishikawa Chart, 5 Why method, brainstorming or 6 hats method.

Not all the tools used by designers to improve problem-solving and communication with a business partner come from the fields of engineering and design. Design Thinking, as a multidisciplinary approach, has adapted methods and tools from different fields of knowledge, such as art, engineering, anthropology, psychology, etc. At the empathy stage, tools and methods such as empathy maps (Figure 1), exploratory interviews and surveys, user observations, and an analysis of the environment in which the problem or need for a new product is occurring are used.

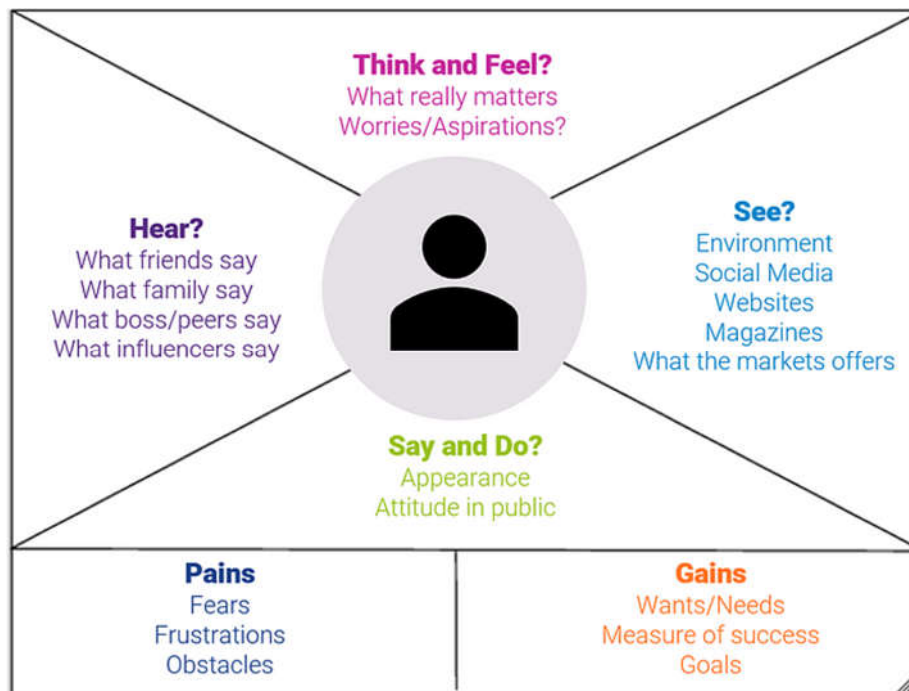


Figure 1. Empathy map

Source: M. Li, Empathy Mapping: An essential for UX design:
<https://bootcamp.uxdesign.cc/empathy-mapping-an-essential-for-ux-design-12e8177dc15e> [access: 20.02.2023]

In the advanced Design Thinking process, there are various methods and workshops to support the thinking and creating stages. The basic tool used at this stage is the popular brainstorming, as well as the 6 hat method.

The brainstorming method, classified as a group of heuristic methods and techniques for generating ideas and analysing them on the basis of creative thinking and logical combinations, was developed by Alex Faickney Osborne and first applied in 1938. This tool, which has the advantage of building a creative environment, thus influencing the stimulation of creativity of session participants, is usually applied in the form of joint work of a team of two to a dozen people. An important feature of this method is the exclusion of elements of ruthless criticism, which blocks minds from thinking creatively outside the box. Although brainstorming is a heuristic method, it is applied in a certain sequence of events, which are moderated by the person leading the sessions. Brainstorming is an excellent tool for generating ideas because its overarching premise is to use collective thinking, engaging a multidisciplinary group to listen and derive ideas based on others' solutions. Typically, brainstorming uses "post-it" which are coloured pieces of paper

taped on the wall used to map the thought process, which are temporary, can be freely reposted, arranged in different configurations by reminding people that the process requires a lot of flexibility and distance from one's own ideas.

The Six Thinking Hats method was created by Edward de Bono, the founder of the concept of lateral thinking. At the basis of this method is the assumption that the obstacle to achieving unconventional solutions in group work is presenting one's own position and trying to defend it, while – not always justified – criticizing the ideas of others. In individual work, on the other hand, the barrier is the "chasing of thoughts" involving simultaneous focus on multiple aspects of the issue under consideration and emotions. The method of six hats is based on the model of parallel thinking, which is aimed at obtaining, as many different opinions on the topic under study as possible. By using this method, it is also possible to evaluate the developed solutions in a structured and organized manner, as it involves analysing the problem from different perspectives and role-playing symbolically designated by hats in six colours. The hat signifies a way of thinking and obliges the holder to adopt one of the points of view. By having all participants focus on a particular approach (hat colour) at one time, the group works together better than if one person evaluates ideas emotionally (red hat), while another person tries to be objective (white hat), and yet another person is critical of all the ideas that emerge from the discussion (black hat).

Design Thinking tools have their applications in many areas of business (Meinel, Leifer, 2022). The choice of particular tools or design strategies depends mainly on the purpose they are intended to serve. However, the most important thing in this method of work is, on the one hand, to take into account the complex context of a given area or business challenge at each stage of the project, and on the other hand, to realize that design is an open and continuous process, and its development potential lies in the never-ending search for new perspectives and opportunities.

3. Design Thinking in practice – examples of application in companies

The concept is applicable not only in the product sphere, but also in service or process offerings. It is primarily a structured way of searching for solutions, starting from the definition of the problem, through implementation, up to the evaluation of the resulting prototypes and a thorough assessment of the results obtained. It is the Design Thinking method that is behind the successes of the world's most recognizable brands and their iconic products. Thanks to the Design Thinking method and putting people and their needs at the centre of the project, products desired by customers around the world have been created. Design Thinking in business can be used at different stages of its development. From testing

a business idea and business model, to implementing process optimization in a company, creating new products, to creating a marketing strategy for a brand and building its image. Design thinking is the method by which young companies and start-ups implement innovative ideas and improvements. It is the focus on the needs of the potential customer, not the needs of the company, that allows designed products and services to succeed. Design Thinking is the answer to many of the questions being asked – and most importantly, it is the answer to the question of how to comprehensively approach a given type of problem – so it is a broader context for action (Lewrick, 2018).

The background for the development of Design Thinking is Stanford University in California, where projects in line with the concept of design thinking began. At the time, the method was seen as a transfer of creative ideas, visions from the world of science to business, being an innovative approach to the growing demand of Silicon Valley entrepreneurs. One of the main pioneers of Design Thinking is Professor David M. Kelly of Stanford University, later co-founder of the IDEO design office. IDEO's services are used by many world-renowned companies, and major clients include Apple, GE, and Shimano. The creation of the design bureau was in part a response to market demand, related to the need to modify the then prevailing client-designer model. Many times, technology companies expected only a case, a "package" for their product, while having a fully functional device already ready. Despite diagnosing elements in the manufactured goods that should be improved even before the product was launched on the market, it was too late to implement improvements. The financial outlay to modify the products was enormous, which would undoubtedly have weighed on the profitability of their sales. IDEO has many design offices around the world, including in New York, Chicago, San Francisco, Boston, London, Shanghai, Singapore, Tokyo, Seoul and Munich. It currently employs more than 550 designers from various area disciplines who are specialists in their field, and the company is managed by Tim Brown.

The IDEO concept came about as a result of the need to change the approach to creating high-value solutions for customers, in which an important premise of the project – the need to involve product and service designers at the very beginning of the design process. The result of this work came from a true understanding of customer needs and expectations during the testing stage, where the change in approach began to yield very good results, as the entire process began with the understanding stage and ended with testing. IDEO, which uses design thinking in the areas of strategic consulting, innovation, transformation, organizational culture building, marketing and many other areas thanks to the involvement of its employees in product development starting from the concept phase, is able to develop much more innovative solutions. The unique value that IDEO offers its clients

is a new model of cooperation the ability to develop an innovative product from the initial phase of the product life cycle. In the past, companies would come in with a finished product and expect to upgrade it, but it was often too late.

Design Thinking is one of the most leading methods used by well-known and well-liked brands in the community such as Apple, Coca-Cola, Ikea, Nike, Starbucks, SAP, Walt Disney, among others.

Only some examples of well-known brands have been mentioned. We can imagine that without Design Thinking, there would not be most of the above products. Following the stages in the case of the Apple brand, one can see a combination of product innovation and fashionable design. The company has also focused on creating 3 specific models released at one time, thus dropping a new product line. The brand also prides itself on its customer service, the level of which ensures that all their customers are satisfied with the product and have a memorable experience. By developing a reputation as an expensive but also unique brand, Apple creates its products so that they are well configured with new models, so the iPhone combines with the iPad and MacBook, and the air pods fit each individually.

For IKEA, the world's largest furniture retailer, the time has already begun to consider what the kitchen of the future will look like and, more importantly, how people will feel cooking in it, eating in it and spending time socializing in it. To make these concepts a reality, IKEA commissioned IDEO to design and build a full-scale kitchen concept for 250,000 visitors to test the developed solutions at the EXPO in Milan.

Another of the companies using design thinking in its operations is SAP AG (Systems Applications and Products in Data Processing), a multinational IT company that was founded in 1972 and headquartered in Walldorf, Germany, one of whose flagship products is ERP-class business software, dedicated to companies in almost all industries and sectors of the economy. In the past, SAP customers had to wait months or even years before they could use the purchased software in their company. This state of affairs has been changed by a design thinking approach, which significantly accelerated the development of technology solutions and translated into consumer satisfaction. Developers, working at SAP, want to acquire as much information as possible about the end user, his needs and expectations from the solution being produced. Often, just a few hours of interaction with the customer make it possible to customize the software and give it the desired direction for further development (Galer, 2013).

The practical use of design thinking concepts is invaluable, the only thing that limits them is human imagination. After all, one cannot think schematically, one should even break all stereotypes and go beyond the usual framework. Many of today's everyday solutions have been

developed precisely on the basis of Design Thinking, from furniture to electronics.

The practical use of the concept of design thinking is invaluable, the only thing that limits it is the human imagination. It is even necessary to break all stereotypes and go beyond the usual framework, we cannot think schematically. Many modern solutions used every day have been developed precisely on the basis of Design Thinking, from furniture to electronics.

Conclusion

One of the main benefits of using the Design Thinking methodology is to build market advantage for the organization by continuously strengthening the involvement of employees in creating solutions at different levels and in different areas, combined with attention to the target user. This applies to both internal and external business processes.

1. Design Thinking is a method that is gaining popularity. It involves the creation of highly innovative products and services that are based on a deep understanding of the problems that arise throughout the process.
2. The latest research on business innovation both in Poland and around the world shows that the existing model of development management needs to change and take into account new dimensions of creativity, innovation and value creation.
3. New conditions for strengthening innovation, and thus building competitive advantage, at the same time concern not only the institutional and organizational environment of enterprises, but also the socio-cultural contexts and attitudes of entrepreneurs themselves.
4. Design Thinking is a way to develop innovation in small steps. Thanks to this method, new products, packaging, services, public space designs, marketing concepts, breakthrough technologies have been created.
5. Every B2B company selling technology faces the same challenge – how to convince the customer of their product or technology. Proof of concept is a good practice - it is common for an enterprise customer to conduct several PoCs in parallel, with different suppliers, to verify them and select the best supplier.

Design Thinking is a general-purpose method that can be used not only for the design of new products, but also, for example, to find innovative solutions for a given situation. With the Design Thinking method, it is possible to solve complex problems, even commercial ones, because it provides a fresh perspective on a given situation, you can rediscover the problem and get closer to finding an optimal solution.

Design Thinking is a method of practical, creative problem solving. It's a form of solution-focused thinking with the intention of producing a constructive outcome for the future based on design thinking to provide creative solutions. It is such a versatile method that it can be applied from a start-up to a large corporation. The motto of design thinking is "doing, not talking," so writing down every detail of a project is turned into a several-step breakdown of tasks expanding and clarifying further threads. Design Thinking is a method of design work that uses a diverse set of knowledge, competencies and tools, and thus is applicable to different areas of life.

The essence of the Design Thinking method is a focus on continuous experimentation and the search for innovative solutions with particular attention to the social, cultural and economic context. Innovation in this view requires both the use of a variety of tools to stimulate creativity and mobilize internal resources of the company, but above all, as a social process, it entails the need to undertake multidimensional cooperation with the external environment and skilful management of new design spaces. The process of seeking and exploiting new sources of innovation through effective interaction with various partners, and thus sustaining the competitiveness of the enterprise, poses new kinds of challenges to the entrepreneur as much at the level of his personal and professional development as at the level of building and continuously developing the subjectivity of the entire enterprise.

References

1. Brown T., (2013), *Change through design: how design thinking changes organizations and stimulates innovation*, Libron Publishing House, Wrocław.
2. Brown T., (2008), *Design Thinking*, *Harvard Business Review*, vol. 86 Issue 6, June.
3. Bruce M., Bessant J., (2002), *Design In Business. Strategic Innovation Through Design*, Pearson Education Limited, England.
4. Galer S. (2013), *Design Thinking in Action*: <http://news.sap.com/design-thinking-inaction/> [access: 20/02/2023].
5. Gawroński H., Seredocha I., (2012), *Evaluation process of the project "Improvement of innovation and competitiveness of Elbląg SMEs through temporary employment of highly qualified staff"*, in: *Evaluation audit in projects, organizations and public policies*, Kraków.
6. designthinking.pl/co-to-jest-design-thinking/ [access: 20/02/2023].
7. Helman J., Rosienkiewicz M., (2016), *Design thinking as a concept for stimulating innovation. Innovations in Management and Production Engineering*, Publishing house of the Polish Production Management Association.
8. Lewrick M., (2018), *Design Thinking*, Beck C.H.

9. Li M., (2022), *Empathy Mapping: An essential for UX design*: <https://bootcamp.uxdesign.cc/empathy-mapping-an-essential-for-ux-design-12e8177dc15e> [access: 20.02.2023].
10. Lockwood T., (2009), *Design Thinking: Integrating Innovation, Customer Experience, and Brand Value*, Allworth Press, New York.
11. Meinel Ch., Leifer L. (Editor),(2022) *Design Thinking Research: Achieving Real Innovation (Understanding Innovation)*, Springer.
12. Starostka J., (2015), *Design thinking as a way to create innovations*, Logistics, vol. 2.
13. Wawak S., (2016), <https://wawak.pl/pl/content/podejscie-procesowe>, [access: 20/02/2023].