

Design thinking as a method of innovation : What difference between its application in goods and in services ?

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Abstract— In recent years, the world has undergone a multiplicity of changes and evolutions. Consequently, the effects of this change have affected several areas, including that of industrial and tertiary enterprises. Faced with this change, these companies are forced to arm themselves with innovative competitive strategies. In this context, several companies use the innovation method called “design thinking”. However, the latter remains misunderstood, in particular because of the reduced attention given to it by the researchers, as well as the lack of clarity between its application in the industrial and tertiary fields. For this purpose, this research aims to present the meaning of design thinking, and the differences between its application in goods and in services.

Index Terms— Design thinking, goods, services, innovation.

1 INTRODUCTION :

These last years, the market on which operate on the different organisations knew several changes, because of several factors, such as: the digitalisation. Facing this change, several firms were led to change their working way, while looking for competitive methods of innovation on which they can be based to face up rivals and to distance themselves from these last. Firms understood that to win, it is necessary to take “innovation” into their plans, and also through competitive methods.

In this context of hyper competition, one of the most emergent methods of innovation and the most using one, is named «Design Thinking». This last represents stages of collective intelligence which have as purpose to put the human being, his manners and his desires, in the middle of reflexion. So its methodology consists in setting up a multidisciplinary team, composed of specialists, made responsible for offering solutions in definite problems, notably in problems of immateriality of services, across notably the prototype, and involvement of the users.

This method of innovation begins expanding in several domains, such as industrial activities and also service sectors, because of its numerous advantages. However, the application of “design thinking” in industrial activities, differs as for its application in services, since goods have a material aspect, while services have insubstantial benefits. For this, the purpose of our research consists in explaining the differ-

ence between the application of design thinking in industrial activities on one hand and in services on the other hand. The majority of research works related to design thinking don't check off features of difference between its application in industrial domain and in service sector. The majority of researches are limited to a general presentation of design thinking.

For this, we are going to begin by introducing the definition of design thinking, since its introduction to its present state. After that, we are going to introduce the application of design thinking in industrial activities. Thereafter, we are going to present its application in services. At the end, we are going to present a general conclusion.

2. Definitions of design thinking

We are going to introduce below the evolution of the definition of design thinking in time.

Design thinking appeared in 1960s, except that all the representations presented by different authors allowed only to differentiate the difference between design thinking, and industrial design, and also the representations were about the interest of its use by any type of firm, as a method of innovation and of resolution of problems. However, the definition of design thinking became legitimate only in the beginning of the 1980s.

According to Cross (1982), design thinking, represents a method of problem resolution, which gives a force to the firm which uses it, facing its environment. In the same order ideas, Rowe (1987) introduced the design thinking, as being a method of innovation, which allows to improve the return of the firm. In the same frame, Norman (1988), introduced design thinking as a state of mind, a way of thinking, which allows the optimization of the output of the firm.

According to Norman (2002), design thinking, allows to discern and to discover true problems and to reach

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the solutions. It is a method of innovation, that allows polyvalent teams, working collectively to diverge, to search solutions, then to converge on a solution in group. Design thinking is also a process of reflexion, which is centered on the human being, with a deep respect to the environment.

However, Cova (2004) criticized representations moved forward by the authors, as being general and not specific for some definite activities. It was the first one to introduce the design thinking, applied to service activities. According to his author, «The design of services is so assimilated with a design of mark, that is to say with a design which concentrates on the identity of the firm to bring a total vision of coherence in all elements likely to be in correlation with the client». By this definition, Cova (2004) introduced the design of services, as being a design which is based, on the mix-marketing of services, since this last is composed of the elements which put the clients in correlation with the firm.

Moreover, Brown (2008) moved forward a representative definition of design thinking. According to this author, this last is defined as being a method of innovation, which opts for some methods and some innovative tools, to give to multidisciplinary teams the possibility of innovating on industrial goods, services and processes, while taking into consideration desirability, feasibility as well as economic viability.

By this definition, Brown (2008) put the point on tools on which design thinking is based. It is about the multidisciplinary job of the team, the recognition of the desirability, which refers to the desires of the users, as well as feasibility, which is related to the feasibility of the innovation plan, and finally the economic viability, which is linked to the impact of the innovation plan on economy. As well as according to this author, design thinking, has an impact on goods, services and also on processes.

One year later, Brown (2009), offered another definition of design thinking, by differentiating the goods from the services. According to this author, design thinking is a method of innovation, applied not only to goods, but also to services, and which requires the creation of a multipolar experience, and where each of the final users has an opportunity to participate in the conception of the offer.

By this definition, Brown (2009), introduced the design of services, as being the offer of an experience to the final users, and which have the right to be involved in the creation of the offer.

In the same frame, Kimbell (2011) introduced the design of services as being an iterative process, managed by an interdisciplinary team working in group, based on the improvement of the interactive elements, allowing to optimize the experience of the users. In the same order of ideas, Holmlid and al (2014) defined the design of services, as being a multiple-subject approach, implicating exchange between

several departments of the firm, and also an interactive approach of co-creation, based on the exchange with the final users.

According to Marchal (2014), the design thinking, indicate stages of collective intelligence which have as purpose to put the human being, his manners and his desires, in the middle of reflexion. The methodology allows to set up a multidisciplinary team, composed of specialists, made responsible for offering solutions in definite problems, notably in problems of immateriality of services, across notably the prototypage, and involvement of the users.

According to Daniela and Yu (2014), the design of services is defined as being a philosophy, a state of mind. So, it is a method, a continuity of process, composed of some steps to follow and tools to use by a multidisciplinary team, to implement the innovation in services and also in processes.

According to Jouanny (2015), the design thinking, applied to services, is a method of innovation is, which allows to meet the needs of service firms. Even more, it allows to set up a responsible innovation.

Some authors based their research on the paradigm of «Dominant service Logic», to define the design of services. According to (Vargo and Lusch, 2016; Beudon, 2017), the design of services, is defined as being a method of innovation, which improves the perception of value by the users, because of their real involvement, in the process of co-creation of services.

With the development of researches on this subject. Several authors referred to the definition of Marchal (2014) to link the design thinking, to collective intelligence ", which according to them, it takes into account a dimension of internal management, related to the interdisciplinary collective job of the employees, as well as an external dimension of marketing, related to the co-creation of services with the final clients. According to them, it is a process which allows to lead to the innovation, which is made by the human being (employees) to satisfy the human being (clients).

From these representations, we can say that the definition of design thinking, evolved with the development of research works and the interest carried by the researchers on this subject. Certainly, all the definitions introduced above, introduced thinking design as being a method of innovation, requiring the involvement of the interdisciplinary teams of the firm, as well as the involvement of the final targets upstream of my conception of offer. However, the definition of thinking design evolved in time, to represent a combination of stages and of process of collective intelligence. This last is represented by the researchers, in a dimension of internal management (employees), as well as in a dimension of external marketing (co-creation with the clients). So in the context of services, several authors maintained that design thinking, allows to resolve the problem linked to the im-

materiality of services, across notably the involvement of the clients, and the utilization of some specific tools, such as: the prototype.

Having introduced the evolution of design thinking in time, and the development of its definition, it is necessary to specify below the difference between the application of design thinking in goods and in services.

3. The fields of the application of design thinking: goods and services

The application of design thinking in goods, differs from its application in services. For goods, design thinking has an impact on the physical appearance. While for services, it impacts the mix-marketing.

3.1. The design thinking, applied to goods

In goods, several authors have introduced design thinking as intervening mainly in four typologies, and which are: graphic design, design products, design packaging and the design of environment.

For product design, design thinking allows to give a form, an architecture design, with a view to promote and commercialize it. It is a symbol of identity and of positioning of the business company. It impacts the creation of a well-designed form, to get to mark the product in the spirit of the clients, according to the strategy predefined beforehand by the firm, and it in respect in different pressures. Design thinking allows to create a distinctive value to deal with the competition on the market. Product design, allows to make "material" and concrete the strategy of the business company, by showing its capacities, and by introducing its values.

For packaging design, it concerns all the angles of conditioning or the packing of the commercialized goods. It allows to wrap the good to achieve its protection and its commercial presentation. Design packaging represents however an informative aspect to targets and so regulation to protect itself from rival's copies. This regroups the totality of the definite elements, with the intention of forming a delightful, desired and prestige image of the firm, to get to demonstrate the presentation of its positioning. The purpose of the design packaging is to identify the firm on the market, and to attract the aimed clients, and to reinforce the relation clients - firms.

As for graphic design, it allows the creation of visual signs, notably for commercial vocation. This concerns the commercial eye-catcher, the slogan of the firm, the packaging, the promotion on the place of the sale, the advertising posters, the signalistics of the point of the sale. It is related to the "visual" aspect. Its purpose is to clear emotions and strong feelings, on the basis of identity, history, notability and style chosen by the business company. This allows to enhance the firm's offers, and to engage the clients in a reflective and in an emotional dimension.

For environmental design, it is represented in two parts: the first concerns the interior architecture for

the company's internal employees, namely the design of offices, the cafeteria, the common work space. The second part concerns the external architecture, as seen by customers, partners and suppliers. In general, it concerns showrooms, stores, displays, and waiting rooms. Environmental design allows the development of the company's sales and work outlets. It makes it possible to concretize the firm's identity. In the case of service companies, this makes it possible to concretize the intangible, and gives it a tangible appearance in relation to competitors on the market. It influences the minds of the clients, and it is in line with the strategy defined by the company.

In industrial goods, design thinking gives the offer an attractive visual aspect on the market, and gives it a shape desired by the clients. It optimizes purchases, and brings maximum benefit to the firm. The different applications of design thinking in goods allow the company to differentiate itself, and to distinguish its offer, especially in a competitive market. The impact of design thinking on the shape of goods is of great importance in the success of companies, since it brings an attractive dimension to the offer, a strong communication of the latter to clients, as well as an intense value creation.

All the forms discussed above are used to represent a stylistic approach, to communicate the company's image to customers. In general, design thinking, applied to goods, represents a form of packaging that emphasizes the aesthetic aspect of the company's offer. It is a method of innovation in marketing, which enhances the firm's assets and gives it a competitive advantage, and serves to encourage the need for consumption on the part of the company's targets.

After presenting the impact of design thinking on goods, it is necessary to specify its application in services.

3.2. Design thinking, applied to services

The application of design thinking in services differs from its application in goods, since services do not have a tangible form. The concept of design thinking, applied to service activities, belongs to Cova (2004), who presented it as a strategic resource for marketing, which supports innovation and materializes the service offer through design thinking tools. Cova (2004) highlighted the importance of the marketing mix in innovation through design thinking, and considered the application of the variable "communication", the variable "price" and the variable "distribution" in services as processes, supporting the final service. In the same vein, Hollins et al (2006) presented design thinking, applied to service activities, such as the construction of a value process, and the materialization of services, through the marketing mix. In the same context, Holmlid (2007) presented the application of design thinking in services as a set of steps and tools, linked to inspiration, ideation and implementation, that can impact the marketing mix, to re-

duce the feeling of uncertainty perceived by users. Thus Holmlid (2007) stressed the importance of teamwork (front-office and back-office) as an essential tool for design thinking, particularly in its application in services. Thus, according to Hachicha (2013), design thinking, applied to service activities, makes it possible to represent a solution to the problem of immateriality, in particular by its intervention in the improvement of material support (interior architecture, etc.), if the place of supply of the service is important, such as in restaurants and hotels. However, if the place of supply has less value, such as telephone services and insurance services, service companies are keen to optimise their material supports, by improving their internal organisation systems between employees, by improving basic services, peripheral services, staff and other variables in the marketing mix. Thus, according to Hachicha (2013), design thinking is involved in the process of service activities, through its various key stages to impact the marketing mix. Hachicha (2013) pointed out that in both services and goods, innovation through design thinking also has an impact on the organisational level (internally), before moving on to customer-oriented innovation. According to Teixeira and al (2017), design thinking, applied to service activities, impacts the marketing mix, including basic and peripheral services, as well as processes, staff and hardware support. However, according to this author, with Information and Communication Technologies, design thinking, applied to service activities, thus makes it possible to impact the information system set up by the company. More recently, according to Penin (2018), design thinking, as an innovation method applied to services, makes it possible to materialize the service offer, through mix-marketing, including interactive variables specific to "staff", "material support" and "process" services. In the same context as Cova (2004), Penin (2018) considered these variables as a set of processes, supporting basic and peripheral services, and allowing users to feel more comfortable.

All the authors consider that design thinking, applied to service activities, makes it possible to impact the marketing mix of these activities, in order to materialize the service company's offer. Thus, according to the same researchers, the "communication" variable and the "price" variable are a part of the "process" variable, in the context of services, since both variables make it possible to better manage supply. However, according to hachicha (2013), innovation in services as well as in goods concerns the internal organisational level, before it concerns the external level (customers).

4. Conclusion:

The main purpose of this article was to present the difference between the application of design thinking in goods on one hand and in services on the other.

However, to explain this difference, we cannot ignore the presentation of the definition of design thinking, going gradually, from its initiation, to its current state. In this context, design thinking was presented as an innovation method on which companies base their innovation in a competitive context, since the majority of economies have been affected by various changes and disruptions, due in particular to digitalization. To achieve this, it is useful for companies to adopt a competitive innovation method, such as design thinking.

To this end, this research made it possible to present a general overview of design thinking, ranging from the oldest to the most recent representations. We note that its definition has evolved and its use has spread over time. According to all the authors, design thinking is a method of innovation, which companies use to distinguish themselves in the market. Nevertheless, with the development of research work, the definition of design thinking has evolved to be represented as a succession of stages of collective intelligence. According to the authors, the latter implies an internal management dimension relating to the company's internal employees, as well as an external marketing dimension relating to co-creation with customers.

After presenting what design thinking is, as well as its evolution over time, we presented the main differences between its application in goods, and between its use in services. In this context, for goods, design thinking makes it possible to give industrial goods a visual aspect and a shape, which is attractive, so that they can be better marketed on the market. In the context of service activities, design thinking mainly impacts the marketing mix, including interactive variables (staff, material support, processes). However, before impacting the marketing mix, its role consists in reaching the internal organizational level, based on the idea that a satisfied employee will better serve his customers.

Admittedly, this article has made it possible to clarify what design thinking represents, as well as the difference between its application in the industrial sector on one hand and in the tertiary sector on the other. However, several studies are still needed to be done at this level, because of the advantages for all companies.

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