

## **PLANNING THE BUSINESS MODEL BY DESIGN THINKING: A RESEARCH ON START-UPS**

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### **ABSTRACT**

*Business Model approach refers to the whole of an enterprise. The issue of how the Design Thinking Approach (which suggests a people-oriented approach to each problem, from the entrepreneur problems to daily problems) will have consequences on Business Model Innovation is a remarkable research topic. In this article, in the process of creating or innovating their business models, the design-centred thinking level, the contribution of the business model to the building blocks, and the aspects that entrepreneurs benefit were investigated. In this research which is based on the experiences of entrepreneurs, start-ups were contacted, and semi-structured interviews designed by taking expert opinions were applied to entrepreneurs. The data obtained from 13 interviews of approximately 1 hour per participant were analysed using the MAXQDA software program and expert opinions. As a result; It was made out that entrepreneurs were highly Design Thinker individuals, they think design-oriented in their "value proposition" about their ventures, thus minimizing time-money costs.*

**Keywords:** Entrepreneurship, Business Model, Business Model Innovation, Design Thinking

**JEL Codes:** M10, M13, M19

### **İŞ MODELİNİ TASARIM ODAKLI DÜŞÜNMEK: START-UP'LAR ÜZERİNE BİR ARAŞTIRMA**

#### **ÖZ**

*İş Modeli yaklaşımı; A'dan Z'ye bir girişimin bütünü ifade etmektedir. Girişimcilerin karşılaştığı zorluklardan gündelik sorunlara kadar her bir probleme karşı insan odaklı bir yaklaşım öneren Tasarım Odaklı Düşünme Yaklaşımı'nın İş Modeli İnovasyonu üzerinde nasıl sonuçlar doğuracağı ise dikkat çeken bir araştırma konusudur. Bu çalışmada, girişimcilerin iş modellerini oluşturma veya revize etme sürecinde tasarım odaklı düşünme düzeyleri, iş modelinin yapıtaşlarındaki katkısı ve girişimcilerin hangi açılardan fayda sağladıkları araştırılmıştır. Girişimcilerin deneyimlerine dayanan bu çalışmada, start-up'lar ile iletişime geçilmiş ve yarı yapılandırılmış mülakatlar ile veri toplanmıştır. 13 katılımcı ile yaklaşık 1'er saatlik görüşmelerden elde edilen veriler MAXQDA yazılım programı ve uzman görüşlerinden yararlanılarak analiz edilmiştir. Araştırma sonucunda; girişimcilerin yüksek oranda Tasarım Odaklı düşünebilen bireyler oldukları; girişimleriyle ilgili ortaya koydukları "değer önerisinde" Tasarım Odaklı düşündükleri ve bu sayede zaman-para maliyetlerini minimize ettikleri sonucuna varılmıştır.*

**Anahtar Kelimeler:** Girişimcilik, İş Modeli, İş Modeli İnovasyonu, Tasarım Odaklı Düşünme

**JEL Kodları:** M10, M13, M19

\* This study is derived from the master's thesis titled "The Role Of Design Thinking On The Business Model Building Process And A Research" which was completed under the supervision of Prof. Dr. Selim YAZICI at Istanbul University, Institute of Social Sciences.

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## 1. INTRODUCTION

Entrepreneurship activities have made significant progress after the 1970s and have been accepted as the "driving force of economic and social development" worldwide (Audretsch et al., 2006: 12). Likewise, between 1970-80, the growth dynamics of the American economy started to shift towards entrepreneurial sectors (Drucker, 1984: 2). It is of vital importance for social development as it increases the welfare of society and contributes to the production of resources (Aytaç, 2006: 140-141). A Business Model, on the other hand, embodies the revenue, cost and profit structure by clearly demonstrating the value that a start-up offers to customers (Teece, 2010: 173). A useful business model is one of the methods that should be adopted for an organization that wants to be successful (Magretta, 2002: 3-4). Besides, well-established business models have the potential to reshape and scale industries (Johnson et.al., 2008: 58). Designing a business model; refers to the blending of scattered ideas, individual insights, and industry insights into a tangible "value proposition" and ultimately a business model. The better and more accurate this design is, the more the revenue will be, and the competition beyond product-price-technology items will be possible (Bland & Osterwalder, 2019: x).

Known for exhibiting a human-centred methodology, the Design Thinking approach reveals the wishes and needs of people more clearly and allows them to observe what they like or dislike by including them in all processes from the production to consumption of a product. In this way, targeted design or innovation gains powerful insight (Brown, 2008: 1).

It contributes to design thinking in the process of creating a business model, increasing the value created, vitalising the creation of ideas, and alleviating conflicts of interest by including stakeholders in the process (Geissdoerfer et al., 2016: 1218). Integrating the Design Thinking approach into the Business Model is a must for the future of the business world. The Design Thinking approach leads to better business solutions in every way by providing more communication towards the customer needs with a human-centred perspective (Davis, 2010: 6538).

## 2. BUSINESS MODEL

Developments in the global economy have changed the ongoing balance between suppliers, vendors, and customers. The increase in Information and Communication Technologies and the open and accessible global trade regimes have made it possible for customers to have access to more options, different customer needs to come to light and different supply opportunities to become more transparent (Teece, 2010: 172). Entrepreneurs can create new opportunities by making use of Information and Communication Technologies (Zott & Amit, 2007: 184). The supply-based mode of production of the industrial age is no longer valid. Therefore, as long as it is possible to provide low-cost solutions thanks to technology, businesses should be more customer-oriented. This requirement has made it necessary for businesses to reconsider the value propositions they offer to customers over time (Teece, 2010: 172).

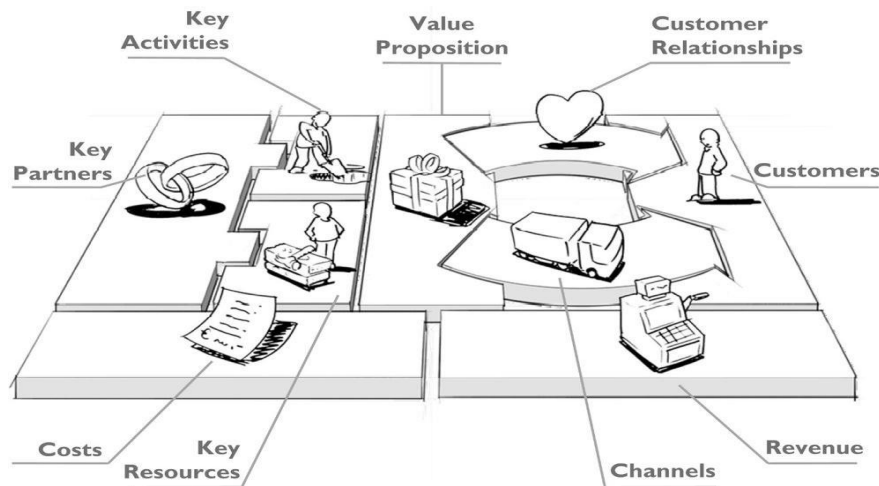
A technological idea by itself does not constitute an objective value. Its potential economic value remains hidden unless commercialized. A useful "Business Model" is necessary to turn the idea into an economical value. Using the business model, companies commercialize new ideas and technologies. If a technological idea cannot be built with a suitable business model, it is a possible result that third parties or institutions that blend it with a good business model will precede, even if you are the party that develops it (Chesbrough, 2010: 354-355). The creation of a

Business Model contributes to the understanding, analysis, development, and future projections of the way to do business for entrepreneurs (Osterwalder, 2004: 20-21).

In the creation of the business model, attention should be paid to the fact that it yields results that will achieve the goals. While doing this, attention should be paid to issues such as the absence of conflicts in the final idea or choices within the team, the differentiation of the business model from that of the competitors, the attainment of an indispensable value for suppliers and customers, and the fact that the value offered cannot be easily imitated (Casadesus-Masanell & Ricart, 2011: 4).

In order for the business model to have a common understanding, Osterwalder and Pigneur have come up with a business model concept that is easy for everyone to understand, express, and discuss. While doing this; it was expected that the concept would be simple and intuitively understandable, that the beneficiaries would be able to start their discussion from the same point and talk about the same thing. They stated that this concept could be a common language that allows to easily define and change business models to create new strategic alternatives (Osterwalder & Pigneur, 2010: 15). The Business Model Canvas, which forms the most important part of the concept; it is considered as a strategic management tool for designing, testing and managing profitable and scalable business models (Osterwalder, et al., 2014: 276). The Canvas is a common language that can define business models, enable them to be visualized, facilitate their evaluation, and make it possible to change them when necessary (Osterwalder & Pigneur, 2010: 12).

Within the framework of the concept they presented, Osterwalder & Pigneur (2010: 16-17) placed the Business Model on a canvas and created this canvas from 9 building blocks. The 9 building blocks presented in Figure 1 are: Customer Segment, Value Proposition, Channels, Customer Relationships, Revenue Stream, Key Resources, Key Activities, Key Partners and Cost Structure.



**Figure 1.** Business Model Canvas

**Source:** Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game changers, and challengers* (Vol. 1). John Wiley & Sons.

Start-ups need to develop their initiatives together with the customer to minimize the loss of money and time, to increase their experience without exhausting their resources with small unsuccessful experiences, and to learn from failures (Blank & Dorf 2014: 22-351). The Business Model Canvas should be used throughout the development process with the client as a benchmark. Entrepreneurs can clearly see all processes through the business model canvas while developing with the customer. The Business Model Canvas has the potential to be a visual aid in identifying failures and missteps in learning processes faced by entrepreneurs and in revisions.

In the technology market with a high rate of transformation, product or process innovation alone is not enough, however, the realization of Business Model Innovation provides a serious competitive advantage (Amit & Zott, 2012: 37). Successful Business Model Innovation depends on sufficiently differentiating the business model. Your Business Model Innovation can be referred to be a success if existing competitors, start-ups, or new gamers cannot easily copy the fresh business model in a short time (Teece, 2010: 173). As with every tool and method, business models are also open to development. For this reason, it would be beneficial for the users to revise their business models with the help of the canvas at regular intervals.

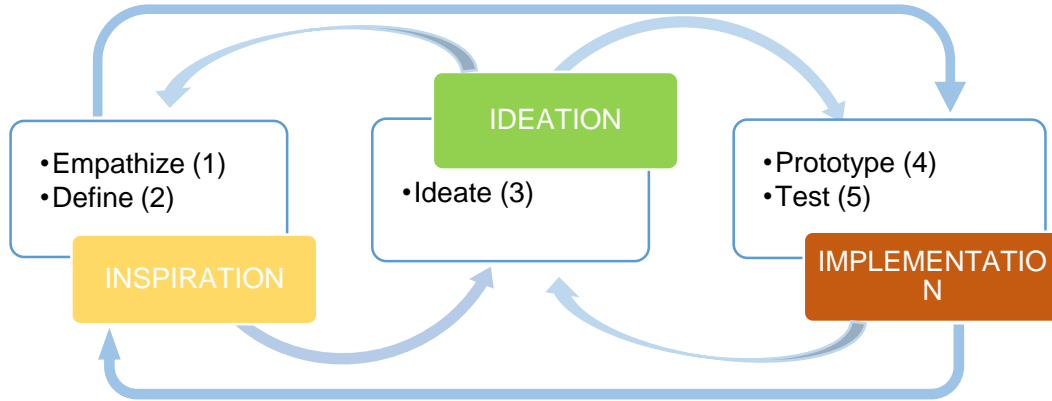
### **3. DESIGN THINKING**

Design activity after the 1950s has started to offer a more serious competitive advantage in many sectors from technological products to packaged food products (Brown, 2008: 2). The most successful brands in the world, use design principles to deeply understand their customers, make innovation and create value (Brown, 2008: 6).

Not only The Design Thinking is limited to contributing to the physical design of elegant and useful products, but also can be used to design services and systems (Dunne & Martin, 2006: 517). This approach is a methodology that internalizes the entire aspects of innovation activities with a human-centred design ethic. Design thinkers are expected to have the designer's method and sensitivity, to offer technological solutions suitable for human needs, or to transform viable business strategies into customer value and market opportunities. While Design Thinking facilitates to understand human needs and expectations, it offers the opportunity to directly observe what is liked and what is not liked, from the production process of services or products to sales and promotion activities. In this way, it provides a strong understanding of the targeted innovation (Brown, 2008: 1-2). The Design Thinking Approach is accepted among the best ways of being creative and innovative (Johansson-Sköldberg et al. 2013: 121). Design Thinking, which is a human-centred approach, has started to be adopted gradually by companies to make innovations (Nakata & Hwang, 2020: 117).

The Design Thinking approach consists of 3 phases and 5 steps. These phases are; Inspiration, Ideation, and Implementation (IDEO, 201: 9), while the steps are; Empathize, Define, Ideate, Prototype and Test (d.school - Hosso Plattner Institute of Design, 2010: 2). "Inspiration" encourages solving problems or seizing opportunities; "Ideation" generates and develops ideas that can lead to solutions; "Implementation" provides a roadmap on the market way (IDEO, 2015: 9). As indicated in Figure 2, Empathize and Define steps are at the Inspiration phase; Ideate step in the Ideation phase; Prototype and Test steps can be handled in the Implementation phase. Because these steps, considered together, are so

interconnected that they cannot be separated from each other, and one is meaningless without the other.



**Figure 2.** Phases and Steps of Design Thinking Approach

**Source:** Created by the Authors

An entrepreneur using Design Thinking Approach; starts with empathy and by defining user needs, then generates ideas to explore possible solutions to improve the user experience. He/she then iteratively prototypes the concepts and refines the concepts through the testing process. (Butler & Roberto, 2018: 45). These steps are not always linear. Design thinkers can always go backward or rewind processes when needed. Therefore, the phases and steps of the Design Thinking Approach are always open to feedback.

#### 4. PLANNING THE BUSINESS MODEL BY DESIGN THINKING

Business models should include creative thinking in all circumstances and support creative processes that enable thinking outside the box (Davis, 2010: 6533). Design Thinking, on the other hand, offers innovations and differences to support the viability of ideas and develops processes for the realization of these ideas (Miyachi & Cressman, 2019: 97). In addition, it contributes to reframing issues and clarifying design paradoxes based on the value proposition (Gudiksen, 2012: 407-418). This approach has the potential to support Business Model Innovation or assist with business model building from scratch (Direction, 2019: 19). Including Design Thinking in the Business Model creation process contributes to increasing the value created, stimulating the idea generation process, and minimizing conflicts of interest by involving stakeholders in this process (Geissdoerfer et al. 2016: 1218).

When Bolus (2016: iii) explores whether Design Thinking is a valuable resource for any organization, he saw that the concepts of Design Thinking and Business Model are intricately related, and he realized that the Business Model is an output of Design Thinking. Bonakdar and Gassmann (2016: 60-66) discovered that Design Thinking contributed significantly to the process of creating radical new business models as the result of their projects with businesses, and they argued that Design Thinking could be applied at all stages of the Business Model Innovation process to design and implement innovative business models.

Miyachi & Cressman (2019: 102) initiated a joint Design Thinking process in the organization to revise the business model of the non-profit “Art á la Carte”

business, which had become dysfunctional. With the Design Thinking process used in this study, they determined the short-term viability and constraints of the business model of the organization and created options for necessary business model innovation, new workflows, and participation opportunities. As a result, it was concluded that Design Thinking is beneficial for business model innovation and evolution (Miyouchi & Cressman, 2019: 105-106).

The Design Thinking approach contributes to the Business Model Innovation process in various ways. Taking a human-centred approach to problems, Design Thinking sharpens the perspective of the business model innovation team by observing and empathizing with the customer. Design Thinking in the Business Model Innovation process helps uncover hidden customer needs and formulate the design challenge. By providing rapid prototyping of business models, it is possible to test the created business model against the real situation. This method applied iteratively, continues the Business Model Innovation process until it reaches a satisfactory level by providing continuous feedback (Bonakdar & Gassmann, 2016: 65).

## **5. RESEARCH**

With the influence of technology, developments are happening very rapidly around the world, opportunities are emerging and disappearing very often, and businesses and start-ups need to constantly revise their Business Models in order not to fall behind rivals (Euchner & Ganguly, 2014: 33). The success of start-ups that want to enter the market depends on their innovative business ideas. Therefore, when the studies that deal with Design Thinking and Business Model tools together are examined, it is seen that Design Thinking contributes significantly to having innovative Business Models (Leavy, 2011: 19; Gudiksen, 2012: 418; Girotra & Nettekine, 2013: 539; Bonakdar & Gassmann, 2016: 66; Geissdoerfer & diğer., 2016: 1229; Miyouchi & Cressman, 2019: 97).

Considering that the Design Thinking approach contributes to its practitioners in many areas from value proposition to determination to cost reduction, it is thought that it will play an important role in Business Model innovation activities. The adoption of Design Thinking, which is a human-centred methodology, by entrepreneurs and approaching the business model canvas with this methodology can provide a significant gain.

The purpose of this research is to create an insight into the role of Design Thinking in the Business Model Innovation process.

The research questions that guided the study were determined as follows:

At what level do entrepreneurs benefit from the Design Thinking approach?

How do entrepreneurs benefit from Design Thinking and in which steps?

What are the consequences of Design Thinking while creating the Business Model?

The source of the research carried out is the entrepreneurs. Since this research focuses on the experiences of entrepreneurs, it was found appropriate to use the semi-structured interview method and the Phenomenology design, which are among the qualitative research methods.

In the process of reaching entrepreneurs, it was deemed appropriate to use Snowball Sampling, Criterion Sampling, and Convenience Sampling Methods,

which are under the Purposeful Sampling method. Since the research focuses on how entrepreneurs who know and benefit from the Business Model tool benefit from the Design Thinking approach specific to the Business Model, it is aimed to reach entrepreneurs that have been in incubation and acceleration centres. In these centres, entrepreneurs are given training in many fields such as "Business Model, Design Thinking, Lean Start-up" and their practices are encouraged. When deemed necessary, the researchers also used their personal references to reach the entrepreneurs.

In the study, care was taken to collect data from entrepreneurs from different sectors. During the sampling process, 13 entrepreneurs from 6 sectors were interviewed. The information about the participants were listed in Table 1.

**Table 1.** Information About the Participants

Participant	Age	Gender	Position	Sector	Start-Up Experience
BS	25	Male	Co-Founder	Software	3+
NT	30	Female	Co-Founder	Software	1
AK	22	Male	Co-Founder	Software	2
MB	40	Male	Co-Founder	Software	3+
SM	31	Male	Co-Founder	Software & Hardware	1
BY	47	Female	Co-Founder	Education	2
KCK	22	Male	Co-Founder	Education	2
AH	24	Male	Co-Founder	Education	3+
ACE	30	Male	Co-Founder	Health Tech.	2
YK	46	Male	Co-Founder	Health Tech.	3+
UG	31	Male	Co-Founder	Beverage	3+
FE	30	Male	Co-Founder	Manufacturing Tech.	1
FA	38	Male	Co-Founder	Digital Content and Gaming	3+

**Source:** Created by the Authors

The names of the participants are coded in terms of the privacy of the personal and professional data of the entrepreneurs. In addition, the names of the start-ups were not shared, instead, sector information was contented. In order to emphasize the experiences of entrepreneurs in the start-up ecosystem, the number of enterprises they have carried out has been evaluated in three categories (1st enterprise, 2nd enterprise, 3+th enterprise).

The following steps were taken to ensure the internal and external validity of the study:

While forming the interview questions, interview forms, findings, and results in the literature were benefited (Gudiksen, 2012: 407-418; Bolus, 2016: 178).

The prepared interview form was examined by a Design Thinker, who is an expert in the field of Design Thinking and works as a mentor in different incubation centres, and necessary content arrangements were made in line with his recommendations.

The structural framework of the prepared interview form was examined by an academician who is an expert in the field of qualitative data analysis and has an Associate Professor degree in the field of Mathematics and Science Education, and structural adjustments were made in line with his feedback.

The coding processes made during the analysis process and the accuracy of the level of reflection of the themes on the data set were again examined by the expert academician and revisions were made.

The relationships established between themes, categories and codes were presented to the Design Thinker again, and the accuracy of the established relationships were confirmed.

The external reliability of the research has been enhanced with detailed explanations under the title of "5.1. Data Analysis Process". Internal reliability was supported by tabulating the data, creating relationship maps, and including expert views in the study in section "5.2. Research Findings".

### **5.1. Data Analysis Process**

The entrepreneurs -which are in the entrepreneurship ecosystem, benefit from the Business Model tool, are active in the market, or that are preparing to go to the market- have been included in the scope of the research. After the literature review, it was decided the research would be carried out on which method and design, and a pre-interview form was prepared for the entrepreneurs by using the data obtained from the literature, and this interview form was approved by experts, and the study was made ready for the data collection process.

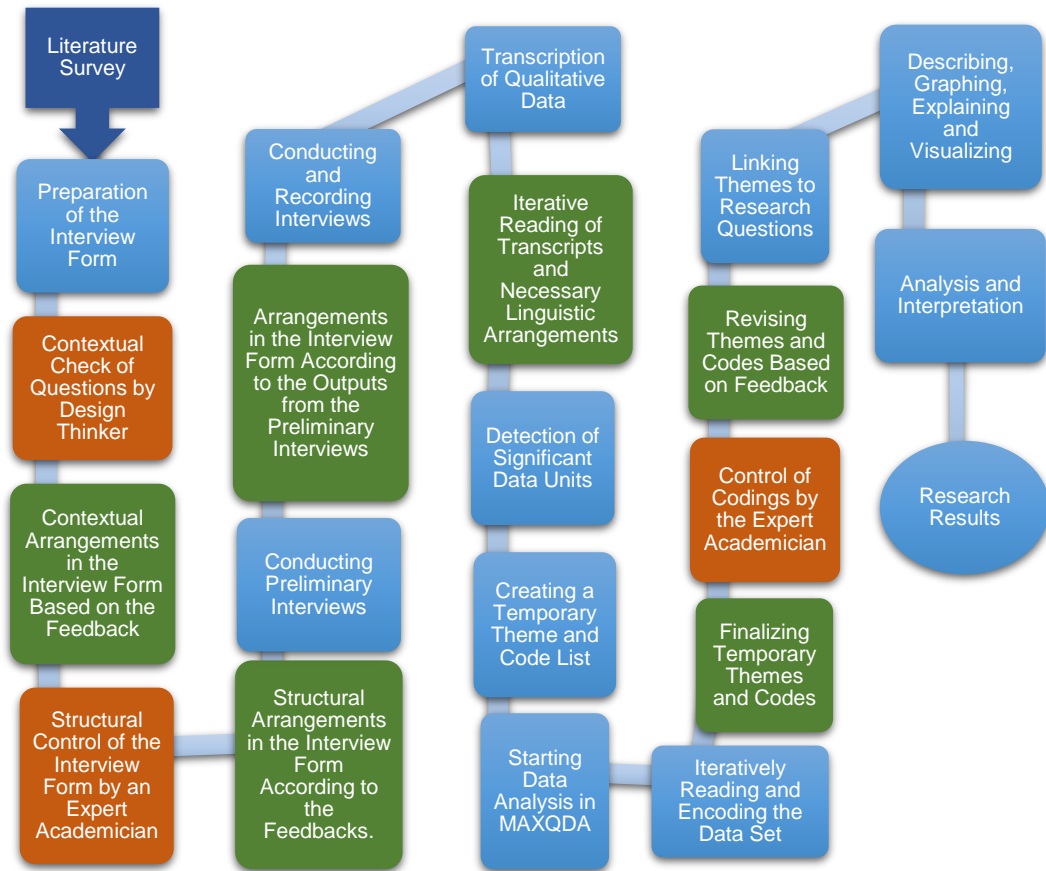
During the interviews, it was taken into account that the entrepreneurs would not know the Design Thinking approach literally. Therefore, the steps of the Design Thinking process were explained before the relevant question and a correct understanding was ensured by making descriptions. In addition, "Probe Questions" were placed and used when necessary, in case the data sought could not be obtained among the answers given to the questions.

The "Research and Analysis Process", which was followed from the beginning to the end of the research, is as shown in Figure 3.

During the research period, "online video interviews" were conducted with the participants due to the existence of a worldwide pandemic (Covid-19) and the risk of transmission.

At the beginning of the interviews, the researcher and the study were introduced to the participant in a general framework, and before starting the interview, the consent of each participant was taken with permission for the audio and video recording of the interview and the use of the data. With their permissions, the data of the participants were analysed and used in the study.





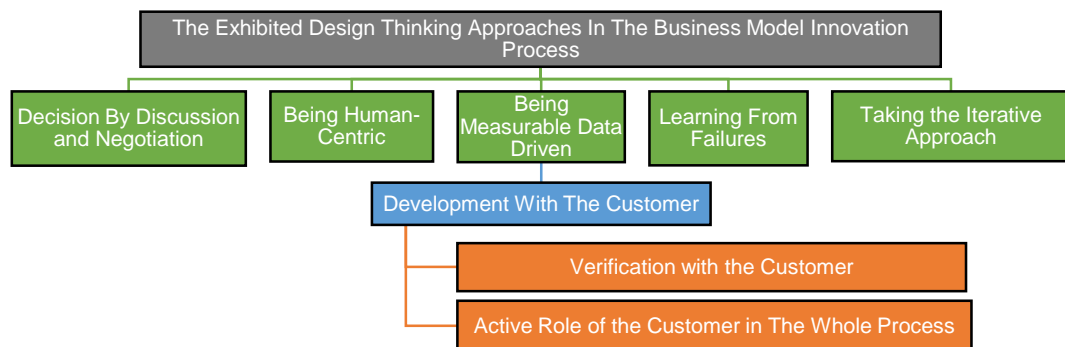
**Figure 3.** Research and Analysis Process

Source: Created by the Authors

### 5.1.1. Creating Codes to Data Analysis

Some of the codes used in data analysis were created from data obtained from literature reviews. When necessary, new codes for the purpose of the research were created and included in the study. The code hierarchies of the 3 themes used in the study are presented in Figures 4, 5 and 6.

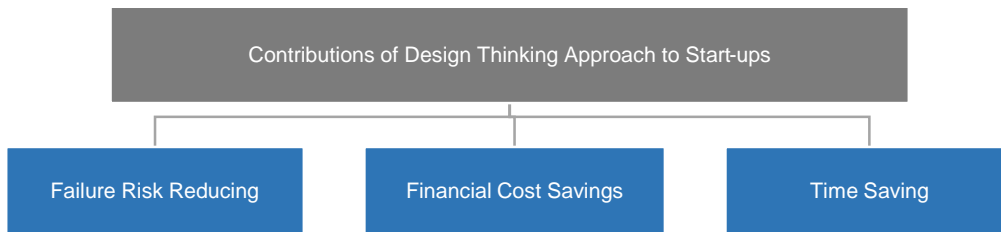
The categories and codes specified in Figure 4, were used to understand the level of entrepreneurs' adoption of the Design Thinking approach.



**Figure 4.** Categories and Codes of the Theme of Exhibited Design Thinking Approach in the Business Model Innovation Process.

**Source:** Created by the Authors

It is understood that “Verification with the Customer” and “the Active Role of the Customer in the Whole Process” are included in the "Development with the customer" strategy and the development activity with the customer is carried out to reach measurable data. Therefore, it has been found appropriate to include “Development with The Customer” and sub-codes under the category of “Being Focused on Measurable Data”.

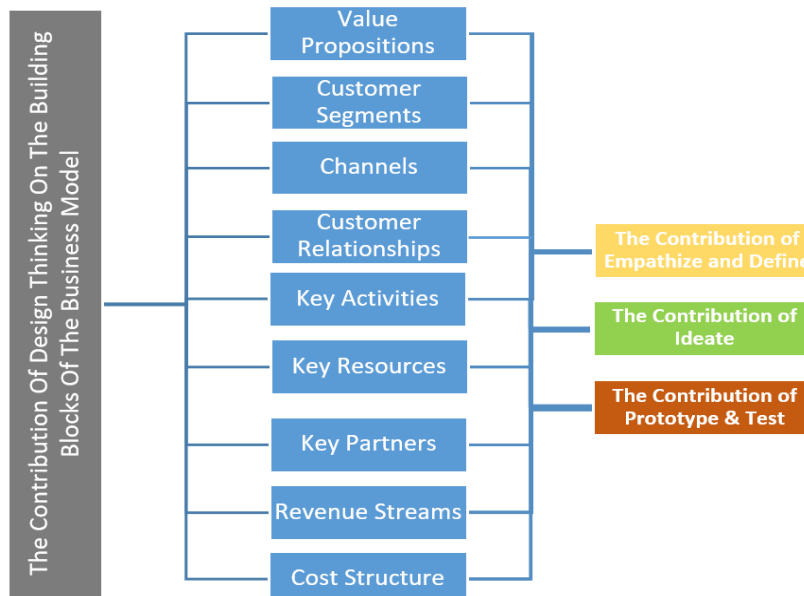


**Figure 5.** Categories and Codes of the Theme of the Contribution of Design Thinking in the Business Model Innovation Process

**Source:** Created by the Authors

As a result of the interviews, the contributions emphasized by the participants were determined and categorized by putting them into codes. While the "Financial Cost Saving" and "Time Saving" codes in Figure 5 were created according to the concepts previously determined in the literature. "The Failure Risk Reduction" code is one of the codes included in the data analysis, which was created as a result of the participants' emphasis.

Figure 6 includes themes, categories, and codes that aim to determine the phases of Design Thinking and the effects of the steps within these stages of the 9 building blocks of Business Model.



**Figure 6.** Categories and Codes of the Theme of the Contribution of Design Thinking on the Building Block of the Business Model

**Source:** Created by the Authors

At this stage, as indicated in Figure 2, the steps of "Empathize and Define" were discussed under the "Inspiration" phase, and the steps of "Prototype and Test" were discussed under the "Implementation" phase. The Ideate step was also handled within the Ideation phase. It was found appropriate to consider the three codes related to Design Thinking on the right side of Figure 6 as a sub-code of each of the 9 building blocks of the Business Model, thus examining their effects on the building blocks.

MAXQDA program was used in the qualitative analysis process. MAQXDA program provides great convenience in determining codes and themes and organizing data in qualitative researches. During the iterative analysis of the interview transcripts, it was helpful in reducing the time loss that could be experienced and in minimizing the errors that may occur in the process of determining the code, category, and theme. In addition, the "Code Relationship Scanner" provided by the MAXQDA program was used to determine the affinities between the codes and categories, and the data obtained from here was used in the study.

**5.2. Results**

**Table 2.** Matrix of Design Thinking Ability of Participants

Matrix of Design Thinking Ability of Participants			Participants													Approach Exhibition Rate	
			BS	KCK	SM	AK	ACE	UG	BY	YK	NT	FE	MB	AH	FA		TOTAL
Decision By Discussion and Negotiation			1	1	1	1	1	1	1	1	1	1	1	1	1	13	100,00%
Taking The Iterative Approach			1	1	1	1	1	1	1	1	1	1	1	1	1	13	100,00%
Learning From Failures			1	1	1	1	1	1	1	1	1	0	0	1	1	11	84,62%
Being Human-Centric			1	1	1	1	1	1	1	1	1	1	1	1	1	13	100,00%
Being Measurable Data Driven	Development with the Customer	Verification with the Custom	1	1	1	1	1	1	1	1	1	1	1	1	1	13	100,00%
		Active Role of the Custom	1	1	1	1	1	1	0	1	1	1	1	1	0	11	84,62%
TOTAL			6	6	6	6	6	6	5	6	6	5	5	6	5		
User Exhibit Rate			100%	100%	100%	100%	100%	100%	83,33%	100%	100%	83,33%	83,33%	100%	83,33%		

Source: Created by the Authors

In qualitative research, since data analysis is shared through tables, figures, and direct quotations, it can take up long pages and cause the integrity to be broken. For this reason, care has been taken to present the findings in a way that does not disturb the integrity of meaning.

The following results are presented in accordance with the research questions outlined in Research part of this paper.

### 5.2.1. The Design Thinking Level of Entrepreneurs

Before questioning in which building blocks of the Business Model, entrepreneurs apply design thinking, and what kind of outputs they achieve, it is necessary to determine to what extent they can behave Design Thinking. When the data obtained from the participants are examined (as expressed in Table 1), it is thought that entrepreneurs adopt and apply the approaches required by Design Thinking at a high rate.

Based on 6 approaches, the assessment shows that 9 out of 13 participants fully met the criteria. Since 4 of the entrepreneurs did not adopt an approach, it was assumed that 83.33% applied the Design Thinking Approach. In Table 2 and the following tables; Values indicated with "1" indicate that the searched criteria is found in the relevant participant, while "0" means that it is not.

### 5.2.2. The Benefits of Design Thinking to Entrepreneurs

While analysing the collected data, which positive and negative points the participants touched when they considered the Design Thinking Approach and the process of creating a Business Model together were examined. Sometimes the participants shared their negative experiences and the lessons they learned from these experiences, and sometimes they explained which they mentioned the negative effects of the steps they took.

**Table 3.** Matrix of Contribution of Design Thinking Approach to Start-Up

	Failure Risk Reducing	Financial Cost Savings	Time Saving	TOTAL	The Rate Over All Criteria
BS	1	1	1	3	100,00%
KCK	1	1	1	3	100,00%
SM	1	0	1	2	66,67%
AK	1	0	1	2	66,67%
ACE	1	1	1	3	100,00%
UG	1	1	1	3	100,00%
BY	1	1	1	3	100,00%
YK	1	0	1	2	66,67%
NT	0	1	1	2	66,67%
FE	1	1	1	3	100,00%
MB	1	1	0	2	66,67%
AH	1	1	1	3	100,00%
FA	1	1	1	3	100,00%
TOTAL	12	10	12		
<b>The Rate Over All Participants</b>	<b>92,31%</b>	<b>76,92%</b>	<b>92,31%</b>		<b>%87,18</b>

**Source:** Created by the Authors

As a result of the analysis of the interviews, it was concluded that Design Thinking in Business Model innovation has three main contributions to start-ups. These are, in order: Failure Risk Reducing; Financial Cost Savings; Time Saving. The results of the analysis of these contributions emphasized by the entrepreneurs are presented in Table 3. As can be seen from the table, most of the entrepreneurs believe that Design Thinking contributes to the Business Model Innovation process in the specified areas.

**5.2.3. The Effect of Design Thinking on The Business Model Building Blocks**

It has been investigated in which building blocks of the business model innovation process entrepreneurs benefit from the Design Thinking approach. The findings were summarized in Table 4.

**Table 4.** Matrix of Contribution of Design Thinking on Value Proposition, Customer Segment and Channels

		Value Proposition			Customer Segment			Channels		
LINE	PARTICIPANTS	Empathize Define	Ideate	Prototype Test	Empathize Define	Ideate	Prototype Test	Empathize Define	Ideate	Prototype Test
1	BS	1	1	1	1	0	1	0	0	1
2	KCK	1	0	1	0	0	1	0	0	1
3	SM	1	1	1	1	1	0	1	1	0
4	AK	1	1	1	1	0	0	0	0	1
5	ACE	1	1	1	1	1	0	1	1	0
6	UG	1	1	1	0	0	1	0	0	0
7	BY	1	0	1	1	0	0	1	0	1
8	YK	1	1	1	1	1	0	0	1	0
9	NT	0	0	1	1	0	0	0	0	0
10	FE	1	1	0	0	0	0	1	0	0
11	MB	1	1	1	0	0	0	0	1	0
12	AH	1	1	1	0	1	1	1	0	1
13	FA	1	1	1	0	1	0	0	0	0
	TOTAL	12	10	12	7	5	4	5	4	5
X/13	DETAILED BENEFIT RATE	92,31 %	76,92 %	92,31 %	53,85 %	38,46 %	30,77 %	38,46 %	30,77 %	38,46 %
X/39	BENEFIT RATE PER BUILDING BLOCK	87,18%			41,03%			35,90%		

Source: Created by the Authors

In the interviews with the entrepreneurs, questions were asked by considering the stages and steps of the Design Thinking approach, thus it was aimed to reach more detailed and enlightening results. As can be seen in Table 4, the biggest impact on the Business Model building blocks was in the Value Proposition. In Value

Proposition, on the other hand, it is noticed that the Empathize-Define and Prototype-Test steps are dominant.

**Table 5.** Matrix of Contribution of Design Thinking on Customer Relationships, Key Activities and Key Resources

		Customer Relationships			Key Activities			Key Resources		
LINE	PARTICIPANTS	Empathize-Define	Ideate	Prototype-Test	Empathize-Define	Ideate	Prototype-Test	Empathize-Define	Ideate	Prototype-Test
1	BS	0	0	0	0	0	1	0	0	1
2	KCK	0	0	1	0	0	1	0	0	1
3	SM	1	0	0	1	1	0	1	1	0
4	AK	0	0	0	0	0	0	1	1	1
5	ACE	1	1	0	1	1	0	1	1	0
6	UG	0	1	0	0	0	0	0	0	0
7	BY	1	0	1	0	0	1	0	0	0
8	YK	1	0	0	0	0	0	0	0	0
9	NT	1	0	0	1	0	0	0	0	0
10	FE	0	0	0	1	1	0	1	1	0
11	MB	0	1	0	1	0	0	0	0	0
12	AH	0	0	1	0	0	1	0	1	1
13	FA	1	0	0	0	0	0	0	0	0
	TOTAL	6	3	3	5	3	4	4	5	4
X/13	DETAILED BENEFIT RATE	46,15 %	23,08 %	23,08 %	38,46 %	23,08 %	30,77 %	30,77 %	38,46 %	30,77 %
X/39	BENEFIT RATE PER BUILDING BLOCK	30,77%			30,77%			33,33%		

Source: Created by the Authors

Although the effect of Design Thinking on three of the Business Model building blocks in Table 5 is not high, the data obtained suggest that more studies are required in this area.

**Table 6.** Matrix of Contribution of Design Thinking on Key Partners, Revenue Stream and Cost Structure

		Key Partners			Revenue Stream			Cost Structure		
LINE	PARTICIPANTS	Empathize-Define	Ideate	Prototype-Test	Empathize-Define	Ideate	Prototype-Test	Empathize-Define	Ideate	Prototype-Test
1	BS	0	0	0	0	0	0	0	0	0
2	KCK	0	0	1	0	0	1	0	0	1
3	SM	1	1	0	1	1	0	1	0	0
4	AK	0	0	0	0	0	1	0	0	1
5	ACE	1	1	0	1	1	0	1	1	0
6	UG	0	1	1	0	0	0	0	1	1
7	BY	0	0	0	1	1	0	0	1	0
8	YK	0	0	1	1	0	1	0	0	0
9	NT	0	0	1	1	0	0	0	0	0
10	FE	0	0	0	1	0	0	1	0	0
11	MB	0	0	0	0	0	0	0	0	0
12	AH	0	1	1	1	0	1	0	0	1
13	FA	0	0	0	0	0	0	0	1	0
	TOTAL	2	4	5	7	3	4	3	4	4
X/13	DETAILED BENEFIT RATE	15,38 %	30,77 %	38,46 %	53,85 %	23,08 %	30,77 %	23,08 %	30,77 %	30,77 %
X/39	BENEFIT RATE PER BUILDING BLOCK	28,21%			35,90%			28,21%		

Source: Created by the Authors

When Table 6 is examined, data on which building blocks of the Business Model benefit the least from the design thinking approach. Although the limitations of qualitative research and the human factor negatively affect the accuracy of these results, the scarcity of rates in the data gives an idea.

**5.2.4. Relationship Between Codes**

With the help of the "Code Relations Scanner" offered by the MAXQDA program, "the relationships between the codes detected in the same paragraph" were examined. Since a participant's answer to a question is stated as a paragraph in the interview transcripts and there is no coding in the paragraphs where the researcher asks a question, the error rate is minimized. In the explanations made

by the participant while answering any question and in the examples he gave, it was tried to show how many different subjects he touched at the same time.

#### 5.2.4.1. The Relationship of Design Thinking Criteria and Business Model Building Blocks

When the relationship between the criteria that show how much the entrepreneurs use the design thinking and the building blocks of the Business Model are examined, some remarkable data can be observed. When Table 7 is examined, it is understood that the two codes most pronounced together are “Being Human-Centric” and “Value Proposition.”

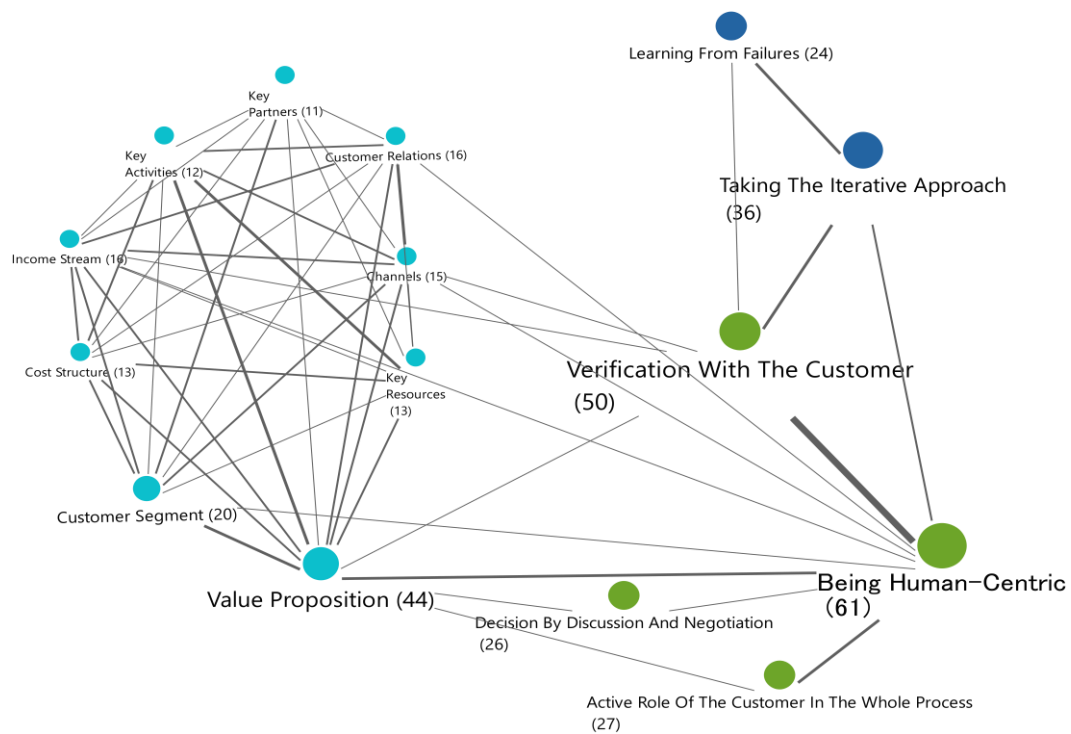
**Table 7.** The Matrix of the Relationship of Design Thinking Criteria and Business Model Building Blocks

	Value Proposition	Customer Segment	Channels	Customer Relations	Key Activities	Key Resources	Key Partners	Income Stream	Cost Structure
Decision by Discussion and Negotiation	12	2	2	4	4	4	2	2	5
Taking the Iterative Approach	8	4	4	4	2	2	2	4	2
Learning From Failures	2	2	2	2	0	0	0	0	0
Being Human-Centric	21	11	9	11	11	5	5	7	5
Verification With the Customer	14	4	8	8	4	2	2	6	5
Active Role of the Customer in the Whole Process	13	6	4	2	2	2	2	2	2

**Source:** Created by the Authors

In other words; It is observed that entrepreneurs who talk about Value Proposition often declare or show that they are Human-Centric. Similarly, it is possible to interpret other relations according to their weights.





**Figure 7:** The Map of the Relationship of Design Thinking Criteria and Business Model Building Blocks

**Source:** Created by the Authors

The numbers next to the code names indicate how many times the code is coded in the study, while the thickness of the connection channels shows the strength of the relationship.

**5.2.4.2. The Relationship of Design Thinking Criteria and Their Contributions**

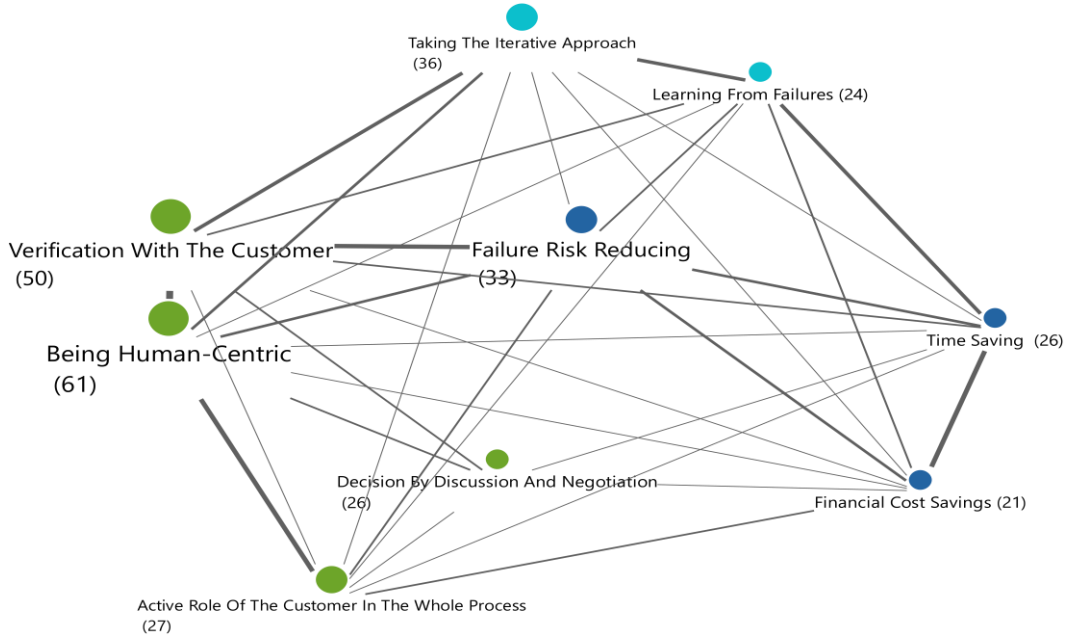
In the interviews, the entrepreneurs emphasized the reasons for these gains while talking about their achievements. For these reasons, the issues belonging to Design Thinking approaches were also coded and included in the analysis. These points were tried to be brought to light through the implemented code relations matrix.

**Table 8:** The Matrix of the Relationship of Design Thinking Criteria and Contributions

	Failure Risk Reducing	Financial Cost Savings	Time Saving
Decision by Discussion and Negotiation	2	3	4
Taking the Iterative Approach	6	7	7
Learning from Failures	9	9	15
Being Human-Centric	14	3	8
Verification with the Customer	18	8	12
Active Role of The Customer in the Whole Process	10	10	6

**Source:** Created by the Authors

When Table 8 is examined, the two most repeated together codes are “Verification with The Customer” and “Failure Risk Reducing”. While the participants stated that they reduced the risk of failure with the Design Thinking method, it was seen that they mostly verified with the customer in their answers.



**Figure 8.** The Map of the Relationship of Design Thinking Criteria and Contributions

**Source:** Created by the Authors

Similarly, other relationships can be interpreted according to their weights. This code relationship matrix -which can also be considered as a causal link relationship- can be examined as a relationship map in Figure 8.

## 6. CONCLUSION AND DISCUSSION

In the entrepreneurial ecosystem, the failure of an enterprise is very common. The main reason for the failure is the inability to present an accurate value proposition. Due to this blindness, spending time, money and human resource on an idea that cannot be embraced by the target audience is shown as one of the biggest problems which is called "falling in love with own idea" in the world of entrepreneurship. On the other hand, presenting the right idea with a wrong concept is also acknowledged among the crucial problems.

Design Thinking, which puts people in the centre and proposes the development of the product or concept entirely together with the customer, can contribute to business models and hereby start-ups. However, when the literature is examined, it has been concluded that there is very little work in this area, and it has not reached to a satisfactory level. At this point, it set one's sights on to contribute to closing the gap in the literature and to shed light on entrepreneurs.

In terms of the diversity of the data, care was taken to include entrepreneurs from different fields in the study. Accordingly, entrepreneurs which operating in 6 different sectors fallen under the study. However, the allocation of 13 participants is not in an equivalent structure when considering the existence of research limitations.

As a result of data analysis, it has been concluded that the criteria that reflect the Design Thinking approach and are sought in the participants are highly adopted by the entrepreneurs. On the other hand, when researching which building blocks of the Business Model are affected by Design Thinking in the Business Model Innovation process, it is clear that "Value Proposition" experienced the greatest impact. In consequence of the inferences made from the statements of the entrepreneurs, it is thought that the Design Thinking approach is mostly related to the subject of "what the start-up promises and offers to its target audience". There are significant differences between Design Thinking's contribution to Value Proposition and its contribution to the other eight building blocks of the Business Model Canvas. There may be possible reasons for this:

Considering the Design Thinking approach on the Business Model Canvas, it can be seen that it is a useful tool in just Value Proposition decision process.

Entrepreneurs may be insufficient to apply Design Thinking to the Business Model even if they think they are suitable to "Design Thinking".

Design Thinking approach may be thought of only as a tool used to develop products or services.

Data can be misleading due to the limitations encountered in qualitative research whose input is human.

As a result of the data obtained, it is thought that Design Thinking has the potential to be important in a decision phase regarding the "Customer Segment". It has been seen that it provides more meaningful data than other building blocks with a 41% utilization level. It is anticipated that further research on this subject will collect more data and find more meaningful data on the contribution of the Design Thinking approach to the Customer Segment.

When the benefits obtained by entrepreneurs as a result of shaping their Business Models by Design Thinking are evaluated, it can be predicted that the risk of failure is reduced, and time and financial cost savings are achieved thanks to the Design Thinking approach. Design Thinking can contribute to the breathing of start-ups who are trying to reach the goal with already scarce resources.

Based on the data, it is thought that entrepreneurs take a Human-Centred attitude when it comes to Value Proposition, and they do Customer Verification by displaying a Human-Centred approach. Finally, it is envisaged that entrepreneurs have reduced the Risk of Failure by Verifying with the Customer.

When the literature is scanned, it is seen that although there are adequate studies on the effect of Design Thinking (which is considered a mentality) on entrepreneurs, there are not enough studies focusing on the use as a tool in "brainstorming" of the creating process a Business Model by start-ups. This study promises to close a gap in the literature by trying to find out what kind of results Design Thinking bring out along the Business Model creation process of start-ups. On the other hand, it is expected that it will contribute to the emergence of existing insight in this field, and to prepare a substructure for future research.

Within the scope of the research, the co-founders of 13 start-ups in Turkey were interviewed. However, both the low adequacy of the ecosystem in Turkey to represent the global ecosystem and the fact that the data analysis is based on the individual evaluation of the researcher raises the possibility that the findings may

differ in future studies. Considering the existing constraints and the margin of error, this situation shows the limitations of the research.

Due to the lack of sufficient studies on this subject, the interview form used in the research was created and applied in the presence of experts. Due to the limitations inherent in qualitative research and the inability to generalize on the data obtained, further studies and quantitative analysis methods are required in this area.

For further researches, it is recommended that researchers who will work on this subject improve the interview form presented in this study or develop a quantitative study scale to increase validity and reliability. In addition, in similar studies to be carried out in the future, it may be useful to evaluate the data according to the sectoral allocation of the start-ups, their level of experience, and the state of the ecosystem in which they are located.

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