# A CREATIVE AND INNOVATIVE DESIGN APPROACH TO A TRADITIONAL CUISINE: A COMPARATIVE STUDY ON TURKISH CUISINE

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## ETHICAL DECLARATION

I hereby declare that I am the sole author of this thesis and that I have conducted my work in accordance with academic rules and ethical behaviour at every stage from the planning of the thesis to its defence. I confirm that I have cited all ideas, information and findings that are not specific to my study, as required by the code of ethical behaviour and that all statements not cited are my own.

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# ABSTRACT

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Özgönül, Sedef

Ph.D. Program in Design Studies

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This thesis conducts a mixed-method research attempt to explore creative and innovative design approaches to traditional Turkish cuisine, which holds significance within Turkey's abundant cultural, historical and geographical heritage. Despite the prevalent acknowledgment of Turkish cuisine's richness and diversity, it remains to be confined within these narratives. This issue, concealed beneath eloquent rhetoric, poses a challenge. The present study posits that cuisine can be regarded as a designed phenomenon. To begin with, in line with this perspective, a differentiation is established between Turkish food culture and Turkish cuisine. Subsequently, an extensive literature review is carried out, encompassing the domains of design thinking, creativity, culinary creativity and innovation, food studies, design thinking literature and Turkish cuisine. This literature review aims to address the three research questions at hand. The review adopts a comprehensive approach, incorporating theoretical and practical viewpoints and draws upon various disciplinary perspectives. An interdisciplinary methodology is employed to respond to the research questions,

involving a comparative analysis and synthesis of commonalities and disparities across these diverse fields. This thesis encompasses three separate studies, each aligned with a specific research question. The first study aims to identify and validate the macro-environmental factors that influence the culinary creativity of Turkish cuisine. Initially, interviews were conducted with experts and chefs specializing in Turkish cuisine to gain valuable insights into the environmental factors that shape its culinary creativity. Subsequently, the insights obtained from the interviews were utilized in constructing a survey, which served as the primary instrument for data collection. Through an exploratory factor analysis, six key environmental factors were identified as significant contributors to the culinary creativity of Turkish cuisine. These factors include (1) politics and economics, (2) education, (3) culture, (4) media and globalization, (5) technology, science and design and (6) tourism.

The second study aims to develop a design thinking model tailored explicitly to the culinary domain, drawing insights from the literature on the design discipline. To accomplish this, interviews were conducted with chefs representing Turkish cuisine in the international gastronomy industry. These interviews aimed to understand the stages and processes involved in chefs' creative processes when developing new dishes or menus. Through qualitative analysis of the data collected from the interviews, a framework rooted in design thinking principles began to emerge. A subsequent survey was conducted to ensure these processes' validity and reliability. As a result, a 7-stage model was formulated and designated as "culinary design thinking." The stages of the culinary design thinking model encompass empathy, define (dining out), idea generation, prototyping, menu development, testing and tasting and cooking and serving. The third study aims to identify the attributes associated with creativity and design in culinary products within Turkish cuisine. Building upon the perspectives and insights gathered from the participants in the previous two studies, the attributes contributing to the creativity and design of culinary products in Turkish cuisine were examined. Through the analysis of the interviews, a survey was developed. The resulting exploratory factor analysis revealed three overarching attributes characterizing culinary products. These attributes were examined by combining design and creative product approaches.

Consequently, a creative culinary product was found to possess the following

attributes: (1) desirability or novelty, authenticity, sensory stimulation, pioneering qualities, surprise elements and the ability to evoke emotions or narratives; (2) feasibility or resolution, encompassing taste, healthiness, filling and understandable; and (3) viability or elaboration, entailing well-crafted, meeting customer expectations and showcasing uniqueness. In summary, this study has introduced a model that aims to present creative and innovative design approaches to Turkish cuisine. This model focuses on the products chefs create, which can encompass individual dishes and comprehensive menus. The proposed model suggests utilizing the stages outlined in the culinary design thinking model to uncover the creative attributes of these culinary products. However, it is crucial to acknowledge that the successful implementation of the culinary design thinking model and the realization of creative and innovative approaches in traditional Turkish cuisine is contingent upon supportive environmental factors. These factors play a pivotal role in facilitating the application of the culinary design thinking model and fostering creative and innovative practices within the context of Turkish cuisine.
Keywords: Design thinking; Creativity; Turkish cuisine; Environmental factors; Culinary product.

# ÖZET

GELENEKSEL BİR MUTFAĞA YARATICI VE YENİLİKÇİ TASARIM YAKLAŞIMI: TÜRK MUTFAĞI ÜZERİNE KARŞILAŞTIRMALI BİR ÇALIŞMA

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Bu tez, Türkiye'nin zengin kültürel, tarihi ve coğrafi mirası içinde önem taşıyan geleneksel Türk mutfağına yaratıcı ve yenilikçi tasarım yaklaşımlarını keşfetmeye yönelik karma yöntemli bir araştırma girişimi yürütmektedir. Türk mutfağının zenginliği ve çeşitliliği yaygın kabul görmesine rağmen, bu anlatılarla sınırlı kalmaktadır. Bu durum güzel kelimeler ardına saklanmış bir problemdir. Bu çalışma, mutfağın tasarlanmış bir olgu olarak kabul edilebileceğini öne sürmektedir. Öncelikle bu bakış açısı doğrultusunda Türk yemek kültürü ile Türk mutfağı arasında bir ayrım yapılmaktadır. Ardından tasarım düşüncesi, yaratıcılık, mutfak yaratıcılığı ve inovasyon literatürü ve Türk mutfağı alanlarını kapsayan kapsamlı bir literatür taraması yapılmıştır. Bu literatür taraması, üç araştırma sorusunu ele almayı amaçlamaktadır. İnceleme, teorik ve pratik bakış açılarını birleştiren kapsamlı bir yaklaşımı benimsiyor ve çeşitli disiplin perspektiflerinden yararlanıyor. Araştırma sorularına yanıt vermek için, bu farklı alanlardaki ortaklıkların ve eşitsizliklerin karşılaştırmalı bir analizini ve sentezini içeren disiplinler arası bir metodoloji

kullanılır. Bu tez, her biri belirli bir araştırma sorusuyla uyumlu üç ayrı çalışmayı kapsamaktadır. İlk çalışma, Türk mutfağının mutfak yaratıcılığını etkileyen makro-çevresel faktörleri belirlemeyi ve doğrulamayı amaçlamaktadır. Başlangıçta, mutfak yaratıcılığını şekillendiren çevresel faktörler hakkında bilgi edinmek için Türk mutfağında uzmanlaşmış uzmanlar ve şeflerle görüşmeler yapıldı. Daha sonra, görüşmelerden elde edilen içgörüler, veri toplama için birincil araç olarak hizmet veren bir anketin oluşturulmasında kullanılmıştır. Keşfedici bir faktör analizi yoluyla, Türk mutfağının mutfak yaratıcılığına önemli katkı sağlayan altı temel çevresel faktör belirlendi. Bu faktörler (1) siyaset ve ekonomi, (2) eğitim, (3) kültür, (4) medya ve küreselleşme, (5) teknoloji, bilim ve tasarım ve (6) turizmi içerir.

İkinci çalışma, tasarım disipliniyle ilgili literatürden içgörüler alarak, mutfak alanına özel olarak uyarlanmış bir tasarım odaklı düşünme modeli geliştirmeyi amaçlamaktadır. Bunun için uluslararası gastronomi sektöründe Türk mutfağını temsil eden şeflerle görüşmeler yapılmıştır. Bu görüşmeler, şeflerin yeni yemekler veya menüler geliştirirken yaratıcı süreçlerinde yer alan aşamaları ve süreçleri anlamayı amaçlıyordu. Görüşmelerden toplanan verilerin niteliksel analizi yoluyla, tasarım odaklı düşünme ilkelerine dayanan bir çerçeve ortaya çıkmaya başladı. Bu çerçeve, Türk mutfağında şeflerin uyguladığı yaratıcı süreçleri anlamak ve tanımlamak için bir temel oluşturdu. Bu süreçlerin geçerliliğini ve güvenilirliğini sağlamak için müteakip bir anket yapılmıştır. Sonuç olarak 7 aşamalı bir model formüle edilmiş ve "mutfak tasarım düşüncesi" olarak adlandırılmıştır. Mutfak tasarımı düşünme modelinin aşamaları empati, tanımlama (dışarıda yemek yeme), fikir üretme, prototip oluşturma, menü geliştirme, test etme ve tatma, pişirme ve servis etmeyi kapsar. Üçüncü çalışma, Türk mutfağındaki mutfak ürünlerinde yaratıcılık ve tasarımla ilişkilendirilen özellikleri belirlemeyi amaçlamaktadır. Önceki iki çalışmada katılımcılardan edinilen bakış açıları ve anlayışlardan yola çıkarak, Türk mutfağında mutfak ürünlerinin yaratıcılığına ve tasarımına katkıda bulunan özellikler incelenmiştir. Yapılan görüşmelerin analizi sonucunda bir anket geliştirilmiştir. Ortaya çıkan keşfedici faktör analizi, mutfak ürünlerini karakterize eden üç kapsayıcı özelliği ortaya çıkardı. Bu nitelikler, tasarım ve yaratıcı ürün yaklaşımları birleştirilerek incelenmiştir. Sonuç olarak, yaratıcı bir mutfak ürününün aşağıdaki niteliklere sahip olduğu bulundu: (1) çekicilik veya yenilik, orijinallik, duyusal uyarım, öncü nitelikler, sürpriz unsurlar ve duyguları veya anlatıları uyandırma yeteneği; (2) uygulanabilirlik veya çözünürlük,

tadı, sağlıklılığı, doyuruculuğu ve anlaşılırlığı kapsayan; ve (3) uygulanabilirlik veya detaylandırma, iyi hazırlanmış, müşteri beklentilerini karşılayan ve benzersizliği sergileyen.

Özetle bu çalışma, yaratıcı ve yenilikçi tasarım yaklaşımlarını Türk mutfağına kazandırmayı amaçlayan bir model ortaya koymuştur. Bu modelde, şefler tarafından yaratılan ve hem bireysel yemekleri hem de kapsamlı menüleri kapsayabilen ürünlere odaklanılıyor. Önerilen model, bu mutfak ürünlerinin yaratıcı özelliklerini ortaya çıkarmak için mutfak tasarımı düşünce modelinde belirtilen aşamaların kullanılmasını önermektedir. Bununla birlikte, mutfak tasarımı odaklı düşünme modelinin başarılı bir şekilde uygulanmasının ve geleneksel Türk mutfağında yaratıcı ve yenilikçi yaklaşımların hayata geçirilmesinin, destekleyici çevresel faktörlere bağlı olduğunu kabul etmek çok önemlidir. Bu faktörler, mutfak tasarımı düşüncesi modelinin uygulanmasını kolaylaştırmada ve Türk mutfağı bağlamında yaratıcı ve yenilikçi uygulamaları teşvik etmede çok önemli bir rol oynamaktadır.

Anahtar Kelimeler: Tasarım odaklı düşünme; Yaratıcılık; Türk mutfağı; Çevresel faktörler; Mutfak ürünleri.

I dedicate this thesis to my mother, Nazan Boğaçacı.

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# CHAPTER 1: INTRODUCTION

Food is and was a biological necessity for human survival to nursery, process and development. However, food is a tool and space that characterizes and defines cultures, societies and identities beyond the material object. Food is a way of expressing sociability and hospitality (Fieldhouse, 1996), one of the most basic needs of society that creates rich identities (Hjalager and Richards, 2003) and is considered an aesthetic and sensory product as well as a technical product (Fine, 1996). When food began to be processed through cooking, it began to be consumed not only physically and instinctively but also mentally, socially and culturally. Wrangham (2009) says that cooking sets humans apart from other species because "cooked food" makes our foods safer, reduces spoilage and creates rich and delicious flavors. In other words, with the cooking process, people became aware of the taste.

While cooking makes food suitable for eating, cuisine transforms the act of eating into an object suitable for intellectual consumption and aesthetic taste (Ferguson, 2004) with the formal and symbolic rules of culinary practices. The cornerstone of cuisine is food and critical skills for creative cuisine include choosing ingredients, understanding their properties and knowing the use of ingredients.

Cuisine usually refers to a region such as French, Italian, or Chinese cuisine, providing distinctiveness and significance through cooking styles, techniques and ingredient choices (Civitello, 2004) and is "both a structure and an action, a set of principles as well as practices" (Ferguson, 2004). However, modern-day culinary trends also define cuisines such as Nouvelle, haute, or vegan. Clark (1975b) explained this as "an affirmation of an ideology."

According to Civitello (2004), it was not a cuisine, as the first humans ate to survive and needed more control over their food sources. The cuisine is a designed phenomenon. The cuisine includes basic and unique ingredients, specific cooking skills and techniques, an acceptable range of dishes and diverse flavor principles for its formation and differentiation (Rozin, 1981). The cuisine is about production and its orders are mainly instrumental; its application is site-specific, involving the producer and consumer in the process (Ferguson, 1998) and its techniques and ingredients can be analyzed empirically (Ferguson, 2004). As a result, it enriches life and produces

aesthetic pleasure (Rozin, 2006), while at the same time, it transforms the physical, natural, uncooked and unprocessed into a social actor (Ferguson, 2004). Moreover, it has its unique markers or "taste motifs" that will make it accepted by others (Fischler, 1988).

According to Clark (1975a), food is a "private good," and cuisine is a "public good," while the recipe is an abstract product and the meal is a tangible product. The production of cuisine requires a culinary system of culinary process and cultural process. It includes creation (cooks and chefs), production (kitchen, restaurant, home), diffusion (cookbooks, guidebooks, prizes, novels, essays) and consumption (diner-consumer and reader-consumer) (Clark, 1975b). A culinary product is connected with the chef, kitchen, dining room and diner and should be reviewed with society (ibid.). When these are brought together, cuisine becomes a commercial product due to the restaurant industry. People experience excitement, delight and a sense of personal well-being in a restaurant. (Finkelstein, 1989). Food acquires significance through the culinary traditions of a culture and commercial restaurants contribute economic value to these cuisines.

Telfer (1996) states that people eat food for health (utilitarian) or pleasure (hedonistic) purposes. In other words, people can make their restaurant preferences for satiation or pleasure. The priority of fine-dining (high-end, high-class, full-service, or white tablecloth restaurant) restaurants is to provide their customers with a pleasurable experience and satiety is not the primary purpose of eating at a fine dining restaurant.

Nowadays, more than offering customers refined quality is required to increase their satisfaction in a competitive environment. To participate in this competition, fine-dining restaurants must regularly innovate their menus, menu products and services (Ottenbacher and Harrington, 2007a). Compared to other segment restaurants (such as fast-food chains, bistros and cafes), the distinctive feature of fine dining is the customers' expectations for individuality and uniqueness in food, wine, service and atmosphere (Ottenbacher and Harrington, 2007a). Fine dining chefs frequently change and transform traditional ingredients, introduce new products and work on new preparation or cooking techniques to keep the customer experience alive. Each product presented to the customer is personalized that is course-specific (Spence and Piqueras-Fiszman, 2014). Chefs design and manage the edible product on the plate and any

action and inedible products (utensils, tools, china) and processes associated with the dish.

### *1.1. Background of the Research*

Since the beginning of the 2000s, the culinary world has experienced noticeable changes. This is because French cuisine, which has dominated the professional culinary world since the 19th century, is challenged by other cuisines. Chefs, former employees of the aristocracy, established restaurants to maintain their profession after being displaced by the French Revolution (Ferguson, 1998). Later, the launching of restaurants caused French cuisine to be structured and codified. The young, newly arrived chefs ignored the systematized and codified French cuisine of chef Auguste Escoffier and instead invented a freestyle of cooking and promoted a philosophy rather than a structured system of rules (Durand, Rao and Monin, 2007). French cuisine has formalized the chef profession by transferring it into an economic dimension, causing it to evolve. Therefore, nowadays, it is natural that culinary education's most essential knowledge and skills are based on French cuisine.

There have been significant advances in the culinary world in recent years because of the effort of international chefs, all of whom have a French cuisine education background, to discover the roots of their cuisines with the accumulation of their education and experience. The most prominent case of this is undoubtedly Ferran Adria. Ferran Adria, who started his professional life (like most chefs) by specializing in the classical tenets of French cuisine, has made significant shifts in the roles of chefs, service structure, consumption processes and cooking techniques (Opazo, 2012; Svejenova, Planellas and Mazza, 2005). Furthermore, he declares that the driving force for him to achieve his contributions is the phrase of French chef Jacques Maximin, "Creativity is not copying" (Svejenova, Mazza and Planellas, 2007). Thus, Ferran Adria realized the importance of creativity and caused Catalonia to become the other epicenter of "nueva" Spanish haute cuisine.

Another example is Chef René Redzepi (Petruzzelli and Savino, 2014), who characterizes Danish haute cuisine in Copenhagen. He also took his culinary training in French traditions and worked with French chefs and Ferran Adria at El Bulli. He has also been one of the leading actors in the formation of the new Nordic cuisine,

which is considered to have "good taste, original character and conforms to the standards of the world's largest cuisines" (Byrkjeflot, Pedersen and Svejenova, 2013). Similarly, Brazilian chef Alex Atala, who has taken significant steps in his professional life in France, highlighted his country's products and food culture by communicating with the indigenous peoples of the Amazon and guiding a new era for Brazilian cuisine (Atala, 2013).

The successful efforts of chefs in their careers and the processes in their work to highlight their cuisine have been the subject of "culinary creativity" and "culinary innovation" literature. Some scholars have studied culinary creativity in practice, extrinsic environmental factors that influence the development of culinary creativity, creative culinary products, characteristics of creative chefs and culinary creativity in education (e.g., Bouty and Gomez, 2013; Horng and Hu, 2008; Horng and Lee, 2009; Horng and Lin, 2009; Jeou-Shyan and Lee, 2006; Peng, Lin and Baum, 2012; Stierand, 2015; Yeh and Huan, 2017). Scholars have extensively researched culinary innovation, covering chefs' processes, competencies, characteristics, customer perspective, education and teamwork (e.g., Harrington, 2004; Hu, 2010a; Hu, Horng and Teng, 2016; Jin, Goh, Huffman and Yuan, 2014; Jin, Line and Merkebu, 2016; Justiniano, Valss-Pasola and Chacon, 2018; Ottenbacher and Harrington, 2007a, 2007b, 2008; Petruzzelli and Savino, 2014; Stierand and Lynch, 2008; Stierand, Dörfler and Lynch, 2008 Research that covers culinary creativity and innovation in the leadership roles of chefs in making success, institutional entrepreneurs (chefs) that initiate change, organizational dimensions, abilities and challenges to enacting changes within the culinary field has been examined by scholars (e.g., Abecassis-Moedas, Sguera and Ettlie, 2016; Albors-Garrigós, Monzo and Garcia-Segovia, 2017; Balazs, 2002; Bouty and Gomez, 2010; Braun and Bockelmann, 2016; Lane and Lup, 2015; Opazo, 2012; Presenza and Petruzzelli, 2019; Slavich, Cappetta and Salvemini, 2014; Svejenova, Mazza and Planellas, 2007). In addition, some scholars have analyzed culinary creativity and innovation by merging them to reveal drivers in culinary activities, emphasizing competitive advantage, explain a systems model of creativity in the culinary field and understand factors that influence the creative process in culinary activities (e.g., Abbate et al., 2019; Albors-Garrigós et al., 2013; Bouty and Gomez, 2013; Stierand and Dörfler, 2012; Stierand, Dörfler and MacBryde, 2014; Vargas-Sanchez and López-Guzman, 2018).

In the studies on culinary creativity and culinary innovation, it is observed that both subjects are sometimes used interchangeably, alternately and collectively. This situation needs to be clarified in the understanding of both subjects. Therefore, this thesis has accepted creativity as the basis for innovation and suggests that the design thinking approach can explain creativity and innovation issues in a coherent framework.

Design thinking is a human-centered innovation process that incorporates observation, collaboration, fast learning, visualization of ideas, rapid prototyping and cooperative business analysis (Lockwood, 2010). Design thinking and creativity encourage innovation that stimulates new businesses, creating further growth (Lockwood, 2009). Design thinking is valuable for improving innovative results by encouraging decision-makers to reduce their biases by drawing on collaborative colleagues and practices (Liedtka, 2015). Creativity and design are essential components of a developed economy that substantially influence innovative outcomes in different countries (Hollanders and Cruysen, 2009). Therefore, as a transdisciplinary approach, design thinking promotes creativity and innovation in overlapping spaces (Brown and Wyatt, 2010).

Unlike culinary creativity and innovation, only a few studies have focused on design thinking in the culinary context. Design thinking has been integrated into or used as a pedagogy model for culinary arts and food studies education for students to be able to identify and solve problems, create and develop new concepts for products, services and dining or food experiences through the function and competence of design and understand and introduce innovation to the food system and competitive food industry to meet environmental and consumer needs by using the human-centered approach of design thinking (Bonacho, 2021; Leung, Choy and Lee, 2013; Mitchell and Woodhouse, 2019; Parasecoli, 2017). In addition, design thinking itself has become a case model in designing a business model to connect the food system, interpreting consumer research, food choice motives and food market trends and sustaining brand equity in haute cuisine (Beverland, Wilner and Micheli, 2015; Castanho, Cunha, Oliveira, Guerra and Brites, 2018; McFarland, 2021; Olsen, 2015).

The researchers mentioned above carried out their studies by selecting different cuisines as cases. For a cuisine to take part in the competitive industry, it must improve

with the ingredients, cooking techniques and flavor principles that create it, as well as its society, namely chefs, kitchens, dining rooms and diners. Each of these elements has been discussed individually in the manifesto of the New Nordic Cuisine movement. In short, this manifesto declared to center cooking on the produce and ingredients offered by their geography, to encourage producers and their products and to spread their culture, to discover potential new applications of traditional food products, to join organizations with consumers and to combine cuisine and traditions with impulses from abroad (Byrkjeflot, Pedersen and Svejenova, 2013). With this move, Nordic cuisine has succeeded in putting Scandinavia on the culinary map (Müller and Leer, 2018).

New Nordic cuisine has been designed. This can be explained by Buchanan's "four orders of design" model. Buchanan offers this model to understand the changing meanings of products. The first half of the design discipline was focused on symbols and objects, but the designers turned to action and the environment to reflect the value of design in people's lives. Buchanan aspires to emphasize here that even if designers know how to create symbols and physical artifacts, these products will only have value or significant meaning if they are part of people's life experiences and support their actions. This concern has led to the idea that products are more than physical objects and experiences, activities and services are included in product understanding. Thus, products have a mediating feature, focusing on how people relate to others through this mediation effect. The fourth order is related to system problems and people can never see or experience a system but are strongly influenced by the systems and environments they create and even by the systems nature provides. Fourth-order design focuses on the idea or thought that organizes a system or environment. As a result, the critical point in changing product understanding is not the product form, function, materials, production and practice behavior but the way of experience of the human being who positions and uses the products socially and culturally. Therefore, while product function, form, material and production style remain necessary, what makes a product useful, usable and desirable has gained importance (Buchanan, 2001).

Ferguson (2004) described the production of cuisine as the culinary system and this system has different sectors for its cuisine to be created, produced, disseminated and

consumed. The importance of these four sectors has been mentioned in the manifesto of the new Nordic cuisine as a culinary system.

Each cuisine is a potential design product and space. The fact that cuisine can be an individual cuisine besides the food culture of its country is related to its design and who designed it. This can be explained as follows: Turkish food culture or foodways cannot compete in the international competitive restaurant world. However, when chefs design any regional cuisine of Turkish cuisine, it gains a professionally detailed dimension in preparation and presentation. Because chefs take that cuisine out of home cooking and commercialize it with their knowledge of tacit craft skills, the way they handle their ingredients with aesthetic ethics and their commitment to the eco-system and local economy around their restaurant (Tellstrom, Gustafsson and Mossberg, 2005), the problem with Turkish cuisine is that the distinction between Turkish food culture and Turkish cuisine is unified and integrated. While passing through a long historical process, Turkish food culture has interacted with other cultures and covered large geographical and climatic areas in the past. Today, it has a unique climate and rich diversity while still having what the past brought. The professional economic value and recognition of Turkish cuisine can be increased if the opportunities offered by Turkish food culture are managed by the chefs and included in the competition in the international restaurant industry.

### *1.2. Statement of the Problem*

Turkish cuisine is renowned for shish kebab, doner and lahmacun, which tourists favor or must choose when visiting Turkey (Oncel, Güldemir and Yayla, 2018). This is also true for most restaurants abroad that serve Turkish cuisine. In fact, in Karaosmanoğlu's (2007) study, one of the concerns of the Turkish Cuisine Foundation is Turkish Iskander kebab, which is incorrectly known as Alexander kebab in Greece and around the world. Moreover, this is also true for most of our universalized dishes. In other words, when a foreigner or tourist is asked about Turkish cuisine, the answer is probably doner or kebab and our well-known dishes have been going through an identity discussion for years. In addition, while Turkish food culture was shifting under the influence of the West, with the impact of Islam, Arab cuisine, unfortunately, became visible in Turkish food culture (Batu and Batu, 2018).

The international perception of Turkish cuisine could be more substantial than its qualities. However, as an example, Çakmak and Sarıışık (2019) have examined 6261 ingredients among selected 767 main dishes of Turkish cuisine to investigate their basic contents. The deceased Tuğrul Şavkay, the founder of the first gastronomy and culinary arts undergraduate program in Turkey, said that the dose of nationalism should be well-adjusted and not stuck with the local; the important thing is to bring a local theme into a form that will interest all people. He exemplified what he said as the important thing is to put the food in the village of Antep on a restaurant's menu in New York and sell that food there (Şavkay, 2003).

Turkish cuisine faces an identity problem, particularly in its international perception, which limits its potential. However, chefs play a crucial role in reshaping this perception. They have the power to demonstrate that Turkish cuisine extends beyond kebabs, as "kebab" is just one unique cooking technique. While the identity problem has cultural roots, its tangible manifestations lie in the ingredients and cooking techniques used. Chefs can address these challenges by adopting creative approaches and innovative solutions. It is essential to define the problem area and generate solutions accordingly clearly. In this context, chefs can benefit from embracing the design thinking approach. Design thinking is a collaborative and human-centered problem-solving approach (Brown, 2008), well-suited for tackling issues, problems and opportunities with a focus on innovation (Owen, 2007). By applying design thinking, chefs can effectively contribute to reshaping the perception of Turkish cuisine and showcasing its diversity and potential beyond conventional expectations.

Figure 1 illustrates the trends in Google searches related to the fine dining industry from the years 2016 to 2023. Notably, a noticeable fluctuation is observed in the global search volume for fine dining restaurants (green line) and the renowned Michelin guide (yellow line) over the given period. However, it is worth mentioning that the fine dining sector's search volume, specifically in Turkey (red line), has remained relatively constant throughout the same time frame.

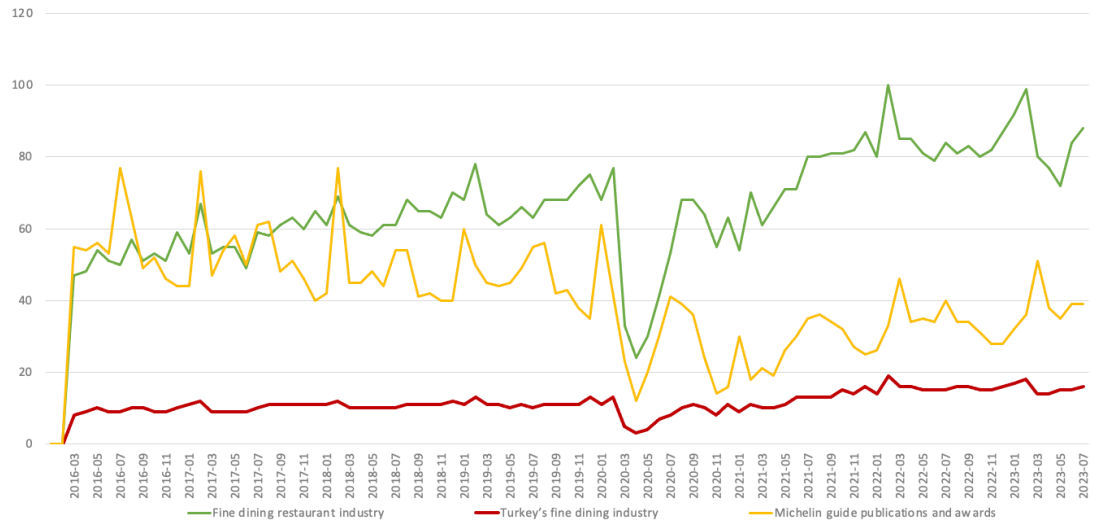


Figure 1. Fine dining industry search in Google statistics

Another comparative chart (Figure 2) presents data on Google searches for French cuisine (green line), which has played a significant role in shaping the history of world gastronomy and Turkish cuisine (red line), alongside the search volumes for renowned chefs Ferran Adria (blue line) and Rene Redzepi (yellow line), who have exerted substantial influences on the contemporary gastronomic world. The data spans the years 2016 to 2023. Upon analysis, it becomes evident that fluctuations are apparent in the search volumes for both the culinary industry and the mentioned chefs. However, in stark contrast, Turkish cuisine's search volume remains relatively stable and consistent throughout the entire duration of the observation period. The findings from both graphs lead to the observation that Turkish cuisine appears to maintain a consistent and ordinary level of interest when compared to the dynamic fluctuations observed in the broader gastronomy industry and the search volumes for renowned chefs.

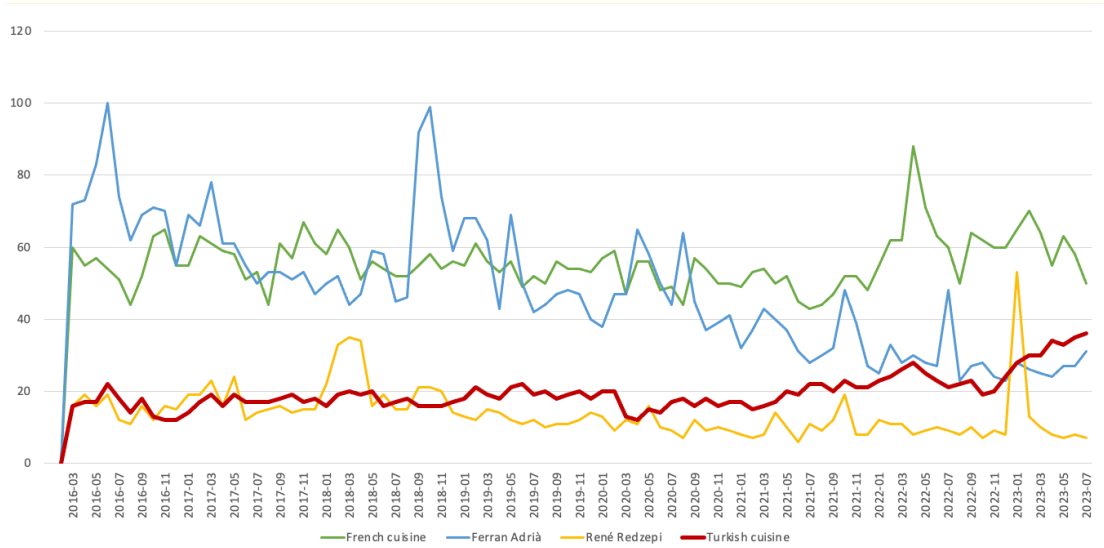


Figure 2. Comparative graphic of Turkish cuisine

To strengthen the global and professional recognition of Turkish cuisine, it is necessary to conduct a study that addresses creative and innovative design approaches. The objective of this study is to identify the problem areas of Turkish cuisine using a design thinking approach and to define the characteristics of creative culinary products that can effectively represent Turkish cuisine through the creative processes of chefs. It is worth noting that Turkish cuisine has yet to be extensively studied in the context of culinary design thinking, creativity and innovation within the existing literature. Therefore, this study aims to fill that gap by adopting a phenomenological approach to explore the perspectives of Turkish cuisine professionals regarding the current state of Turkish cuisine, design processes and the attributes of creative culinary products. Through this study, insights can be gained into how Turkish cuisine can be positioned and promoted globally while shedding light on chefs' creative and innovative practices in showcasing the richness and distinctiveness of Turkish culinary traditions.

### *1.3. Research Questions, Hypotheses and Objectives*

The purpose of the study is to examine the macro-environmental factors that influence the culinary creativity of Turkish cuisine and impact its recognizability in the global restaurant industry, to identify Turkish chefs' creative processes in the framework of the design thinking approach and to define creative and design-related attributes of culinary products. Thus, the current study aims to answer the following research questions and to test hypotheses:

**RQ1:** What are the macro-environmental factors that influence Turkish cuisine's culinary creativity?

**RQ2:** What are the concerns and steps of chefs during the development of a new dish or menu in the framework of design thinking?

**$H_a$1:** The working (creative) processes of chefs could be defined utilizing a design thinking approach.

**$H_0$1:** The working (creative) processes of chefs could not be defined utilizing a design thinking approach.

**$H_a$2:** The emergent culinary design thinking model stages are positive and have direct effects on one another.

**$H_0$2:** The emergent culinary design thinking model stages are not positive and have direct effects on one another.

**$H_a$3:** The emergent culinary design thinking model stages have positive indirect effects.

**$H_0$3:** The emergent culinary design thinking model stages do not have positive indirect effects.

**RQ3:** What are the creative and design-related attributes of culinary products that contribute to the promotion and recognition of Turkish cuisine?

To answer the research questions, specific objectives include to:

- Identify creative environment (press, climate) factors.
- To determine the macro-environmental factors affecting Turkish cuisine.
- Analyzing design thinking models and mindsets.
- To explain the stages of chefs in creating new dishes or menus through the design thinking approach.
- Examining product characteristics in both design thinking and creativity literature.
- Adapting culinary products attributes to design and creativity literature.

### *1.4. Research Method*

A comprehensive literature review was conducted on design thinking, creativity, culinary creativity and innovation, food, design thinking literature and Turkish cuisine

to address the three research questions. The review encompassed both theoretical and practical perspectives, drawing insights from various disciplines. An interdisciplinary approach was employed to effectively answer the research questions by comparing and combining similarities and differences across these fields. This approach enabled a holistic understanding and analysis of the subject matter, providing valuable insights into the intersection of design thinking, creativity and culinary innovation in Turkish cuisine.

A mixed-methods approach was employed to address the first research question (RQ1). Initially, interviews were conducted with Turkish cuisine experts and chefs to gain insights into the environmental factors that influence the creativity of Turkish cuisine. These interviews served as the foundation for formulating the research instrument. The findings from the interviews were used to identify the key factors that impact the creativity and production of Turkish cuisine. Based on the insights from the interviews, a survey was constructed as the primary data collection instrument. The survey aimed to explore further and quantify the factors affecting Turkish cuisine's creativity and production. This phase of the study is referred to as "Study 1" throughout the thesis, focusing specifically on answering the first research question. By employing a mixed-methods approach and utilizing both qualitative and quantitative data, the study aimed to provide a comprehensive understanding of the environmental factors that shape the creativity and production of Turkish cuisine.

In response to the second research question (RQ2), which focuses on the creative processes of chefs in Turkish cuisine, "Study 2" was conducted. This study aimed to develop a culinary design thinking model based on the insights gained from the design discipline literature. Interviews were conducted with chefs actively representing Turkish cuisine in the international restaurant industry. These interviews aimed to understand the stages and processes involved in the chefs' creation of new dishes or menus.

The qualitative data obtained from the interviews were analyzed, leading to the emergence of a framework within the design thinking approach. This framework served as the basis for understanding and defining the chefs' creative processes in Turkish cuisine. A survey was subsequently conducted to ensure these processes' validity and reliability.

The survey aimed to validate the chefs' creation processes and explore the specific attributes they incorporated into their culinary products. By combining qualitative and quantitative data, this study sought to provide a comprehensive understanding of the creative processes of chefs in Turkish cuisine within the framework of design thinking. It was referred to as "Study 2" throughout the thesis, specifically addressing the second research question.

The third research question (RQ3) focused on identifying the creative and design-related attributes of culinary products in Turkish cuisine. This part of the study referred to as "Study 3" throughout the thesis, involved interviews with participants from Studies 1 and 2 to explore how they defined or expressed the products of Turkish cuisine, particularly their dishes.

Through these interviews, the participants' perspectives and insights were gathered regarding the attributes contributing to the creativity and design of culinary products in Turkish cuisine. Drawing upon both creativity and design literature, a comprehensive set of creative culinary product attributes was identified.

A survey was developed and administered to chefs who participated in the previous interviews to validate further and quantify these attributes—the survey aimed to assess the importance and relevance of the identified features in their culinary creations.

By conducting this study and exploring the participants' definitions and expressions of Turkish cuisine's products, the research sought to provide a deeper understanding of the creative and design-related attributes that contribute to the promotion and recognition of Turkish cuisine.

The sequential exploratory mixed-methods approach was adopted for the research. The sequential nature of the methodology and its adaptability to allow a pragmatic approach to follow the development of the model are well suited to the thesis's exploratory viewpoint. As with sequential mixed methods, the emphasis of the research is on the course of discovery and interpretation of all the data that is revealed rather than relying on the simple analysis of primary data. Establishing research on the culinary industry of Turkish cuisine requires the interpretation and understanding of both the primary data and the secondary data provided by the participants. Since there is no model or theory to be tested, Turkish cuisine has yet to be examined in a design

thinking context and the thesis possesses an exploratory approach. Figure 3 shows the methodology flow of the thesis.

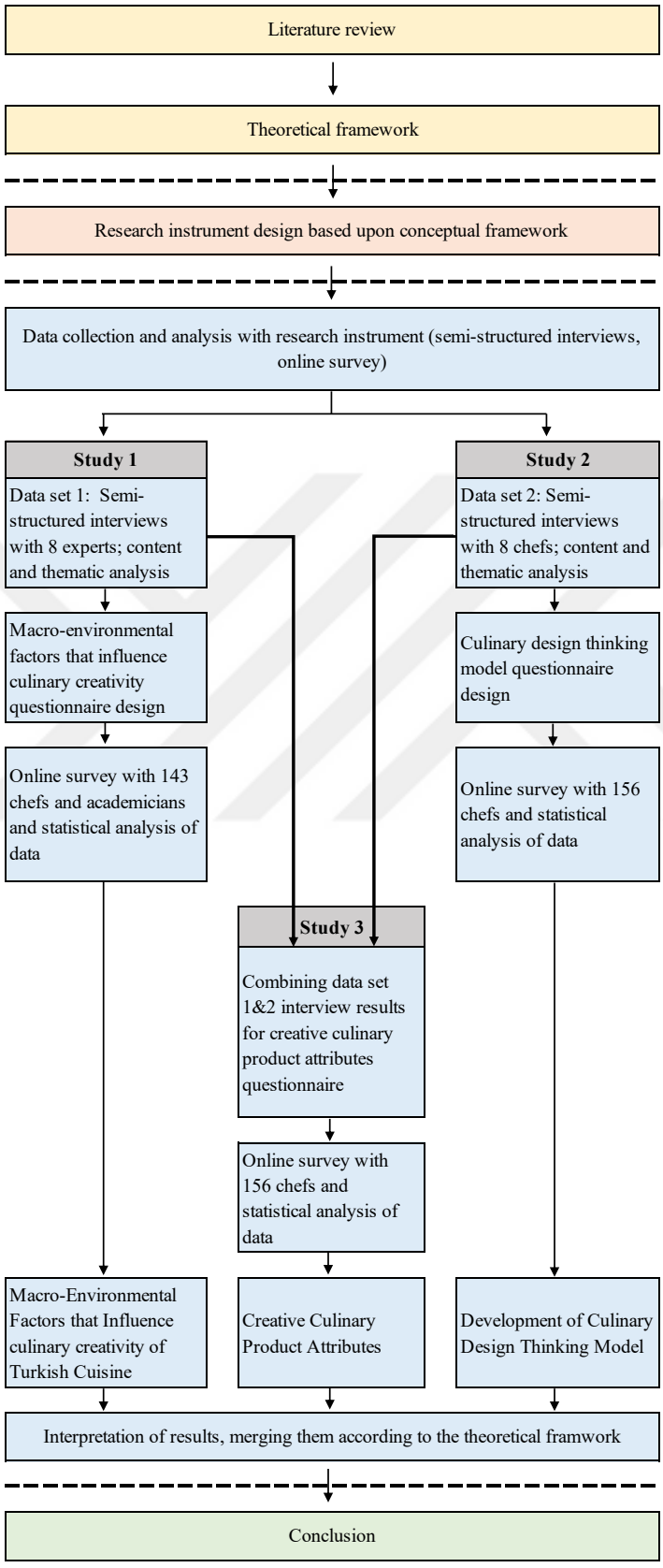


Figure 3. Thesis methodology flow

### *1.5. Significance of the Study*

The general discourse about Turkish cuisine is its richness and importance compared to world cuisines (e.g., Aktaş and Özdemir, 2007; Ertaş and Karadağ, 2013; Karaosmanoğlu, 2007; Aymankuy and Sarıoğlan, 2007; Talas, 2005). However, the studies conducted on Turkish cuisine commonly involve tourism studies (e.g., Aktaş, Aksu and Çizel, 2007; Aydın, Erdoğan and Baloğlu, 2019; Okumuş, Okumuş and McKercher, 2007; Yayla, Yayla and Konuk, 2020) and food culture and its historical development (e.g., Batu and Batu, 2018; Cekal, 2014; Düzgün and Özkata, 2015; Önçel, 2015). Recently few scholars have studied Turkish cuisine from the service design perspective (Gürcan and Özcan, 2014), product innovation (Erdem, Doğdubay and Sarıoğlan, 2012), creativity (Seçilmiş, Kodaş and Kodaş, 2017) and success factors of Turkish chefs (Eren and Güldemir, 2017).

This thesis identified and confirmed the environmental factors that influence the creativity of Turkish cuisine. The survey study validated these factors, further solidifying their significance in shaping Turkish cuisine's creativity.

Additionally, the study developed a culinary-oriented design thinking model, which was tested and validated through interviews with chefs representing Turkish cuisine on the international platform. The effectiveness of the model was assessed by examining the chefs' processes of creating new menus or dishes within the framework of design thinking.

Furthermore, the attributes of culinary products that emerged from the qualitative studies, guided by creative product literature, were also tested and validated. The study investigated the importance and relevance of these attributes through surveys and interviews with the participating chefs.

Through these comprehensive analyses and validations, the study provides valuable insights into the environmental factors influencing Turkish cuisine creativity, the application of design thinking in the culinary context and the attributes that contribute to the creativity and recognition of culinary products in Turkish cuisine.

### *1.6. Structure of the Thesis*

This thesis comprises five chapters. Chapter 1 serves as the introduction to the study, providing background information, addressing the problem statement, stating the research aim and objectives, presenting research questions and hypotheses, discussing the significance of the study, outlining the research methodology and presenting the overall thesis structure.

Chapter 2 offers an extensive literature review on the evolution of design processes and design thinking process models, which form the foundation for this study. Additionally, it defines creativity and explores relevant studies on products, processes, persons and the press in the context of creativity. The literature review also encompasses research on food design, culinary innovation and culinary creativity. The chapter concludes by presenting a conceptual model within a theoretical framework, which guides the research conducted in this thesis.

Chapter 3 comprehensively describes the research design and methodology employed in the thesis. It outlines the construction of interview questions, selection of surveys and questionnaires and sampling design and details the data collection and analysis processes.

In Chapter 4, the findings and discussion of the study are presented. This chapter consists of three primary studies, namely Study 1, Study 2 and Study 3, each aligned with specific research questions. Following a brief presentation of the demographic profile of the respondents, the chapter presents the results of descriptive analyses, exploratory-confirmatory factor analysis and structural equation modeling. Study 1 includes exploratory factor analysis, Study 2 includes exploratory factor analysis and structural equation modeling (including confirmatory factor analysis) and Study 3 involves exploratory factor analysis. Each study's findings are subsequently discussed, leading to an interpretation and synthesis of the overall findings.

Chapter 5 encompasses the conclusion of the thesis, including a summary of key findings, a discussion of their implications and the current study's limitations. Additionally, suggestions for future research are provided. The thesis structure is visually represented in Figure 4.

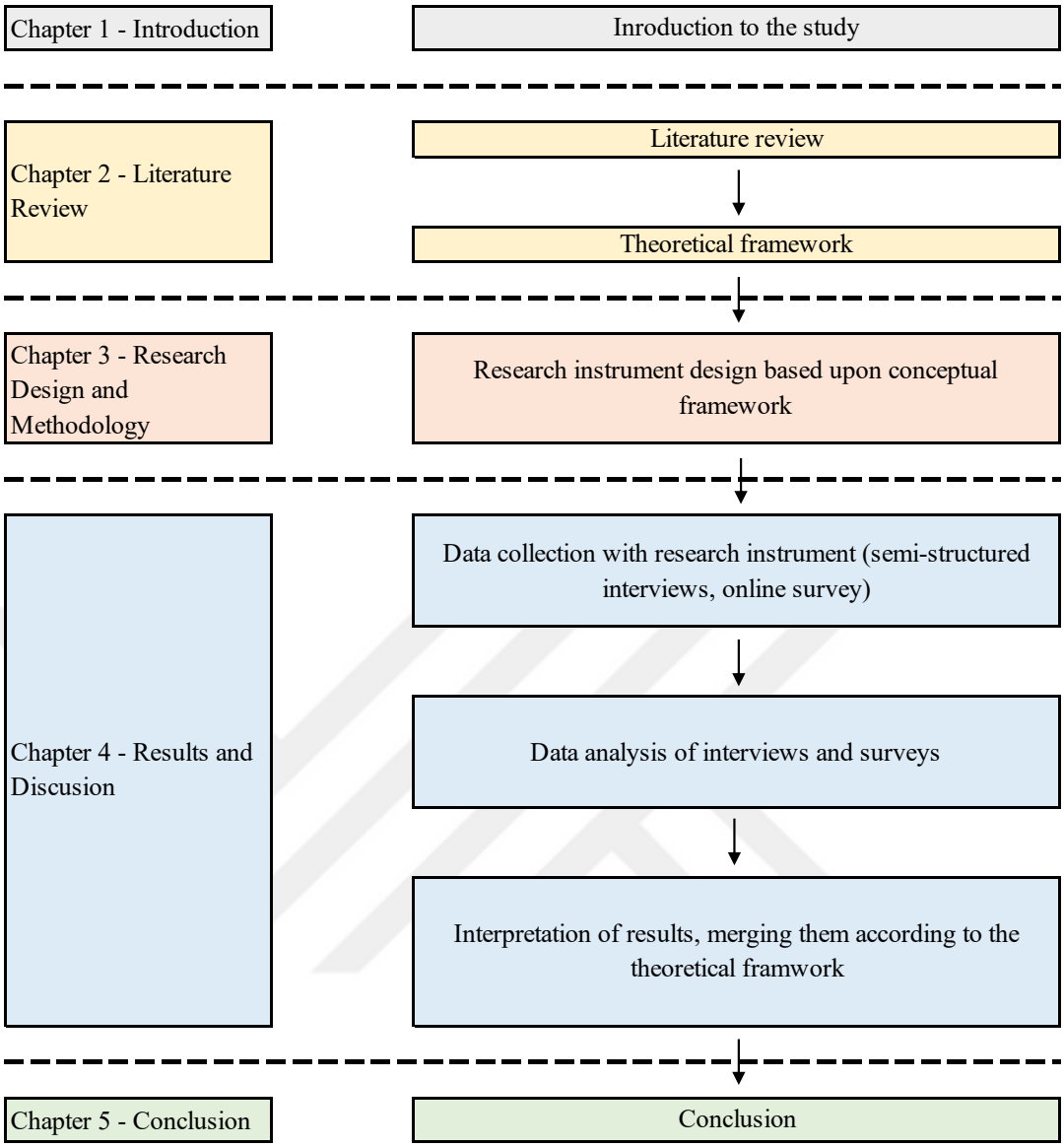


Figure 4. Structure of the thesis

# CHAPTER 2: LITERATURE REVIEW

The initial segment of this literature review commences by focusing on the design field. It aims to illustrate the process of incorporating design thinking into various disciplines by examining the contributions of influential figures in the design methods process. Subsequently, it explores the concept of design thinking from diverse perspectives, explicitly discussing the emerging connection between food and design. The second section of the review centers on creativity. Initially, it defines creativity and highlights its correlation with design thinking. To enhance the understanding of creativity, the review adopts Mel Rhodes's (1961) categorization known as the 4P's of creativity, which encompasses the dimensions of person, process, product and press. Furthermore, it delves into the intersection of food and creativity. To address the research inquiries of this thesis, a conceptual framework is established based on the theoretical concepts synthesized from the literature review, emphasizing Turkish cuisine and professional culinary operations.

## *2.1. Towards Design Thinking*

The first cited use of the noun "design" can be traced back to the 15th century (Goldschmidt, 2014) and it has undergone rapid evolution due to labor lines and industrialization. The concept of design research can be followed back to the 1962 Conference at the Imperial College of London called “Design Methods,” where the conference is generally considered the event that signified the launch of design methodology as a subject or field of inquiry (Cross, 1993).

Design thinking also originated in the 1960s, during which design methodologists distinguished between design science and natural science. Design science aimed to create new forms, works, or knowledge, while natural sciences focused on analyzing existing reality (e.g., Alexander, 1964; Gregory, 1966; Simon, 1969). Especially the 1960s-1980s witnessed important papers and profiles in shaping design practice, theory and methodology.

In the Sciences of the Artificial (1969), Herbert Simon defined design as a systematic event and said:

> *"Engineers are not the only professional designers. Everyone designs who devises courses of action aimed at changing existing situations into preferred ones." (p. 111).*

According to Simon, the world is not natural; it is built from human-made artifices; that is, it represents humans' objects, which Simon called artificial. Based on this, according to Simon, every profession that aims to produce or rebuild the artificial reflects the design action. Moreover, according to Simon (1996), human thought is also artificial; They form boundaries that prevent the design of solutions and understanding the complexity of the external environment that requires solutions. So, he proposed an optimization theory that one can only 'satisfy' instead of solving problems. As a result, he concludes that humans' complex artificial environment requires a science of design using simulation techniques and a theory based on logic (Simon, 1996).

According to Johansson-Sköldberg, Woodilla and Cetinkaya's (2013) approach of "design and designerly thinking as the creation of artefacts," where the authors distinguish 'design thinking' from the professional designer's practice of designerly thinking, they refer to Herbert Simon's book "The Sciences of the Artificial" because it justified research design in academia as an experimental approach and he was accepted as the father of design research. Simon's approach to design separated natural sciences, social sciences and humanities from design but did not separate it from engineering. He was interested in design research because, according to Simon, the design was concerned with creation, while other sciences deal with what is already existing. In other words, the research aspect of design emerged with Herbert Simon and he approached design cognitively.

Another approach that has influenced design thinking is "wicked problems." In their 1973 article titled "Dilemmas in a General Theory of Planning," Rittel and Webber introduced the concept of wicked problems. They argued that traditional approaches to problem-solving were insufficient for addressing complex social and policy issues characterized by high levels of ambiguity, incomplete information and multiple, frequently contradictory perspectives.

Horst Rittel and Melvin Webber did not provide a precise definition of the term "design thinking." Nevertheless, they contributed to the field of design theory and proposed the concept of "wicked problems," which influenced the evolution of design thinking. Rittel and Webber (1973) argue that the only way to address "wicked" problems is for individuals or organizations to thoroughly comprehend the nature of the problem, collect pertinent data and draw conclusions from it. In addition, Rittel and Webber (1973) argued that a comprehensive solution could never be discovered, as overcoming a "wicked" problem would reveal a new, more complex problem. Accordingly, while Horst Rittel and Melvin Webber did not formulate the term "design thinking," their work on wicked problems laid the groundwork for the emergence of design thinking as an approach to problem-solving before Richard Buchanan.

According to Johansson-Sköldberg, Woodilla and Cetinkaya's (2013) approach to academic discourses of designerly thinking and the classification of "design and designerly thinking as a problem-solving activity," Buchanan is the first to develop Rittel and Webber's (1973) "wicked" problems approach with a design-oriented perspective. He emphasized that, according to Buchanan (1992), dealing with "wicked" problems that do not have a single solution and where creativity is required is a matter of designers' professional thinking (Johansson-Sköldberg, Woodilla and Cetinkaya, 2013). Richard Buchanan introduced the concept of orders to contextualize his thoughts. Orders are a tool where problem formulation and solution go hand in hand rather than sequential steps, intuitively and deliberately shaping the design situation, defining the participants' views and examining their concerns. He proposed four different design areas as intervention locations where problems and solutions could be evaluated: (1) symbolic and visual communications (or graphic design), (2) material objects (or industrial design), (3) activities and organizational services (or service design), (4) complex systems or environments for living, working, playing and learning (or interaction design).

Buchanan's (1992) article "Wicked Problems" in design has been an essential reference for the whole design area besides design-oriented thinking. Buchanan (1992) saw the role of the designer as a "master of exploration" in complex design projects and stated that all other participants should have an understanding and awareness of the process.

In addition, Buchanan's design thinking approach determines the role of design in the world rather than focusing on designers.

Another approach in the design discipline that has an effect on design thinking is from Bruce Archer. Although he is not widely credited with introducing the term design thinking, it is important to note that Bruce Archer did emphasize the significance of a user-centered design approach (Archer, 1984). In his paper Systematic Method for Designers (1965), he used the term "design thinking" in the flow of a sentence;

> *"In the face of this situation, there has been a worldwide shift in emphasis from the sculptural to the technological. Ways had to be found to incorporate the knowledge of ergonomics, cybernetics, marketing and management science into design thinking (p.57)."*

Archer (1979) advocated for designers to comprehend and empathize with the desires and requirements of the individuals they were designing for. He believed that design should be driven by a comprehensive comprehension of users and their context, in addition to societal, cultural and environmental considerations.

Archer's work influenced design as a whole. Rather than focusing on a specific aspect of the design work, he emphasized its methodology. Archer's design debates and opinions are progressive because they encapsulate the essence of contemporary design. Archer seeks to describe the design process by employing the scientific viewpoint that shaped the first version of design theory. As stated by Archer (1967) and confirmed by Victor Papanek, design is a goal-directed activity and the designer is attempting to move in a direction called good. Archer (1965) provides a more comprehensive and individual explanation of design:

> *Before we can look at the systematic methods of designers, we must know what we mean by 'design.' An architect preparing plans for a house is clearly designing. So is a typographer preparing a layout for a page of print. But a sculptor shaping a figure is not. What is the difference? A key element in the act of designing is the formulation of a prescription or model for a finished work in advance of its embodiment. When a sculptor produces a cartoon for his proposed work, only then can he be said to be designing it (p.58).*

Archer's approach and contribution to design are holistic and emphasize that the design is human-centered. Additionally, he foresaw commonalities between design and management decision-making practices (Archer, 1967). Archer's perspectives on the creative phases of design processes emphasize the need for a balance between systematic, methodical approaches and creativity and exploration. He emphasized the iterative nature of design, recognizing that creativity and innovation frequently emerge from feedback cycles. Archer's approach (Figure 5) emphasizes data collection in the design process and states that designers should return to the data collection stage, if necessary, following other phases, highlighting the importance of the designer's expertise and experience. Throughout the data collection phase, Archer underlines the designer's or engineer's intuition or custom and practice (Davis and Gristwood, 2016).

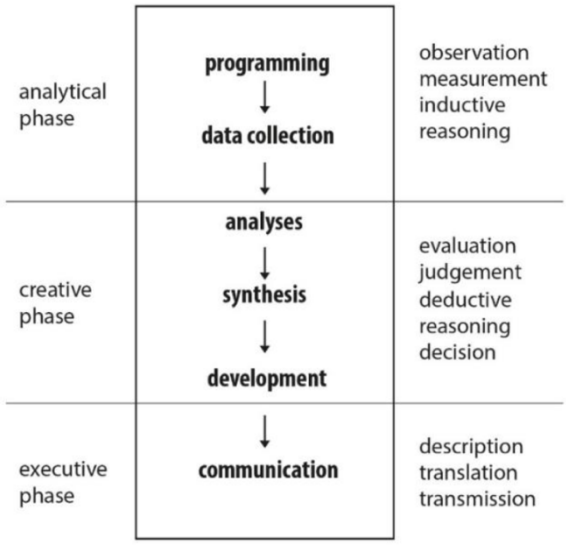


Figure 5. Bruce Archer's Systematic Design Approach (Source: Cross, 2008)

According to Johansson-Sköldberg, Woodilla and Cetinkaya's (2013) approach to academic discourses of designerly thinking and the classification "design and designerly thinking as a way of reasoning/making sense of things" they refer to Nigel Cross and Bryan Lawson and stated that they describe practical situations related to the thinking and work of designers. While Lawson (1980) studied the psychology of creative design processes, Cross (1982, 2006) aimed to reveal what designers did during the design phase by conducting ethnographic studies (Johansson-Sköldberg, Woodilla and Cetinkaya, 2013).

In 1982, Cross referred to Rittel and Weber's (1973) "wicked" problems, describing them as "ill-defined" or "ill-structured." In contrast to scientific, mathematical, or academic challenges, problem-solvers sometimes cannot work with comprehensive data sets. Consequently, comprehensive analysis is of little use in resolving design issues. Since there is no assurance that the correct answers will be discovered, a solution-oriented strategy is preferable to a problem-oriented strategy. Cross (1982) states that the designer's task is to generate solutions:

> *"In order to cope with ill-defined problems, the designer has to learn to have the self-confidence to define, redefine and change the problem-as-given in the light of the solution that emerges from his mind and hand." (Cross, 1982, p. 224).*

One of the earliest cognitive models of design thinking is the *Designerly Way of Knowing* by Nigel Cross, published in the Design Studies series in the 1980s. In the 1960s, under the leadership of Nigel Cross, the design industry shifted its focus from traditional research methods to design thinking. Therefore, scientists have studied the workflows and techniques of designers. Abductive thinking, first proposed by Pierce in the 1860s and cited by Cross (1982), endeavors to explain the tendency of designers to generate novel solutions;

> *"Deduction proves that something must be; induction shows that something actually is operative; abduction merely suggests that something may be."*

Moreover, Johansson-Sköldberg, Woodilla and Cetinkaya (2013) stated that Nigel Cross's and Bryan Lawson's works could be seen as part of Schön's reflective tradition. However, his work's differences are based on practice by presenting examples, not philosophical discourses like Schön. Both design researchers used abductive processes to make sense of and generalize from their observations. They found patterns based on practical experience, for which both scientists proposed a model of the design process (Johansson-Sköldberg, Woodilla and Cetinkaya, 2013).

Donald Schön made important contributions to understanding how designers think. In his book *Reflective Practitioner*, published in 1983, he described the thinking and action processes that designers bring to problematic situations. He observed the

"reflection-in-action" state of the designers as they moved to reframe the problems. Schön (1983) personalized the design process as a unique practice through cognitive reflections and explanations. Also, according to Schön, the critical point in the work process of designers is the alternation between creation and reflection on their creations and this is the essence of design work.

While Schön (1983) offered a critique of Simon's (1969) perspective on the "science of design," which focuses on designers' approach to addressing well-defined problems, he recognized the necessity for designers to grapple with complex and challenging situations (Elsbach and Stigliani, 2018). In light of this, Schön emphasized the artistic and intuitive aspects of the processes employed by design practitioners to comprehend and resolve problems within contexts characterized by uncertainty, ambiguity and instability.

Design processes consist of iterative construction and reflections; thus, design processes have been accepted as "reflective conversation with the situation" (Schön, 1983). As a result, the designer can criticize his practice and adjust it in response to the context dynamics, so a designer is a reflective practitioner who learns by doing action research, develops his methods and reports on his findings and insights (Schön, 1983).

According to Johansson-Sköldberg, Woodilla and Cetinkaya's (2013) approach to academic discourses of designerly thinking and the classification of "design and designerly thinking as a reflexive practice," Donald Schön, a pragmatist philosopher, invited both researchers and practitioners to rethink, comparing technical knowledge and "artistry" in developing professional excellence (Johansson-Sköldberg, Woodilla and Cetinkaya, 2013). The difference of Donald Schön from Herbert Simon detailed the designers who were working. According to Johansson et al. 2013, Schön (1983) 's work is a critique of Simon's cognitive perspective from a design-oriented perspective;

> *"Schön constructed a picture of the designer through a practice-based focus on the relation between creation and reflection-upon the-creation that allows for constantly improved competence and re-creation (p.125)".*

Donald Schön's work inspired Richard Buchanan in his design thinking approach. Buchanan (1998) directly linked the design thinking style to innovation, which came up by integrating art and science-based disciplines into design-oriented thinking to solve complex problems. According to Buchanan (1992), design thinking is a holistic and meta-approach that intersects with all design and cognitive disciplines. Therefore, he suggested that design thinking should extend not only to design-based disciplines but also to the business world.

In *Design for the Real World: Human Ecology and Social Change* (1972, 1985), Victor Papanek presented a new ethical angle on the designer's role. According to him, designers have social and moral obligations that extend beyond profit maximization. Papanek is primarily concerned with shedding light on fundamental societal issues and advises designers to consider broader moral obligations. Papanek, contrary to Rittel, Webber and Simon, is not concerned with expanding the complexities of process theories, techniques, or design definitions. Rather, Papanek frequently mentions innovation and creativity, which he believes arise when problems are solved by removing superfluous layers of complexity.

In contrast to Simon, who attempts to satisfy' and 'optimize' answers derived from complex modeling of external environments, Papanek uses experience, knowledge and intuition to find straightforward solutions to complex problems (Papanek, 1985). Again, compared to Simon and Rittel, Papanek emphasizes the intuitive nature of design, stating, "Design is the conscious and intuitive effort to impose meaningful order" (1985, p. 4). However, Papanek also acknowledges the impracticality of attempting to define intuition literally for innovation.

In its place, Papanek provides a list of innovative-idea-stimulation strategies while referencing conventional and practical process models, such as the function complex (Figure 6), as a means of monitoring the equilibrium of physical design products. Methods such as ideation and prototyping are covered and analogical reasoning is emphasized throughout.

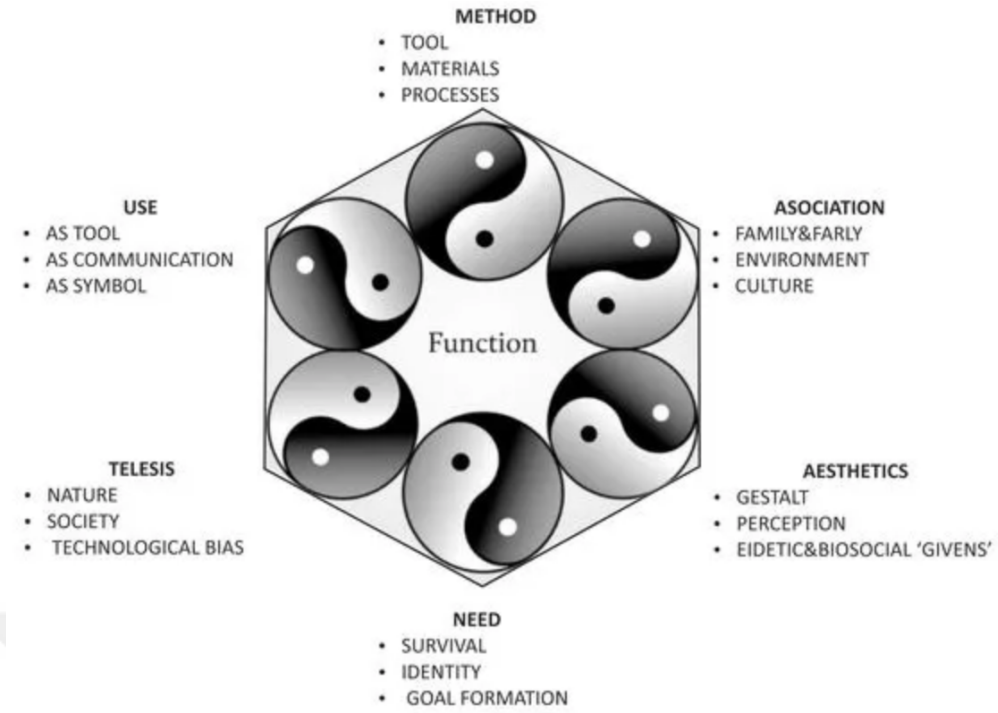


Figure 6. The Function Complex (Source: Papanek, 1985, p.7)

Moreover, Victor Papanek believed that the only important thing about design was its relationship with people. So, he argued that designers could use the urgent needs of disadvantaged minorities in societies to move beyond "appearance design," styling, or "design cosmetics."

Moreover, Victor Papanek believed that the only important thing about design was its relationship with people. So, he argued that designers could use the urgent needs of disadvantaged minorities in societies to move beyond "appearance design," styling, or "design cosmetics."

Another approach of Johansson-Sköldberg, Woodilla and Cetinkaya (2013) is on academic discourses of designerly thinking and the classification of “design and designerly thinking as a creation of meaning.” According to them, Krippendorff (2006) defined design and designers' work as a matter of making sense, using philosophy and a semantic infrastructure (Johansson-Sköldberg, Woodilla and Cetinkaya, 2013). With Simon, his thoughts are not opposed, but the focus of their approach is reversed. For Simon, the work is the essence of the work and the meaning of the work is quality. However, for Krippendorff, the meaning is the essence of the design process and the work is a tool that conveys meanings. He advocates design thinking "to be kept alive

within a community of its practitioners" (Krippendorff, 2006, p.24). According to Johansson et al. (2013), Simon advocated "design science," Cross "science of design," and Krippendorff defended "science for design." As a result, what is important to Krippendorff is to create meaning in design products. Thus, it differs from Lawson and Cross's practical approaches (Johansson-Sköldberg, Woodilla and Cetinkaya, 2013).

As a term, design thinking was first used remarkably by Rowe (1987) in his study of designers' thought processes in architecture and urban planning. Rowe makes a distinction between two terms: design and design thinking. Design, as described by Rowe, is a broad concept that encompasses the act of creating something. On the other hand, design thinking is a narrower term that specifically refers to the process employed by designers to generate something. Therefore, according to Rowe, design and design thinking are separate concepts, with design thinking being a subset of the broader practice of design.

In his book Design Thinking, Rowe (1987) aimed to "account for the underlying structure and focus of inquiry directly associated with those rather private moments of 'seeking out,' on the part of designers." (p. 1). Rowe emphasized the idea of problem-solving and the "complex texture of decision making," and popularized the concept of design thinking in the literature and emphasized that "problem-seeking" should not be limited to idealized step-by-step processes (p.2). Rowe (1987) also identified specific design methods and techniques such as visualization, sketching and drawing as design thinking attributes.

In summary, Simon, Rittel and Webber, Papanek and Archer all grasped design practice's illusive intricacy and "wickedness," albeit from different angles. These scholars believe difficulties can only be "satisfied" due to our complicated, "wicked," and ambiguous reality. Due to the lack of clarity around "what to solve," design experts had to explore our problem-solving procedures to achieve their goals. While all of these scholars contributed to design theory and practice, their perspectives on design were distinct. Herbert Simon focused on rational decision-making, Horst Rittel and Melvin Webber on difficult problems and participatory approaches, Victor Papanek on social responsibility and Bruce Archer on the integration of creativity and technology. By collectively analyzing the perspectives of these scholars, as presented

in Table 1, one can develop a deeper understanding of the multifaceted nature of design practice and the various factors that influence it. The table likely provides a comprehensive overview of the insights and viewpoints contributed by these scholars, allowing for a more comprehensive comprehension of design practice and its complexities.

Table 1. Perspectives of influential desgin scholars

| **Scholar or designer** | **Year** | **Work** | **Contributions or approaches** |
|---|---|---|---|
| Herbert Simon | 1969 | Sciences of the Artificial | Design as a systematic event.<br>The world is artificial.<br>Production or rebuilding is a design action.<br>Design is different than natural sciences, social sciences and humanities but it relates to engineering.<br>Design is concerned with the creation, while other sciences deal with what is already existing. |
| Horst Rittel and Melvin Webber | 1973 | Dilemmas in a General Theory of Planning | Wicked problems.<br>Overcoming a "wicked" problem would reveal a new, more complex problem. |
| Bruce Archer | 1965; 1979; | Systematic Method for Designers | User-centered approach.<br>Importance of methodology in terms of systematic, holistic side and iterative nature of design.<br>Design is goal-directed activity.<br>Formulation of a model is essential.<br>The realtion of creativity with design.<br>Designer's expertise and experience. |
| Victor Papanek | 1972; 1985 | Design for the Real World: Human Ecology and Social Change | Designers have social and moral obligations.<br>People are important.<br>Innovation and creativity are important when compared to theories and techniques.<br>To solve a complex problem, experience, knowledge and intuition are needed. |

Table 1 (Continued).

| Scholar or designer | Year | Work | Contributions or approaches |
|---|---|---|---|
| Nigel Cross | 1982 | Designerly Way of Knowing | Designer's task is to generate solutions.<br>Wicked problems are defined as "ill-defined" or "ill-structured."<br>Supported abductive thinking.<br>Cognitive process. |
| Donald Schön | 1983 | Reflective Practitioner | Reflection-in-action.<br>Reflective practitioner.<br>Learning from experience. |
| Richard Buchanan | 1992 | Wicked Problems in Design Thinking | Complex or wicked problems.<br>Orders of design.<br>Design thinking represents a general design theory and can be applied to both a concrete object and an intangible system. |

### *2.2. Prior to Design Thinking*

In the 1970s, management design emerged as an academic field, taught by designers to management academics to understand Design as an academic field (Johansson-Sköldberg, Woodilla and Cetinkaya, 2013). "Design thinking" grew younger and faster than "designerly thinking." However, management design discourse is less thoughtful and less robust (ibid.) than "designerly thinking" discourse. The methods that designers interpreted according to their conditions attracted managers' attention and these methods replaced strategic management to cope with the complex dimensions of innovation. The authors explained design-oriented thinking in the field of management as having three different roots.

The first is Design thinking as design company IDEO's way of working with Design and innovation (Kelley, 2001, 2005; Brown, 2008, 2009). IDEO's founding brothers, David and Tom Kelley and CEO Tim Brown are at this root. IDEO's books offer creativity lessons and explain the methodologies, working cultures and infrastructures shaped by IDEO's perspective. Tim Brown (2008) called these studies "design thinking," detailed their steps in the process and presented stories that would help the business community to use IDEO's methods as social innovators (Brown and Wyatt, 2007, cited in Johansson-Sköldberg, Woodilla and Cetinkaya, 2013).

The second root is Design thinking as a way to approach indeterminate organizational problems and a necessary skill for practicing managers (Dunne and Martin, 2006; *Martin, 2009).* In this root, the work of strategy consultant Roger Martin, who was the Dean of the Rotman School of Business at Toronto University between 1998 and 2013, has been examined. After working with IDEO, Roger Martin reconceptualized his previous models and started teaching his students how to apply the concept of "design thinking" (Martin, 2009; Dunne and Martin, 2006). The "knowledge funnel" model proposed by Martin broke ties with IDEO by shedding the "messiness" of a designer to be implemented by managers who are familiar with cognitive fundamentals.

Finally, the third approach is Design thinking as part of management theory (Boland and Collopy, 2004a). On this third root, Johansson-Sköldberg, Woodilla and Cetinkaya (2013) focused on Richard Boland and Frank Collopy, professors in management information systems. According to the authors, Bolland and Collopy were more oriented towards cognitive features than Roger Martin because they used the concepts of "design thinking" and "the design attitude" interchangeably. Thus, they look less at Design as a working style or a business process with different characteristics. So, actually, from this point of view, it can be said that Bolland and Collopy's approach remained between IDEO and Roger Martin's approach.

Design thinking has found a place in the business world as an approach to innovation and solving some challenges organizations face (Kimbell, 2011). The third discourse, Design thinking as an organizational resource, has been the least understood since it has begun to be discussed by professionals outside the design discipline. Dunne and Martin (2006) explained this situation as follows: "Even as managers are adopting these approaches, academics and practitioners are attempting to define them" (p. 512)".

According to Kimbell (2011), this third aspect that makes the design thinking approach popular ignores previous literature. In other words, although the term design thinking was coined by academics working in design disciplines, today, this expression is mainly positioned in solving the difficulties businesses face. The organizational literature on design thinking uses other disciplines or discourses, such as management research, organizational studies, or social science traditions (Kimbell, 2011). This situation causes design thinking to be directed by semi-academic and semi-sectoral practitioners. Moreover, according to Kimbell (2011), the design structure that deals

with social and political problems in the world disappears when handled in an administrative framework. While the design thinking of Tim Brown and Roger Martin is slightly different, both have structured Design thinking within organizations. The third version of design thinking often ignores the literature and focuses on design thinking as a business tool that promotes innovation. It is the most popular and perhaps best-known version today because advocates of this idea publish extensively (Kimbell, 2011). In Kimbell's (2011) work, the first version of design thinking is about cognitive style and the second is about general design theory.

### *2.3. Design Thinking*

Since the first Design Thinking Research Symposium was conducted in 1992 (Cross, Dorst and Roozenburg, 1992), the concept of design thinking has expanded to encompass the analysis of complex, open and constantly shifting social processes (Dorst, 2011). Because of Richard Buchanan's paper Wicked Problems in Design Thinking (Buchanan 1992), the term "design thinking" became a more widespread concept. The importance of thinking like a designer while addressing problems was discussed in an essay titled Designerly Ways of Knowing (Cross, 1982). Cross contends in his paper that non-designers may benefit from designers' creative problem-solving strategies.

Johansson-Sköldberg, Woodilla and Cetinkaya (2013, p.123) argue that design thinking refers to design practice and competence used outside the design context, for and with people without a scholarly background in design, particularly management. In contrast, designerly thinking links theory and practice from a design perspective and is therefore rooted in the academic design field (ibid.). Despite the broad embrace of design thinking in academic journals over the past few years, there is a lack of consensus on its definition. Table 2 presents a compilation of various definitions of design thinking.

Table 2. Definitions of design thinking

| Scholars | Definition |
|---|---|
| Dunne and Martin (2006) | "design thinking is the way designers think: the mental processes they use to design objects, services or systems, as distinct from the end results of elegant and useful products. Approaching management problems as designers approach design problems..." (p. 512). |
| Martin (2009) | Design thinking [is] the wider application of a design perspective beyond just product aesthetics, as a potential source of sustainable competitive advantage...to be a 'design thinking' organization...requires gaining the ability to strike a better balance between exploration and exploitation of the innovation process than is typical of most organizations today" (p. 37). |
| Brown (2009) | "a human-centered approach to innovation that draws from the designer's toolkit to integrate the needs of people, the possibilities of technology and the requirements for business success." |
| Acklin (2010) | "Design thinking acts as a bridge between the reactive and the proactive notions of design management by establishing a sustainable culture for design in a company" (p. 55). |
| Lindberg, Gumienny, Jobst and Meinel (2010) | "Design thinking process ... struggle twofold: firstly, they must depict context-sensitivity and situational adaptability of workflows without losing conceptual clarity; and secondly, when they propose instructions for real-life projects, they have to make clear that they offer 'only' guidance and no definite means for design problem solving. In sum, design thinking process models have to deal with the fact that design thinking is originally no process, but that it shapes processes" (p.246). |
| Lockwood (2010) | "essentially a human-centered innovation process that emphasizes observation, collaboration, fast learning, visualization of ideas, rapid concept prototyping and concurrent business analysis, which ultimately influences innovation and business strategy. "( p. xi) |
| Cross (2011) | "Something inherent within human cognition; it is a key part of what makes us human" (p. 3). |
| Chen and Venkatesh (2013) | Design thinking is the collection of thought processes that lead to creativity and innovation |

Table 2 (Continued).

| Scholars | Definition |
|---|---|
| Liedtka (2014) | [A] hypothesis driven process that is problem, as well as solution, focused. It relies on abduction and experimentation involving multiple alternative solutions that actively mediate a variety of tensions between possibilities and constraints and is best suited to decision contexts in which uncertainty and ambiguity are high. Iteration, based on learning through experimentation, is seen as a central task. (Liedtka 2015, p. 927) |
| Carlgren, Rauth and Elmquist (2016) | design thinking is a human-centered approach to innovation based on the ways that designers think and work. |

Various significant corporations have now adopted modern design thinking, which IDEO and the Stanford Design School popularized, to approach complex issues in original, creative and effective ways (Brown, 2008).

Design thinking, according to Tim Brown, CEO of IDEO:

> *"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 2008, p. 86).*

Kelley and Kelley (2013, p. 24f) define design thinking as

> *"a way of finding human needs and creating new solutions using the tools and mindsets of design practitioners."*

Since there is no universally accepted definition of design thinking, Table 2 shows different definitions.

Instead of a linear series of phases, IDEO's design thinking process is defined as a system of overlapping spaces. Brown identified three stages in the design-thinking process: inspiration, ideation and implementation Figure 7.

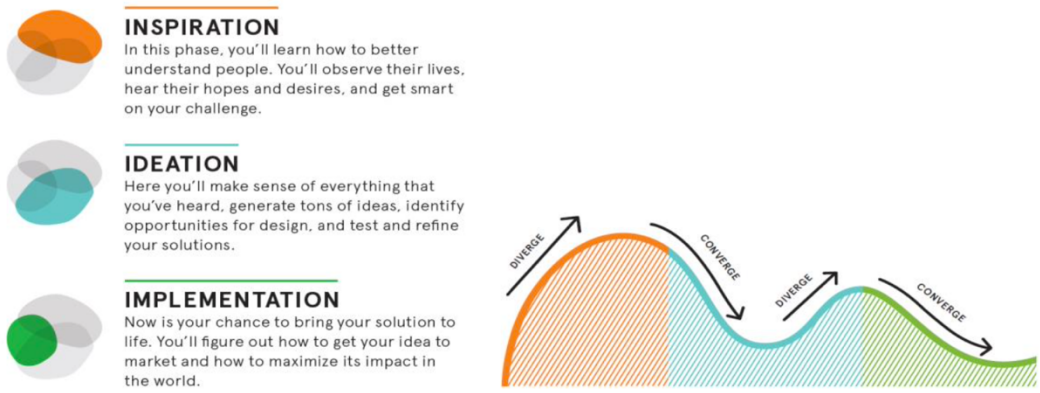


Figure 7. The model of Human Centered Design (Source: IDEO, 2015, pp. 11, 13).

IDEO's design thinking process is defined as a system of overlapping spaces instead of a linear sequence of phases. Brown identified three phases of design thinking: inspiration, ideation and implementation. Inspiration is the motivating force behind action, be it the pursuit of a solution to a social problem or the pursuit of an opportunity. Ideation involves generating, refining and verifying hypotheses via modeling or experimentation. The final stage is implementation, which ushers in the project's actualization phase. Individual initiatives will recur in these spaces, particularly the first two, as concepts are refined and new paths are adopted and refilled in response to arguments.

The design thinking process instructed at the d. the school (Figure 8) has five steps which are empathize, define, ideate, prototype and test. Although these five steps are frequently described in a linear fashion, design thinking is an iterative process (Mononen, 2017) in which the designer can return to various phases depending on the requirements of the problem being addressed.

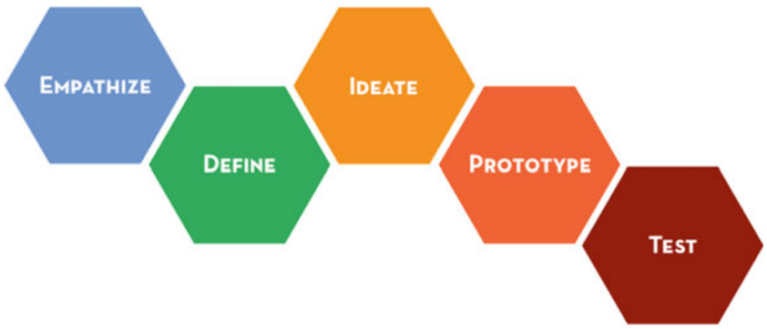


Figure 8. Steps of design thinking model proposed by the Hasso-Plattner Institute of Design at Stanford (Source: d.school)

During the empathy phase, designers engage in observing users in a specific situation or scenario related to the challenge at hand. This observation aims to understand better user behavior, methods and interactions with the service or product designers aim to enhance or redesign. By acquiring these insights, designers are equipped with a more comprehensive understanding of the context and problem, which empowers them to tackle the subsequent stages of the design process more effectively.

During the Define mode, designers utilize the insights they have gathered during the Empathy phase to concentrate on the problem at hand. They aim to move beyond a basic definition by delving into the intricacies of the user, the problem itself and the surrounding context. In this mode, designers present a problem statement that is based on the details and understandings they have previously acquired. The primary objective is to narrow down and frame the problem in a focused manner, which will serve as a guiding principle for their design efforts going forward.

In the Ideate mode, designers engage in the process of exploring a diverse range of solutions and ideas. The aim is to surpass the obvious and engage in brainstorming, incubating and generating innovative ideas, solutions and approaches directly connected to the problem. Generating many ideas spanning a wide spectrum is essential to identifying concepts with the most significant potential. Collaboration between stakeholders and across different disciplines is crucial in this mode, as it fosters a collaborative environment for divergent thinking. By encouraging the exploration of various perspectives and possibilities, designers can uncover novel and creative solutions.

Once designers have generated a range of ideas, they move on to the fourth mode, known as prototype. In this mode, they transform those ideas into tangible representations or models of potential solutions to the problem at hand. Prototyping aims not to reach a final solution but to create an opportunity to visualize and test the ideas concretely. Designers can gain valuable insights, gather feedback and iteratively refine their concepts by creating prototypes. It allows them to experiment, explore different possibilities and assess the viability and effectiveness of the proposed solutions before committing to a final design.

In the fifth mode, test, designers evaluate the prototype by involving real or representative users and stakeholders. They employ various methods, such as conducting interviews, observing user interactions with the prototype, or utilizing other feedback-gathering techniques. The purpose is to gather valuable insights and feedback to refine the proposed solution(s). Testing may reveal the need for further refinement of the prototype or even a reevaluation and redefinition of the initial point of view. Designers might revisit the empathy mode to better understand the users' needs and experiences or return to the ideation mode to explore alternative solutions based on the feedback received. This iterative process allows designers to continuously learn, improve and iterate on their designs until an optimal solution is achieved.

To achieve a desired outcome, a specific procedure or set of procedures must be followed; this is referred to as the design process (Best, 2006). The design process is comprised of a series of activities and methods that are integrated to satisfy the needs of a problem or project. Although there are similarities between case studies cited by academics and practitioners (Jarratt, Clarkson and Eckert, 2005), there are, in fact, a large number of distinct design processes that vary according to the size, scope and nature of the problem. According to Jarratt, Clarkson and Eckert (2005), the design process has been extensively studied since the 1950s, yet there is still no shared model to describe it as design thinking.

Lindberg, Noweski and Meinel (2010) assert that there is a significant distinction between investigating design thinking processes and design processes. They emphasize that design thinking is not a discrete process but instead influences and shapes the design processes.

Design thinking is a mindset or strategy that directs how designers consider and approach problem-solving. It requires being user-focused, empathic and willing to explore multiple possibilities and perspectives. In the design process, design thinking encourages originality, collaboration and iteration.

On the other hand, design processes refer to the specific stages and methods used to create and develop a design solution. These procedures may vary depending on the design discipline or context, such as industrial design, graphic design, or architectural

design. Typically, design processes involve research, ideation, prototyping, testing and refinement.

Lindberg, Noweski and Meinel (2010) suggest that design thinking is a broader framework that influences and forms specific design processes. Design thinking is a perspective and set of guiding principles that inform and direct the design processes, enabling designers to approach problems and generate innovative solutions.

Indeed, various frameworks exist for implementing a design thinking strategy and while their names and the number of stages may differ, they share similar underlying philosophies. Table 3 provides an overview of the stages in some design processes and design thinking models, allowing for a comparison and understanding of their similarities and differences.

The table likely presents a compilation of different design process and design thinking models, highlighting the key stages or phases involved in each model. These stages may include problem definition, research and empathy, ideation, prototyping, testing and implementation, among others. By examining the table, one can gain insights into the commonalities and variations among the different models, allowing for a deeper understanding of the stages involved in both the design process and design thinking approaches.

Table 3. Design process and design thinking process models

| **Model** | **Stage 1** | **Stage 2** | **Stage 3** | **Stage 4** | **Stage 5** | **Stage 6** | **Stage 7** |
|---|---|---|---|---|---|---|---|
| Asimov (1962); Jones and Thornley (1963); Model of design process | Analysis | Synthesis | Evaluation | | | | |
| Archer (1984); Three phase model of the design process (Cited in Cross, 2008) | Programming | Data Collection | Analysis | Synthesis | Development | Communication | |
| Cross (2008); Four-stage model of the design process | Explore | Generation | Evaluation | Communication | | | |
| Koberg and Bagnall (1991); The universal stages of creative problem solving | Accept situation | Analysis | Define | Ideate | Select | Implement | Evaluate |
| Lawson and Dorst (2013) | Formulating | Representing | Moving | Evaluating | Managing | | |
| Brown (2009) | Inspiration | Ideation | Implementation | | | | |

Table 3. (Continued).

| Model | Stage 1 | Stage 2 | Stage 3 | Stage 4 | Stage 5 | Stage 6 | Stage 7 |
|---|---|---|---|---|---|---|---|
| the Hasso-Plattner Institute of Design at Stanford University (2018) | Empathize | Define | Ideate | Prototype | Test | | |
| the Hasso-Plattner Institute of Design in Potsdam, Germany (2018) | Understand | Observe | Define Point of View | Ideate | Prototype | Test | |
| The Double Diamond of Design Council (2007) | Discover | Define | Develop | Deliver | | | |
| Three Gears of Design (Fraser, 2006, 2007) | Empathy and Deep Human Understanding | Concept Visualization | Strategic Business Design | | | | |
| Dunne, D. and Martin, R. (2006) | Generate ideas | Predict consequences | Test | Generalize | | | |
| Liedtka (2014) | What is? | What if? | What wows? | What works? | | | |
| Ambrose and Harris (2011) | Define | Research | Ideate | Prototype | Select | Implement | Learn |

### *2.4. Food and Design Thinking*

Design thinking has been integrated into or used as a pedagogy model for culinary arts and food studies education for students to be able to identify and solve problems, create and develop new concepts for products, services and dining or food experiences through the function and competence of design, to understand and introduce innovation to the food system and competitive food industry to meet environmental and consumer needs by using the human-centered approach of design thinking (Bonacho, 2021; Leung, Choy and Lee, 2013; Mitchell and Woodhouse, 2019; Parasecoki, 2017).

On the reverse side, food and cooking processes have been utilized in case studies of design education to understand culinary-related design issues, to enhance collaborative work and diversity for new cultural experiences, to frame user needs to identify dimensions of user behaviors, to develop new systems, concepts, or strategies of product for an experience or application and to comprehend fostering innovation through implementations (Alonso, Plasencia and Kint, 2012; Aparo and Soare, 2015; Beckman and Barry, 2007; Coxon et al., 2007; Liu and Lu, 2020). Likewise, design thinking itself has become a case model in designing a business model to connect food systems, interpreting consumer research, food choice motives and food market trends and sustaining brand equity in haute cuisine (Beverland, Wilner and Micheli, 2015; Castanho et al., 2018; McFarland, 2021; Olsen, 2015).

Another study area in food and design thinking that appears collectively is technology, especially in smart kitchen applications for improving traditional meal preparation and cooking processes, for sharing and facilitating experiences before, during and after cooking and enhancing social relations (Chi et al., 2007; Terrenghi, Hilliges and Butz, 2006; Zeiner et al., 2018). Moreover, the use of human-computer interaction (HCI) in the human-food interaction where people eat and prepare foods in their everyday lives (Grimes and Harper, 2008) and computational creativity that utilizes data-driven ideation approaches to generate recipes and menus (Pinel, Varshney and Bhattacharjya, 2014; Varshney et al., 2013) are some other examples of food and design thinking combinations in the course of technology research.

In the culinary context, a design thinking approach is encountered in the realm of chefs and professional kitchens. For instance, Frøst (2019) emphasizes the importance of design thinking's prototyping and experimenting phases with various product interpretations in developing collaboration between chefs and scientists. Likewise, Guixer (2019) utilized the convergent and divergent thinking structures and rapid prototyping features of design thinking to discover gastronomically interesting fermented products.

Another culinary-related example of design thinking is the composition of an amuse-bouche in the context of a multisensory designed menu called Mooning Walk, which was developed through the application of the Design Council's Double Diamond model (Mota, Mata and Bonacho, 2020). Finally, Pressman (2018), in his book Design Thinking: A Guide to Creative Problem Solving for Everyone, exemplifies creativity in the culinary arts as an application of design thinking in business with a chef who uses design thinking to improve classical dishes by inspiration, iteration, analytical skills in cooking, combination of flavors, observation, intuition and insights.

Herefore, it has been shown how the design thinking approach and food issues alternately support, influence and encourage each other. However, on the other hand, while design scholars explain their design processes and design problems, they also generate a culinary-focused analogy by using the chefs and their cooking processes (e.g., Behymer and Flach, 2016; Fisker et al., 2011; Marback, 2009; Sathikh, 2017; Subasinghe, 2019; Wasson and Kirschner, 2020). As can be understood from here, food has always been a tool, a process and an environment for the design discipline.

Margolin (2013) provided a thorough explanation of the complementarity between food and design. According to him, food joined the design world as the design itself and the critical difference between food and design is that food rarely exists naturally while the design is entirely artificial. However, when foods start to be processed, they become artificial because humans control them. Thus, the academic association of food and design has created a new design discipline, food design, which is still very new but is developing rapidly.

To define the Food Design discipline framework, Zampollo (2016a) identified six sub-disciplines, one of which is Design with Food, which involves chefs. In addition,

Zampollo (2016b) has compiled the food design definitions of prominent chefs, designers and scholars to display the diverse perspectives of experts in different fields. The most apparent distinction between chefs and other experts in this review; while designers view food design as the design of food, that is, they regard food as an object, chefs see food as a tool that gives people an experience.

### *2.5. Defining Creativity*

In the rapidly expanding field of psychology during the middle of the 20th century, a large number of academics attempted to define and investigate creativity. In the realm of creativity and psychological research, philosopher Joy Paul Guilford played a prominent role and made significant contributions through his extensive study of creativity as a psychological attribute (Weisberg, 1999). Guilford provided a definition of creativity:

> *"In its narrow sense, creativity refers to the abilities that are most characteristic of creative people. Creative abilities determine whether the individual has the power to exhibit creative behavior to a noteworthy degree. Whether or not the individual who has the requisite abilities will actually produce results of a creative nature will depend upon his motivational and temperamental traits. To the psychologist, the problem is as broad as the qualities that contribute significantly to creative productivity. In other words, the psychologist's problem is that of creative personality." (Guilford, 1950, p. 444)*

Creativity has been defined in many ways because its concepts and principles have changed over time. Hanson (2015) explains that creativity is not universal since it has its own historical, social and cultural values. Alternatively, Sawyer (2006) states how creativity began to be understood differently when societies moved away from religious explanations and began to explain their daily events with science. As a result, there is no particular, standard definition of creativity and no regulated, universally accepted measurement technique for its assessment (Sternberg, 1999b). As stated by Gotz (1981), creativity is a form of production and, therefore, a public activity as opposed to a private mental activity. A physical manifestation of the creator's thoughts,

emotions and mental processes exists. Thus, the act of doing is more important than the capacity to act. Creativity is typically defined as the capacity of an individual to produce something new, novel, unexpected and surprising (Takala, 1992; Fischer, 1992) and creative ideas result from unusual and unexpected combinations of ideas (Boden, 1991).

Creativity is not about one thing but a system of things (Csikszentmihalyi, 1988). To understand the nature of creativity, scholars have proposed diverse theories and applied different measurements and tests. The wide range of various theories or approaches generates their creativity. However, there is one standard definition of creativity that is broadly accepted. In their definitive article, Runco and Jaeger (2012) explained the standard definition of creativity as bipartite, originality and effectiveness.

In their definition, Runco and Jaeger (2012) utilized two tactics: to work backward and use base rates. Ultimately, they concluded that the first clear standard definition was written by Stein (1953) in his article on creativity and culture. Undoubtedly, originality is often labeled as a novelty; if something is not unusual, novel, or unique, it is commonplace, mundane, or conventional (Runco and Jaeger 2012). Appropriateness takes the forms of effectiveness, usefulness, fit, suitability and sometimes the form of value in economic research on creativity (Runco, 1988). In addition to these components, Simonton (2012) suggested a third criterion, "surprise," which is used by the U.S. Patent Office to evaluate creative products (Abdulla and Cramond 2017).

Runco (2004) indicated that if an interpretation is useful and original, it is then creative. However, Mumford and Gustafson (1988) offered a more comprehensive definition:

> *"Creativity appears to be best conceptualized as a syndrome involving a number of elements: (a) the processes underlying the individual's capacity to generate new ideas or understandings; (b) the characteristics of the individual facilitating process operation; (c) the characteristics of the individual facilitating the translation of these ideas into action; (d) the attributes of the situation conditioning the individual's willingness to engage in creative*

*behavior; and (e) the attributes of the situation influencing evaluation of the individual's productive efforts. "*

The multifaceted phenomenon of creativity can be examined and fed from different perspectives. Table 4 shows that there is no exact agreement on what creativity is.

Table 4. Definitions of creativity

| **Author(s)** | **Definitions and Views** |
|---|---|
| Guilford (1950) | said creativity refers to the abilities that are most characteristic of creative people. Creative abilities determine whether the individual has the power to exhibit creative behaviour to a noteworthy degree. |
| Stein (1953) | defined creativity as the process which results in a novel work that is accepted as tenable or useful or satisfying by a group at some point in time. |
| Rhodes (1961) | explained that creativity is a noun naming the phenomenon in which a person communicates a new concept (which is the product). Mental activity (or mental process) is implicit in the definition and of course no one could conceive of a person living or operating in a vacuum, so the term press is also implicit. |
| Bruner (1962) | suggested that creativity is an act that produces effective surprise. |
| Torrance (1967) | Defined creativity a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies and so on; identifying the difficult; searching for solutions, making guesses or formulating hypotheses about the deficiencies, testing and retesting these hypotheses and possibly modifying and retesting them and finally communicating the results. |
| Getzels and Csikszentmihalyi (1976) | described thinking may be called creative if: 1) the product has novelty and value either for the thinker or the culture, 2) the thinking is unconventional, 3) it is highly motivated and persistent or of great intensity and 4) the problem was initially vague and undefined so that part of the task was to formulate the problem itself. |
| Vygotsky (1978) | Viewed creativity as creating anything new. |

Table 4 (Continued).

| Author(s) | Definitions and Views |
|---|---|
| Welsch (1980) | defined creativity as the process of generating unique products by transformation of existing products. These products, tangible and intangible, must be unique only to the creator and must meet the criteria of purpose and value established by the creator. |
| Amabile (1983) | suggested that creativity can be regarded as the quality of products or responses judged to be creative by appropriate observers and it can also be regarded as the process by which something so judged is produced. |
| Mumford and Gustafson (1988) | creativity appears to be best conceptualized as a syndrome involving a number of elements: (a) the processes underlying the individual's capacity to generate new ideas or understandings, (b) the characteristics of the individual facilitating process operation, (c) the characteristics of the individual facilitating the translation of these ideas into action, (d) the attributes of the situation conditioning the individual's willingness to engage in creative behavior and (e) the attributes of the situation influencing evaluation of the individual's productive efforts. |
| Vernon (1989) | explained that creativity is a a person's capacity to produce new or original ideas, insights, restructurings, inventions, or artistic objects, which are accepted by experts as being of scientific, aesthetic, social or technological value. |
| Runco (1996) | stated that creativity is manifested in the intentions and motivations to transform the objective world into original interpretations, coupled with the ability to decide when this is useful and when it is not. |
| Csikszentmihalyi (1996) | defined that creativity is any act, idea or product that changes an existing domain, or that transforms an existing domain into a new one. |
| Sternberg and Lubart (1999) | stated that creativity is the ability to produce work that is both novel (i.e., original, unexpected) and appropriate (i.e. useful, adaptive concerning task constraints). |
| Csikszentmihalyi (1999) | again, explained that creativity is a phenomenon that is constructed through an interaction between producers and audience.<br>Creativity is not the product of single individuals, but of social systems making judgments about individuals' products. |
| Mumford (2003) | added that creativity involves the production of novel, useful products. |
| Plucker, Beghetto and Dow (2004) | defined creativity as the interaction among aptitude, process and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context. |

Table 4 (Continued).

| Author(s) | Definitions and Views |
|---|---|
| Scott, Leritz and Mumford (2004) | stated that creativity ultimately involves the production of original, potentially workable, solutions to novel, ill-defined problems of relatively high complexity. |
| Zha et al. (2006) | said that intelllectual creativity is the ability to view what is ordinary in a novel or atypical way; the ability to detect problems that others may not recognize; or the ability to generate original, exceptional, adaptive, or effective solutions to a problem. |
| Davidovitch and Milgram (2006) | defined creative thinking as a cognitive process of original problem solving by means of which original products are generated. |
| Sawyer (2006) | explained that creativity is the emergence of something novel and appropriate, from a person, a group, or a society. |
| Runco (2007) | added that creativity is a reflection of cognition, meta-cognition, attitude, motivation, affect, disposition and temperament. |

Due to its sophisticated structure, defining and measuring creativity can be complicated. Therefore, one can encounter multiple viewpoints and descriptions of creativity. Most creativity researchers and theorists have applied Rhodes's (1961) framework of 4P's to measure and define creativity.

This part of the research is studied through James Melvin Rhodes' 4P Theory, which provides a robust contextual framework for examining different types of creativity. This model provides a useful holistic typology covering all types of creativity. Given the interrelated nature of various definitions of creativity, Rhodes (1961) presented a distinct approach to measuring creativity, addressing the issue from four distinct perspectives: person, process, product and press (Figure 9). Rhodes (1961) sought to provide a comprehensive framework for understanding and evaluating creativity by considering these fundamental dimensions.

The term "person" involves information about "personality, intellect, temperament, physique, traits, habits, attitudes, self-concept and behaviors" (Rhodes, 1961, p. 307). 'Process' is associated with "motivation, perception, learning, thinking and communicating" (Rhodes, 1961, p. 308). What are the actions of the thinking process?

The term "product" concerns a thought communicated to others in words or other material. Furthermore, "when an idea becomes embodied into a tangible form, it is called a product" (Rhodes, 1961, p. 309). The term "press" refers to the relationship between human beings and their environment. "Creative production is the outcome of certain kinds of forces playing upon certain kinds of individuals as they grow up and as they function" (Rhodes, 1961, p. 308). Although the four strands have their own unique identity academically, "only in unity do the four strands operate functionally" (Rhodes, 1961, p. 307).

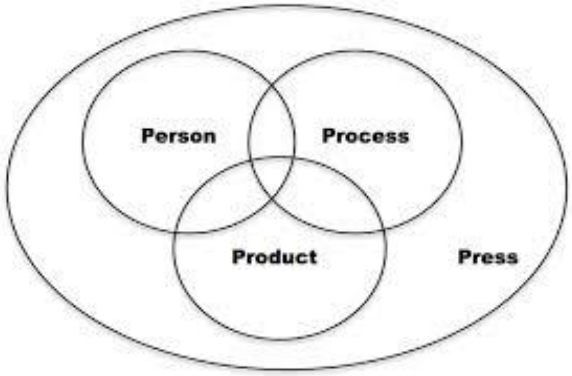


Figure 9. 4P's of creativity (Source: Rhodes, 1961)

### *2.5.1. Creative Person*

Guilford (1950) and Boden (1991) both argued that creativity is an advanced version of the talents shared by everyone and can be trained and improved. Csikszentmihalyi (1996) found that the essential feature of individuals is that they are dominant in a field of knowledge and develop it. Boden (1991) argues that motivation is fundamental beyond the creative person's interests and "passion" exists and that all people have the basic abilities to be creative. Cropley (2001) argued that full personal growth, self-fulfillment and actualization of individual potential are characteristics of creative people. Moreover, personality attributes for creative functioning include a willingness to overcome obstacles, take sensible risks, tolerate ambiguity and have self-efficacy (Sternberg, 2006). Also, creative individuals are complete, in control of their lives and can do something with them (Craft, 2003).

The Four C model of creativity, presented by Kaufman and Beghetto (2009), differentiates "little-c" (everyday creativity), "mini-c" (inherent in the learning

process), "Big-C" (eminent creativity) and "Pro-c" (professional-level knowledge) in any creative domain.

The authors assert that the Four C paradigm represents the creative life cycle and does not advocate avoiding every creative impasse in an effort to foster originality. Einstein's Big-C contributions to physics serve as additional evidence. Cooking and chefs were used as examples in the essay titled "Beyond Big and Little: The Four C Model of Creativity." The authors explain that the Big-C category is appropriate for the revolutionized profession of chefs such as Marie-Antoine Careme, Ruth Graves Wakefield and James Beard, while the Little-C category is appropriate for the everyday creativity of home chefs who can combine ingredients to create unique and delicious dishes.

### *2.5.2. Creative Process*

The creative process has been analyzed from multiple perspectives as a cognitive process, a learning process and a natural cognitive capacity. Cognitive psychology researchers have developed valuable theories and models for the creative process by examining creativity within a cognitive framework concerning other topics (Runco, 2014). Initial attempts to define creativity (e.g., Wallas, 1926) centered on the creative process. Some authors (e.g., Koestler, 1964; Boden, 1991) conceptualized this as the cognitive process occurring within an individual. However, according to Runco (2004), research into the creative process may be less subjective and more behavioral.

Preparation, incubation, illumination and verification are the four stages that makeup Wallas' 1926 model of the creative process. Clarifying and comprehending the issue is the focus of the preparation phase, which, according to Wallas (1926), may involve gathering and analyzing pertinent background information. The incubation stage occurs when the issue is no longer actively considered but remains an idea. Insight, or "illumination," is the moment when an original thought occurs. The final step, verification, involves ensuring that the proposed solution is unique and appropriate to the problem.

Another pioneer example of the creative process is from Guilford (1968), who examined the relationship between divergent and convergent thinking to understand the creative process. Divergent thinking, as proposed by Guilford (1968, 1986), is used

when people are tasked with finding solutions to unstructured issues or tasks. However, definitive answers may be attained through the application of convergent thinking. While this is not equivalent to divergent thinking or creative thinking, it does shed light on the thought process that yields a novel answer or concept (Runco, 2014).

In order to improve business quality, Paul E. Plsek (1997) comprehensively evaluated the models developed by psychologists to describe the creative process of thinking. He examined the theories underlying eight distinct models and synthesized these concepts into a single, comprehensive image. The Wallas Model for the process of creativity (1926), Rossman's Creativity Model (1931), Osborn's seven-step model for creative thinking (1953), the Creative Problem Solving (CPS) model by Parnes (1992) and Isaksen and Trefflinger (1985), Koberg and Bagnall's Universal Traveler Model (1981), a Model for Creative Strategic Planning by Bandrowski's (1985) and Robert Fritz' Process for Creation (1991) were the models examined by Paul E. Plsek (1996). Plsek (1996, p. 132) notes that "purposeful analysis, imaginative idea generation and critical evaluation" are the three stages shared by all models. This suggests that "critical verification" derived from a period of creative thinking comes after the "purposeful" aims established at the very beginning of the creative process.

Only three of the eight models considered inspiration as something that could be enforced, whereas five regarded "problems" as the source of a creative solution.

Different fields require distinct approaches. The design firm IDEO describes this procedure as "understand," "observe," "visualize," "evaluate," and "implement" (Kelly and Littman, 2001). Cropley's (2001) model is standardized and extends Wallas' phases of development in education, which are widely used. Additionally, Shneiderman (2000) presents a fundamental paradigm applicable to multiple fields: collect, relate, create and contribute. Learning, teaching, creating, developing and advancing are contingent on one's ability to engage in all of these nonlinear activities.

### *2.5.3. Creative Product*

Depending on the creative domain, the outcome of a creative process can be a physical object or a novel solution (Cropley, 2001; Runco, 2004). Consequently, the creative product is the result of the ideas that are generated during the creative process. A

creative product is often viewed as a physical object, such as a work of art, a musical composition, or an architectural structure. Nevertheless, creative products are now an integral part of the consumer experience.

According to Cropley, Kaufman and Cropley (2011), creative products are characterized by a combination of originality and practicality. This means that a creative project should be innovative and surprising and have a functional purpose. Without these aspects, the work would be purely aesthetic. Simply being original is not enough for a creative product; it should also have a practical or realistic element to it (Barron, 1969). Warr and O'Neill (2005) suggest that a creative product exhibits indicators of creativity, such as originality and suitability.

Two influential scales measure product creativity which are the Creative Product Semantic Scale (CPSS) (Besemer and O'Quin 1986, 1987, 1999; O'Quin and Besemer 1989, 1999; Besemer 1998) and the Consensual Assessment Technique (CAT) (Amabile 1983). The creative product analysis methodology devised by O'Quin and Besemer (2006) was designed to assist organizations in selecting the most promising concepts or products. According to O'Quin and Besemer (2006), the model consists of three dimensions or elements corresponding to the three most significant indicators of product originality. Priority must be given to the novelty of the idea or product, which includes considering any novel materials, techniques, concepts, or aspects. The second component is the product's functionality or resolution, or how well it fulfills its intended purpose. The style dimension concerns a product's presentation and how it communicates with the consumer (O'Quin and Besemer, 2006).

### *2.5.4. Creative Press*

The effects of creativity on different disciplines have been studied by expanding the research field (Kaufman, Glaveanu and Baer, 2019) and environmental factors have become a critical determinant across diverse domains. The location, place, situation, setting, or climate in which creative activity occurs is referred to as the press, which is the context of creativity. The term "press" refers to a broad category describing how a person's environment may foster or inhibit creativity (Isaksen, 2007).

The environment, sometimes called creative climate, is one of the broadest categories of creativity research. Rhodes (1961) explained the press as "the relationship of human beings and their environment," and his definition has been emphasized by Simonton (1980, 1990) and Csikszentmihalyi (1998, 2014) in the theories of social, cultural, economic and political influences. Besides, Runco and Pagnani (2011) explained six levels of socialization acting as press factors: the physical surroundings, family upbringing, schooling experiences, workplace environments, cultural traditions and historical milieu. Creative people require a setting that encourages and rewards original thought and expression (Sternberg, 2006). Because part of the socialization process is teaching kids how to act in ways that are appreciated by the society, they are becoming a part of (Cropley, 2001), a social structure may suppress originality.

Creativity can be inhibited by external factors like criticism (Sternberg, 2006). Several workplace factors have been suggested as essential determinants of creativity, including supervisory support and social influences from group engagement (Shalley and Perry-Smith, 2001).

### *2.5.5. Culinary Creativity and Innovation*

In the culinary creativity literature, the relations between the chefs' creative processes and their performances (Horng and Hu, 2008, 2009; Horng and Lee, 2009; Peng, Lin and Baum, 2012; Roque, Guastavino, Lafraire and Fernandez, 2018); the creativity and occupational satisfaction of chefs in the hospitality and tourism industry (Bouty and Gomez, 2013; Robinson and Beesley, 2010; Tongchaiprasit and Ariyabuddhiphongs, 2016) the education of the chefs and the creativity of the performances (Peng, Lin and Baum, 2012); and the culinary innovation process and creativity (Presenza, Abbate, Casali and Perano, 2017; Stierand and Dörfler, 2016; Stierand, Dörfler and MacBryde, 2014) are the most studied subjects.

The studies related to Turkish cuisine generally focused on the food and beverage establishments' role in the tourism industry. In recent years, innovation and culinary creativity have been defined as two crucial elements in the development of gastronomy tourism and a strategy has been conducted by the Turkish Culture and Tourism Ministry (Kültür ve Turizm Bakanlığı, 2019). Karaosmanoğlu (2007) reflects the

importance of culinary creativity in terms of modernization, globalization and standardization in the development of the tourism industry, while Erdem, Doğdubay and Sarıoğlan (2012) indicate that food and beverage establishments should recreate their basic strategies to make differences in their services and for full long-term successful organizations, they should be innovative. They also concluded that the combination of creativity and innovation is the process of transforming new ideas. During the literature research, no focused study has been seen directly on culinary creativity in Turkish cuisine.

The studies of culinary creativity have been conducted from different perspectives with various frameworks in the culinary fields. Chossat and Gergaud (2003) identified creativity as an expert's opinion of the demand for successful gourmet cuisine. They also explained the creativity in cuisine as a refinement of classical or traditional culinary arts in the French culinary tradition. Svejenova, Mazza and Planellas (2007) explored entrepreneurship in international gastronomy and explained culinary creativity as combining concepts and techniques operating through the organization and generating a continuous flow of new ideas. Horng and Hu (2008) explored culinary creativity based on the modified version of Wallas' classic 1926 creative process model, which forms a cycle: preparation of the idea, idea incubation, idea development and verification of the culinary product. Horng and Hu (2009) continued their study to search for the relationship between the culinary chefs' expertise and creative process, including their performances on the culinary product. Peng, Lin and Baum, 2012 describe culinary creativity as the chefs' capacity, self-achievement and organizational skills that allow them to optimize profit for long-term operation on an internal level.

In contrast, on an external level, they define it as the development of competitive business and marketing strategies that satisfy customers and market demands. Bouty and Gomez (2013) explained creativity in the culinary context as the idea generation by the head chefs, the production of the dishes by the kitchen team and the naming of the product to express the emotions and gastronomic experiences of the head chef. Tongchaiprasit and Ariyabuddhiphongs (2016) defined culinary creativity as using blends to create a harmonious blend in preparing dishes that look nice, taste delicious and meet the customers' dreams. Lin and Baum (2016) also indicated that compared

to creativity in general, such as the art skills in music and paintings, culinary creativity has limitations in terms of time and customer orientation.

In the culinary industry environment, creativity can be affected by different external factors of the macro environment. There have been several studies on the factors that influence the process of creativity in the culinary industry. Some are directly connected to the chefs themselves, while others are related to the work environment, including the chef. The chef's knowledge, know-how and creativity are critical elements to business success (Chossat and Gergaud, 2003). According to Zopiatis (2010), there is a balance between the chef's profession, artistic culinary creativity and the management of science. Horng and Lee (2009) investigated the environmental factors that affect culinary creativity performances.

Moreover, several studies related to the creative culinary process and performances have used qualitative and quantitative approaches (e.g., Albors-Garrigós, Monzo and Garcia-Segovia, 2017; Hu, Horng and Teng, 2016; Stierand and Dörfler, 2016). Most successful haute cuisine restaurants also depend on their chefs' creativity and to develop a good organization between creativity and innovation (Presenza et al., 2017). Horng and Hu (2009) studied the effects of physical, social, cultural and educational environments on culinary creativity development. Peng, Lin and Baum (2012) directly investigated the creative culinary process within an approached mixed method and indicated the effect of education and training on creativity development. Conversely, the work environment related to job stress, occupational satisfaction and turnover intention explains the other criteria that affect culinary creativity (Tongchaiprasit and Ariyabuddhiphongs, 2016).

### *2.6. Theoretical Framework*

As it is understood from the literature review, which is intended to be as short as possible, the formalization of the design discipline that started in the 1960s and the formation of the design thinking approach are intertwined processes. It is comprehended from the studies that it is impossible to separate one from the other. The point that draws attention is that influential designers apply the design thinking approach in the business world and popularize it. However, this does not detract from the design discipline. On the contrary, it broadens its scope. However, this is an issue

open to discussion in the community. After all, the end product can be tangible or intangible and the overall success they bring matters. From this point of view, the approaches of designers and theorists, which have been repeated frequently in the history and processes of forming design thinking, have guided this study.

### *2.6.1. The production of cuisine*

According to Clark (1975), the culinary and cultural processes included in the culinary system are essential for the production of cuisine. This system has different sectors for creating, producing, disseminating and consuming the cuisine (Figure 10) —culinary products concern chefs, kitchen, dining room and diners. By connecting the culinary product to the chef, the restaurant and the customer, that product is embedded in the culture of that setting. No matter how densely populated the chefs are in restaurants, experts and diners must be involved in producing a cuisine. Like French cuisine, any other cuisine includes culinary systems, namely the culinary process and the cultural process and, like other cultural products, should be studied concerning the society to which it belongs (Clark, 1975).

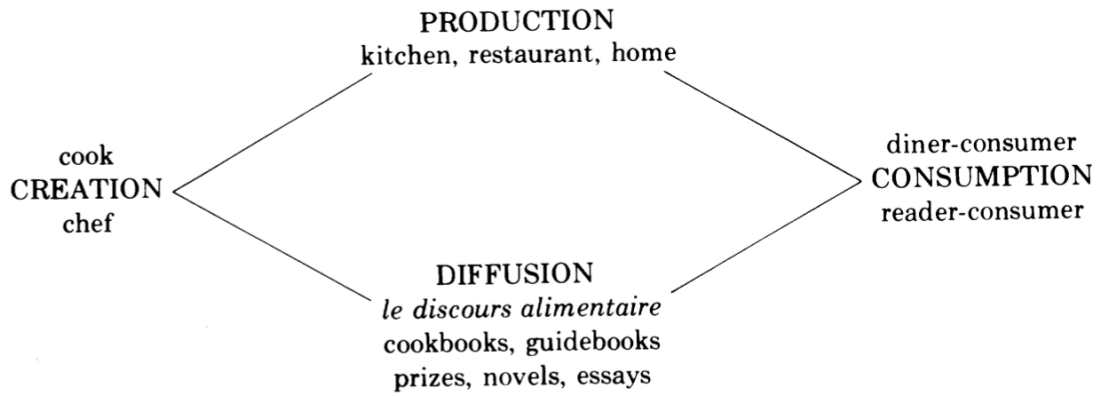


Figure 10. Production of a cuisine (Source: Clarke, 1975)

For this reason, it is more effective to consider cuisine as a process instead of a single product, meal, or recipe, each of which has its inputs, outputs and participants. Comparable phases in the creation (writing), production (publication), diffusion (promotion, criticism, instruction) and consumption (reading) of a literary work can be compared to the divisions of labor in the culinary arts. Even though cuisine is invented, produced and appreciated everywhere men exist, the intricate and complicated means of diffusion are a uniquely modern addition and are especially significant in France. While it is true that every nation has its culinary heritage, in

France, this tradition has become a source of national pride and a representation of French culture (Clark, 1975, p.32-33).

Clarke (1975) contended that even if there were numerous other types of cuisine, only a true gastronome would know to seek out Parisian French. No longer is this the case, however. Because it recognizes and thus legitimizes a diversity of cuisines, from Provençal to Chinese, the culinary system of the late 20th century is highly pluralistic. Now, more than ever, chefs have the freedom to experiment outside of a recipe book.

The purpose of using this approach of Clark is to examine cuisine by separating it from a food culture, which is a much broader subject because cuisine itself is already a part of food culture. Being able to determine the boundaries of cuisine makes the context of this thesis more specific. Therefore, this study discusses Turkish cuisine within the framework of the sectors that formalize it.

### *2.6.2. Systems Model of Creativity*

Mihaly Csikszentmihalyi shifted the emphasis of his creativity research from "What is creativity?" to "Where is creativity?" (2014). Csikszentmihalyi argues, as depicted in Figure 11, that creativity exists at the intersection of three related but distinct concepts: the domain, the field and the individual.

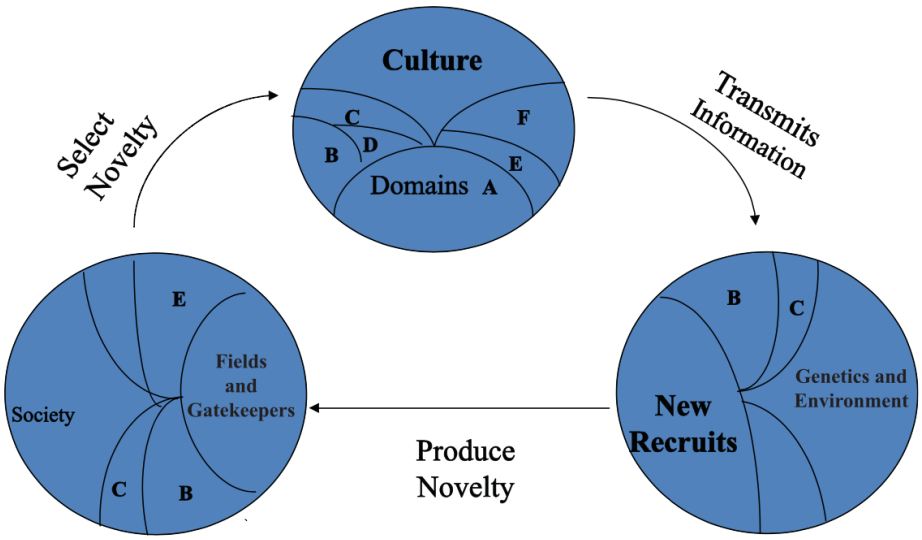


Figure 11 Systems Model of Creativity (Source: Csikszentmihalyi, 1997)

The domain is the individual's cultural context, the language they use to communicate their work to others in their field. This setting may be expansive or confined. Csikszentmihalyi (1997) explains that the creative individual operates within this domain, conforming to its symbolic system and employing its principles to explore novel creative designs contributing to the cultural system.

The field consists of other users of the same symbols in the same domain. According to Csikszentmihalyi, the "gatekeepers" (2014, p. 28) of the domain are the field experts who determine whether or not an individual's work is innovative. "Creativity" is the "subjective judgment assigned to a product at a particular time by other individuals," according to Csikszentmihalyi (2014). For creativity to exist and be acknowledged, all three elements must be present: domain, field and individual. There is no modular configuration of the three components. There is, however, persistent overlap between them.

Even Csikszentmihalyi (in Simonton, 2014) provided a food-related example to illustrate this theory.:

> *"For instance, the domain of gastronomy contains rules about how to prepare food. Recipes for preparing thousands of meals exist in many cultures and they are transmitted either as oral instructions or as written recipes from one generation to the next…. When the field approves of a novelty generated by an individual, it will try to include it in the domain. A tasty new recipe introduced by a chef at a trendy restaurant will be commented on by the food critic of the daily paper and might get included in future editions of respected cookbooks. If the critics and cookbook writers are rather rigid in their tastes, the cuisine will remain traditional and could be abandoned for that reason. If they are too open to change, the cuisine will be called "fusion" and soon lose all predictable character." (pp. 538-540).*

### *2.6.3. Design Thinking*

Design thinking is a distinctive approach to tackling organizational issues (Cousins, 2018). It involves analyzing and evaluating existing information to enhance operational performance and achieve better outcomes within the organization by developing new strategies (Drews, 2009). Ward, Runcie and Morris (2009) conducted research indicating that design thinking is an iterative process that considers multiple perspectives within the organization to analyze problems and generate potential solutions. Furthermore, design thinking fosters the generation of diverse ideas and encourages input, which helps boost the confidence of individual workers and promotes engagement and inclusivity among various work teams across all levels of the organization (Cousins, 2018).

Design thinking can be particularly beneficial when dealing with complex and challenging problems (Cross, 2006). This approach encourages employee participation at all levels, regardless of their skill sets or viewpoints (Cross, 2006). By employing design thinking, organizations can employ methodologies and approaches that facilitate sharing personal knowledge through innovative learning, which is crucial for leadership development and the integration and cultivation of collaborative activities and reflective practices.

### *2.6.4. Design Product and Innovative Design Product*

Richard Buchanan's four-order design matrix (Figure 12), as discussed in multiple papers (1992, 1998, 2001, 2008, 2019a, 2019b), presents a framework for categorizing design into four main areas: communication (signs and images), construction (physical objects), strategic planning (processes and services) and systemic integration (systems and environment) (Buchanan, 1998).

This matrix aims to determine the suitable application of designers' natural abilities. Buchanan further connects these hierarchies with the design skills of inventing, judging, deciding and evaluating. By focusing on these four orders, designers have been able to adapt their practices to meet the evolving needs of the market and society throughout the 20th century.

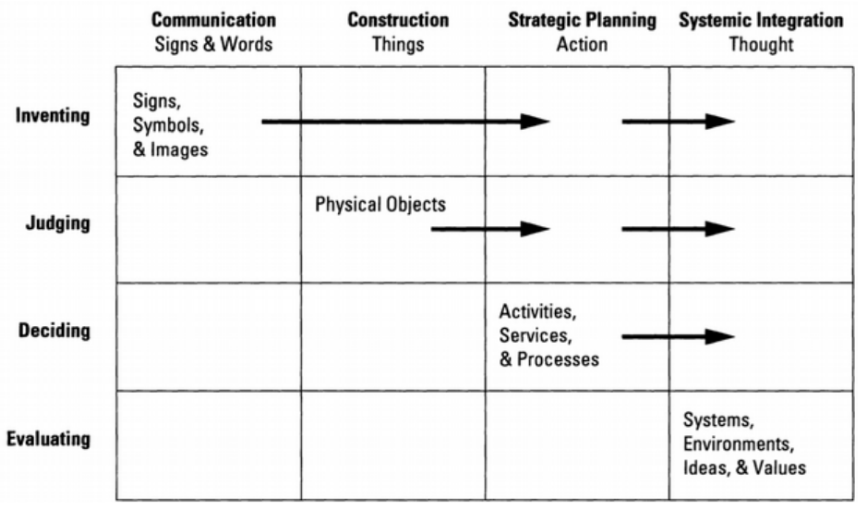


Figure 12. Four Orders of Design (Source: Buchanan, 1998)

Alternatively, Tim Brown offers a different perspective on design outcomes in his work (Brown, 2009). According to Brown, for a product to be considered successful and innovative, it must achieve a balance among three interconnected criteria (Figure 13):

> *Feasibility (what is functionally possible within the foreseeable future); viability (what is likely to become part of a sustainable business model); and desirability (what makes sense to people and for people). (p 19)*

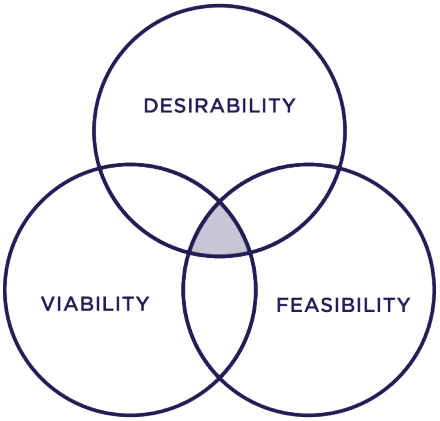


Figure 13 Innovative product (Source: Brown, 2009)

Considering these three factors leads to increased innovation in products.

### *2.6.5. The Creative Product Attributes*

The Creative Product Semantic Scale (CPSS) is an evaluation tool suggested by Besemer and Trefiger (1981) and developed by the scholars (Besemer and O'Quin 1986, 1987, 1999; O'Quin and Besemer 1989, 1999; Besemer 1998) that gives a means of comprehending creativity in goods. It is based on a theoretical model that was developed in the field of psychology. The model, comprised of three dimensions or components and referred to as the Creative Product Analysis Model (CPAM), is based on the three aspects of a product that are considered the most significant indications of creativity. Each component is subdivided into nine distinct categories or aspects that provide more insight into the product.

The novelty factor is the first of three factors. This includes considering new materials, methods, ideas and other novel product or concept aspects. Elements of novelty may be reflected in originality evaluations and they are occasionally highlighted by the potential user's reactions of surprise, excitement, or even shock (Besemer and Trefiger, 1981).

Resolution is the second aspect of creative thought that plays an important role. This concept defines the extent to which an item conducts its intended function. Does it have any logic? Is it operating properly? Is it possible for people to understand how to use it? Is there a distinct indication of its worth and monetary value? (Besemer and Trefiger, 1981).

Elaboration and synthesis are the third indications. This dimension focuses on how the product concept is realized in the new product. The term "elaboration and synthesis" describes the process by which the initial design is either improved and simplified or made more complicated due to figuring out the solution. According to Besemer and Trefiger (1981), this factor is sometimes referred to as "style," but it should not be confused with the "stylish" quality of a finished good. The elaboration and synthesis criterion considers the product's overall cohesiveness, apparent craftsmanship and perceived elegance (Besemer and Trefiger, 1981).

### *2.6.6. Turkish Cuisine Under Related Theoretical Framework*

***Production of a cuisine.*** Firstly, it is essential to distinguish between Turkish culinary culture and Turkish cuisine, which is a crucial distinction. This is made simple by Clark's "production of a cuisine" approach. When Turkish cuisine is mentioned, the region where it is made, consumed, produced and disseminated is also mentioned. However, this is not home-cooked cuisine. This is a professional procedure, so there are both experts and consumers. This strategy is consistent with Csikzentmihalyi's systems model of creativity, which is discussed in the following paragraphs. The French gastronomic system is entrepreneurial, but other cuisines have their societies, culinary traditions and cultural practices.

The history of Turkish food culture holds an important place in the formation of Turkish cuisine, as it has a highly complex structure. The majority of the history of Turkish cuisine can be divided into two distinct periods. The first is traditional Turkish cuisine from before the settlement of Anatolia in 1040 and the second is contemporary Turkish cuisine. After the first immigrants arrived in Anatolia, the development of Turkish cuisine was influenced by three distinct eras. Turkey has experienced three distinct periods throughout its history: the Seljuk and Principalities (Beyliks) (1040-1299), the Ottoman (1299-1923) and the Republic of Turkey (1923 and beyond) (Halici, 2009). In addition, Halici (2009) identifies two distinct categories of Turkish cuisine: the traditional or "classic" cuisine and the "folk" or "regional" cuisine. She defines "classic cuisine" as the food prepared in Istanbul's palaces, mansions and restaurants in the late 19th and early 20th centuries, whereas "folk cuisine" includes both "classic" and "local" ingredients and is prepared today in Anatolia. It is also well-

known that the Byzantine Empire, which remained in Anatolia during the Seljuk and Ottoman periods, significantly influenced regional cuisine.

According to Clark (1975), for cuisine to exist professionally (see Figure 10), chefs must produce it in restaurants, guidebooks must promote it and diners must consume it. Considering the history of Turkish cuisine from this perspective, the French influence on the Ottoman palace and Ottoman cuisine is apparent. After Sultan Abdulaziz's European trip, Europeanization began in Istanbul's Pera district. This Europeanization was most notable for establishing restaurants, hotels, theaters and nightclubs. The Ottomans ate with their fingertips on floor tables rather than with cutlery. By dining at the table, a new food culture centered on the individual emerged in the Ottoman Empire; á la Franca initiated the socialization of table culture and food culture and as a result, new hygiene standards emerged (Samanci 2003). In addition, after the Bolsheviks seized control of Russia, the migration of regime opponents to Istanbul significantly impacted the cuisine's modernization.

When examining the history of Turkish cuisine, it is evident that Istanbul cuisine has had a significant impact. Within the Turkish culinary culture, which has a very traditional structure, Istanbul cuisine has evolved from the cuisine of palaces and aristocrats through oral tradition to taverns and finally, restaurants and bars up until the present day (Bozis, 2002). This distribution corresponds to the diffusion mentioned by Clarke in the production of a cuisine. In other words, the cuisine has not spread from home to home or neighbor to neighbor, but rather by diffusing to various regions and locations. As a result, the Turkish food culture has a very long history and vast geography and it can be said that the Ottoman palace kitchens and Istanbul cuisine established the foundations for Turkish cuisine.

***Systems Model of Creativity.*** From Csikszentmihalyi's point of view, when Turkish cuisine is considered as a domain, ingredients and dishes can be considered as symbols for communication and cooking techniques can be considered as procedures. Within the framework of creativity, it is essential to examine Turkish cuisine as a domain (Figure 14) because it helps to understand how people in the field communicate and collaborate. As a result, in this thesis, Turkish cuisine is accepted as a domain; its symbols are (1) ingredients and (2) recipes (dishes); its procedures are (1) cooking techniques and (2) tools and equipment.

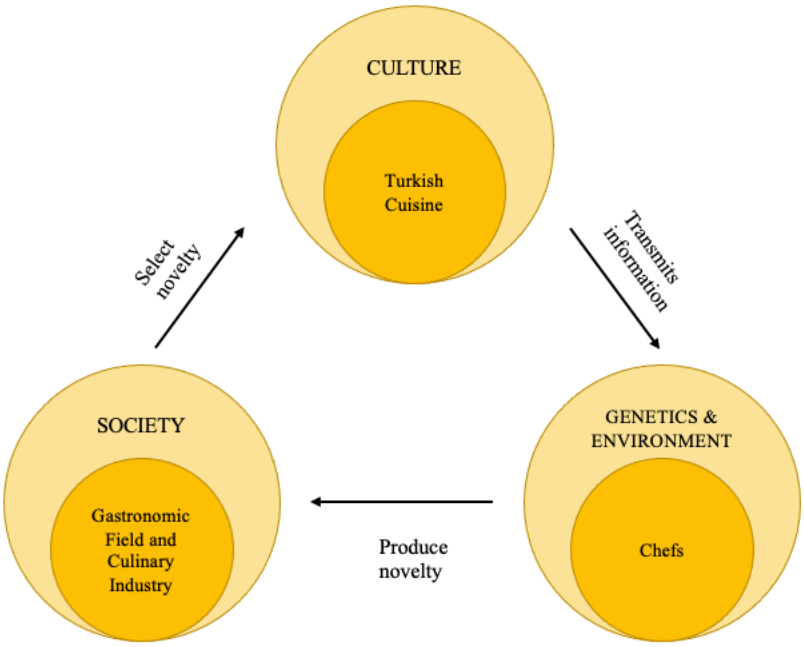


Figure 14. Systems Model of Turkish Cuisine's Creativity

Gatekeepers are experts who select whether innovations in the field will be widely embraced (Csikszentmihalyi, 2014). In this thesis, these individuals may hold positions such as chef, educator, restaurant owner, food writer and journalist within the Turkish cuisine's culinary industry community. One crucial component of the field is that its experts be taken seriously enough to convince others that their ideas belong there.

***Domain of Turkish Cuisine its Symbols and Procedures according to the Systems Model of Creativity***

The history of Turkish cuisine, which encompassed the Balkans, the Middle East, the Mediterranean and Central Asia, as well as the legacy of the Ottoman Empire, contributed a geographically diverse array of ingredients. Today, Turkey, which still maintains its central location, is surrounded on three sides by sea. It has distinct regional geographies, four seasons and an abundance of flora and fauna, thus offering a wide variety of edible ingredients. Accordingly, the effects of Mediterranean ingredients are seen when visiting the west of Turkey due to its geographical location. In contrast, the effects of the Middle East and Central Asia are observed when one goes to the East.

Turks first settled on the steppe between the Ural and Altai Mountains during the Neolithic era (about 3,300 B.C.). They regularly drank koumiss, a beverage prepared from mare's milk (Koşay, 1981, p. 221). Wheat flour, milk, dairy products and horse and sheep meat were common ingredients in the decadent desserts that were a mainstay of the diet. Food was obtained from bovine animals and horses, sheep and goats.

Animal fat was a primary source of nutrition for Turks who raised animals. Yogurt was used instead of milk to create butter; tallow was another typical milk substitute (Ögel, 2000).

Their diet changed when the Turks adopted Islam (Akın and Lambraki, 2004). After they accepted Islam, they progressively stopped drinking and eating pork (Baysal, 1993). After the Battle of Manzikert in 1071, much of Anatolia came under Seljuk control and in 1077, the Anatolian Seljuk State was founded (Akın and Lambraki, 2004). During the Seljuk period, people ate twice a day, once at midday and again at night. Chicken, fish, birds, goats and even horses were all on the menu and few customers asked for vegetables. Because Islam prohibited using some ingredients in Seljuk cooking, the cuisine was simplified (Gürsoy, 2004).

The Ottoman Empire's conservative rule in the nineteenth century had consequences on Turkish cuisine. Due to the empire's vast reach and interaction with many other cultures, Turkish cuisine evolved throughout this time (Tuncel, 2000). During the reign of Sultan Mehmed, the Conqueror, chefs competed to make the kitchen look more impressive during imperial feasts (Akın, Özkoçak and Gültekin, 2015) by creating dishes that palace inhabitants would like. The Ottomans' food culture is divided into two categories: the palace and public kitchens. Közleme (2012) claims that the palace kitchen was of paramount importance because of the quality of the food in terms of taste, presentation, eating customs and diversity.

The Ottoman Empire used a variety of herbs and spices such as cumin, mustard, saffron, coriander, cinnamon, musk, olives, Wallachian salt, gum, vinegar, black pepper, cinnamon, clove and hibiscus in their cooking (Çakmak and Sarıışık, 2019). After discovering the new continent, the Ottoman Empire began using peppermint, basilicum, garlic, parsley, basil and tomato paste as sweeteners; oils included olive oil, tail fat and ghee. Meats, eggs, cream, oysters, shrimps, chickens, cheese, honey, ducks,

sparrows, partridges, quails, roedeer, fallow deer, trotters, dry cottage cheese, geese and cattle tripe were also used. Vegetables such as leeks, cress, lettuce, cabbage, onions, cucumbers, spinach, turnips, chard, celery, radishes and zucchinis were also grown (Güler, 2010; Akın, Özkoçak and Gültekin, 2015). New ingredients such as adzuki beans, green peppers, cauliflower, potatoes, tomatoes, turkeys, cocoa, corn, oranges, tangerines, bananas, pineapples and some varieties of zucchini also made their way into Ottoman cooking between the 15th and 19th centuries (Gürsoy, 2004, p. 137).

Kebabs, stews, fries, meatballs, cutlets made from lamb and mutton, grains, cereals, legumes and broth-based soup are all staples in Ottoman cooking (Sürücüoğlu and Özçelik, 2008). Kadaif, baklawa, saffron, rice dish, zulbiye and halkicini are only a few of the desserts available in Turkish cuisine (Çakmak and Sarıışık, 2019). Lemonade, Turkish coffee, fruit stew, water and sweetened juice are some drinks offered (ibid). Since consuming alcoholic beverages was illegal, the typical meal consisted of sweetened fruit stew or juice (Bilgin, 2008).

Regional variations exist throughout Turkish cuisine, with lamb, dairy products, wheat and legumes taking center stage in Eastern Anatolia. The region's harsh climate is to blame for this.

Southeastern Anatolian food centers around staples like bulgur, icli kofte, hot kebabs and syrupy sweets. Cereals, legumes, herbs, dried fruits, molasses, poppy seeds and sesame comprise the bulk of central Anatolia's diet. Grain, savoy cabbage and anchovies are the three main components of a famous Black Sea cuisine. Less meat and more fish are eaten in the Aegean area, built on a foundation of fruit, vegetables, herbs and olive oil. Vegetable and meat dishes are the foundation of Mediterranean cuisine, along with wrapped appetizers, filled vegetables, meatballs, manti, soups, borek, pasta and sweets like kadayif. Soup, beans, leaf wrap, kebab, pilaf, pickles, salad, hosaf, rice pudding and halvah are all examples of the Marmara region's diverse culinary heritage. These sweets are built on a foundation of several substances, such as wheat or semolina. (Samanci, 2016).

### *2.6.7. Development of Conceptual Model of Culinary Design Thinking*

Throughout the construction of the model, design theories and creativity have been utilized. The systems model of creativity (Csikszentmihalyi, 1988, 1998) was utilized to examine the domain of Turkish cuisine within the field of creativity.

Chefs are judged and awarded based on the quality of their dishes and services. A chef is the creator of a dish. There must be ingredients, which are the inputs and techniques, which are the process, for this product to be created. This statement initiated the first attempt at the model and Figure 15 depicts the adaptation of the dish development process into a generic design model.

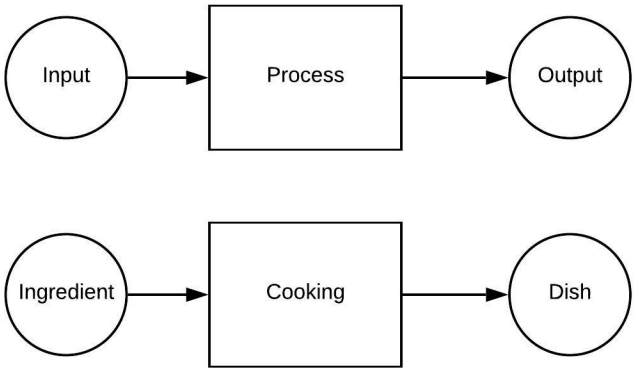


Figure 15. Generic design process model adapted to cooking process

After extensive research on design processes using design theory, the "from chef to diners" model was developed to investigate the creation processes of chefs using design. Person (green circles), Process (blue rectangles), Product (pink diamonds) and Environment (test kitchen, main kitchen, dining room) are depicted in Figure 16.

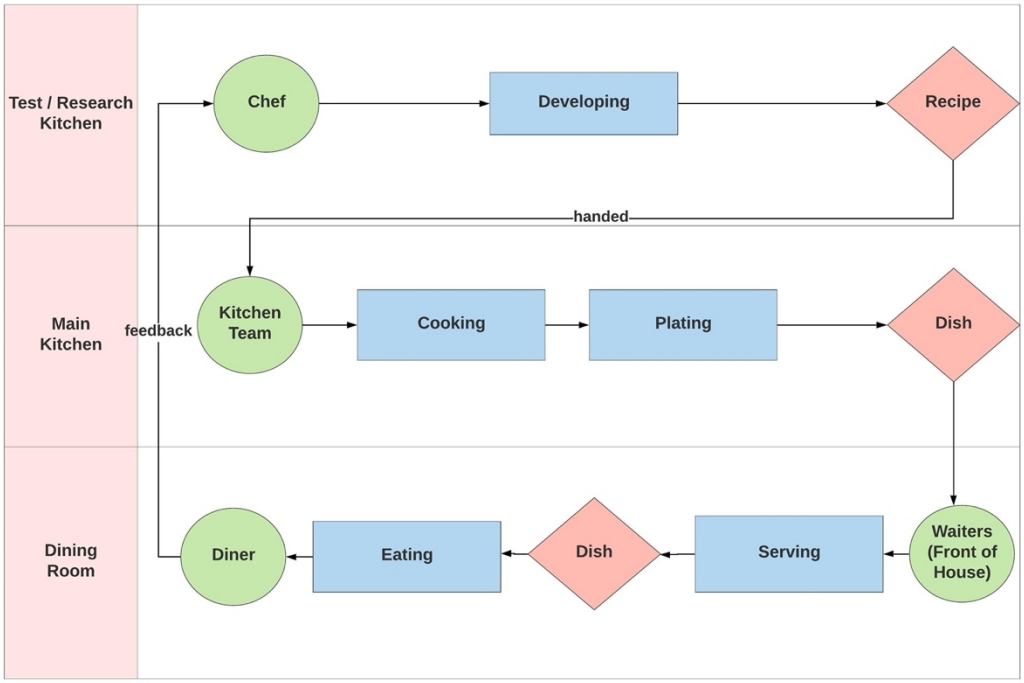


Figure 16. From chef to diner process model

The model represents the final version of the process; some processes or environments may be eliminated, but the logic underlying the process, i.e., "a chef prepares the dish that is served to diners," or "a chef cooks the dish which is eaten by diners" remains constant.

The most significant aspect of the model is the transition from the concrete to the abstract state. Richard Buchanan's "four orders of design" theory frames this notion: the dish prepared in the kitchen becomes an experience in the dining room. According to his theory, the dish in the kitchen corresponds to the objects and artifacts of the second order. Industrial design, the second category of design, is concerned with the creation of tangible, physical products (material things). When a dish is served to a diner, the third order of design occurs and the product transforms into actions or experiences that Buchanan refers to as "interaction design" because it focuses on how humans interact with one another through the mediation of products. Therefore, in the third order, the products are experiences, activities, or services rather than physical objects. From this perspective (Figure 17), a chef should view his or her dish as having two sides: things (product) and actions (experiences).

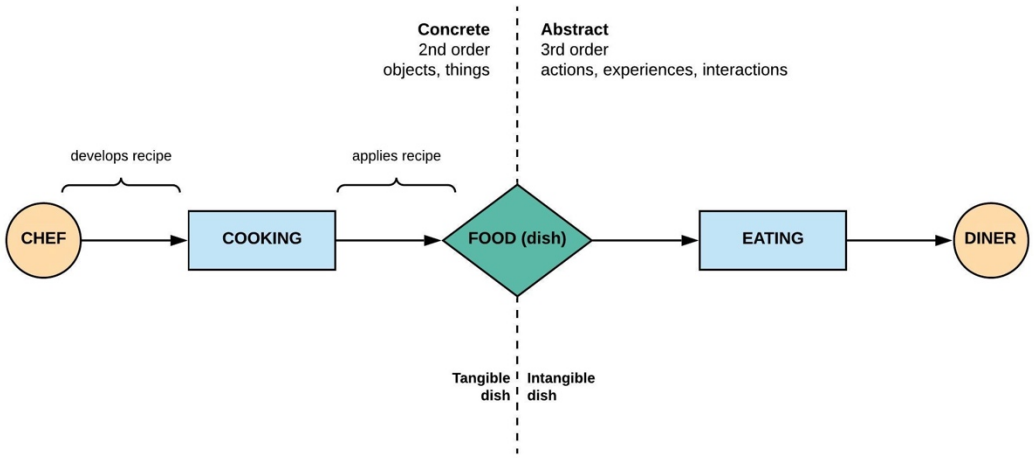


Figure 17. From tangible to intangible dish and experiences

The first product of a chef, as shown in Figure 16 and Figure 17, is the recipe. A recipe contains a detailed description of each ingredient, tools and techniques for preparing a dish. To develop a creative dish, a chef must first compose a recipe. Brown's (2009) innovative design approach was utilized in the conceptual model to explore a dish as a design product.

A dish should be feasible and practical in the kitchen, a viable dish should be relevant to the restaurant's business plan and a desirable dish should maintain its flavor and sensorial dimensions through precise and calculated measurements. Chefs are accountable for every aspect of developing new dishes and menus.

# CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

## *3.1. Research Design and Research Paradigm*

According to Denzin and Lincoln (2011), a paradigm, worldview, or "weltanschaüng" are a set of linked philosophical assumptions and these assumptions are fundamental beliefs and include ontology, epistemology and methodology. Ontology is concerned with "what is the nature of reality," which is the origin of research and commences on to epistemology and methodology (Creswell and Clark, 2007) while epistemology directs the researcher's relationship and the researched (Creswell, 2009). Various philosophical assumptions regarding epistemology and ontology lead to various paradigms and these are closely correlated to the asserted aims and objectives of a piece of research. As a result, research paradigms can be defined by three elements or fundamental questions, which are ontology, epistemology and methodology (Guba and Lincoln 1994; Denzin and Lincoln 2011; Hesse-Biber 2010). Guba and Lincoln (1994) clarified that paradigms could be altered by answering three questions (p.201): - What is the ontological basis for the research? - What is the epistemological basis for the research? - What methodology will be applied to gather data?

Selecting a topic and paradigm is the first step in designing a study (Creswell, 2009). Paradigm is a concept that guides researchers to understand phenomena and which comprise both theories of research and methods of conducting research (ibid). Since the subject of research methods is a developing subject in the academic field, there are various research paradigms proposed by various scholars. According to Milliken (2001) and McNeill and Chapman (2005) positivism/post-positivisim and interpretative/constructivist or phenomenology are other two main research paradigms in the social behavioral science. Additionally, Creswell and Clark (2017) provide four worldviews used in mixed methods research: postpositivist, constructivist, transformative and pragmatist.

**Positivism and Post-positivism.** Positivism is based on rationalistic, empiricist philosophy which traces its origins back to Aristotle, Francis Bacon, John Locke, August Comte and Immanuel Kant" (Mertens 2019). The positivist investigates the facts or causes of social phenomena with limited value for individuals' subjective

states' (Bogdan and Taylor, 1975, p. 2) and aims to test a theory or describe an experience "through observation and measurement in order to predict and control forces that surround us" (O'Leary 2004, p.5). For positivists, there is a single truth that can be measured and examined with total objectivity, with no communication between the researcher and the researched (Lincoln, Lynham and Guba 2011). Positivism assumes that the social reality data are "scientifically measurable" through quantitative measurements and the methods for evaluating research use the conventional natural sciences. Positivism often employs a deductive procedure of examination to test general law (Bryman, 2008), in which the replication and falsification principles play an influential role. Like positivism, post-positivism is often associated with quantitative research and favors deductivism and hypothesis testing for theory verification (Clark, 2008). However, the post-positivistic paradigm advises unobservable reality “has existence and the capability of explaining the functioning of observable phenomena” (Clark, 2008, p. 1245). Besides, post-positivism maintains that any “truth” depends on a guiding theoretical framework and that this framework itself is susceptible to change (Kuhn, 1962; Mackenzie and Knipe, 2006). Scientific methods and hypothetical deduction are still favored, but structured qualitative approaches and questions are more evident than positivism (Guba and Lincoln, 1994; Merriam, 2009). In general, post-positivists consider one reality, but several perceptions of that reality must be combined to obtain a more reliable understanding of it (Healy and Perry, 2000).

**Pragmatism.** Pragmatist researchers concentrate on the “what” and “how” of the research problem (Creswell 2009). “Pragmatists place the research problem and research questions at the centre of the research and use the methods they consider to be the most appropriate in generating the most significant insights into their research” (Wilson 2014, p.11). Thus, the chosen approaches for data collection and analysis do not have any relationship with a specific alternative paradigm. The pragmatic paradigm, therefore, positions “the research problem” as “central” (Tashakkori and Teddlie 2003; Creswell 2009; Wilson 2014)

This thesis adopts a blended research approach, encompassing both post-positivist and pragmatist perspectives, to comprehensively investigate the research area. By incorporating both qualitative and quantitative studies, it seeks to leverage the

strengths of each paradigm. The post-positivist paradigm primarily facilitates qualitative approaches, enabling a deeper understanding of participants' perspectives and experiences. On the other hand, the pragmatist paradigm takes charge of directing the research questions towards the core of the investigation through the implementation of surveys and data-driven analysis. This combined approach aims to provide a more holistic and nuanced exploration of the research topic.

### *3.2. Overview Mixed Methods Design*

This study adopted a mixed methods research design to address the research questions presented in Chapter 1. The basic principle of mixed methods is that combining both qualitative and quantitative approaches lead to a more thorough understanding of research problems than can be achieved by using either approach alone (Creswell and Plano Clark, 2007).

Six primary mixed method research designs have been identified by researchers: (a) sequential explanatory, (b) sequential exploratory, (c) sequential transformative, (d) concurrent triangulation, (e) concurrent nested and (f) concurrent transformative (Creswell, 2009; Tashakkori and Teddlie, 2003). This thesis adopted a sequential exploratory approach which is defined below.

*The sequential exploratory approach* refers to a research design where qualitative data is collected and analyzed in the initial phase of the study, followed by the collection and analysis of quantitative data in a subsequent phase that builds upon the findings of the qualitative phase. This sequential approach allows the qualitative phase to inform and provide insights for the quantitative phase, thus establishing the results based on the initial qualitative exploration. The importance is typically given to the qualitative method in the initial phase and “the data are mixed through being connected between the qualitative data analysis and the quantitative data collection” (Creswell, 2009, p. 211). This approach aims to examine a phenomenon by applying “quantitative data and results to help in the interpretation of qualitative findings” (ibid.).

### *3.2.1. Rationale for Mixed Methods Design*

This thesis applies a mixed method in order to comprehensively examine creative and innovative design approaches in a traditional cuisine. The thesis first aims to determine the external factors that influence Turkish cuisine creativity and determine whether Turkish cuisine experts and professionals have a perception of "culinary creativity" in general. Then, it aims to find out how professional chefs express their processes and products by examining the creative processes in their restaurants within the framework of the design thinking approach. Although the topics of culinary creativity and culinary innovation have been researched in recent years, studies about the relation between culinary and design are few in both the academic field and industry. Hence, this research required a more comprehensive view and more data on the phenomenon than a qualitative or quantitative approach. Therefore, a mixed method research design, which stands out with its benefits of combining two different perspectives (qualitative and quantitative), was chosen. The following are the four main reasons for choosing mixed method design:

1. The purpose of this thesis requires a combination of qualitative and quantitative approaches in order to be able to answer the research questions and hypotheses that arise from those research questions.
2. The research questions require a qualitative approach that enables a comprehensive understanding of Turkish cuisine creativity, the creative processes of chefs and their creative products (dish), as well as their empirical verification (quantitative).
3. In the current literature, few studies examine the external factors affecting culinary creativity, designerly approaches of the chefs in the kitchen and creative culinary products. The combination of qualitative and quantitative methods allows the thesis to understand the phenomenon in detail.
4. There is no study involving creative and innovative approaches to Turkish cuisine. This issue indicates that the thesis requires extensive combination and integration.

Sequential exploratory design begins with the collection and analysis of qualitative data, builds from the qualitative results to a quantitative phase and is used when a topic needs to be explored qualitatively before it can be measured or tested quantitatively

(Clark, Creswell, Green and Shope, 2008). According to Creswell (2009), this methodology is most effective when used to investigate a phenomenon and then build upon the qualitative insights gleaned from that investigation.

Beginning with a qualitative data exploration, the researcher then develops an instrument and tests it uses a different, larger sample in a quantitative test (Creswell and Plano Clark, 2017).

When no existing instrument is available, researchers frequently use an exploratory sequential design (e.g., Clark et al., 2008; Myers and Oetzel, 2003) that begins with qualitative data collection and analysis, followed by a quantitative survey design. Using this method, numerous instruments and tests have been developed (see, for example, Crede and Borego (2013), Harris (2013), Ungar and Liebenberg (2011).

### *3.2.2. Rationale for Exploratory Sequential Design*

An exploratory sequential mixed method was used to design this research (Creswell and Plano Clark, 2017). In the exploratory sequential design, qualitative data are collected and analyzed first. Then, the researcher does the second research using quantitative methods, based on the qualitative stage data, to generalize the results.

The thesis consists of two separate studies and exploratory sequential design was applied in both studies. The first study aimed to understand how culinary creativity is met in Turkish cuisine by examining the thoughts and perceptions of Turkish cuisine academicians and professional chefs towards external factors affecting culinary creativity. Therefore, the exploratory sequential design is useful for Study-1 in the following ways:

1. To obtain the opinions of experts, academicians and professional chefs with qualitative methods, since there is no study on Turkish cuisine and creativity.
2. To create survey tools to obtain more generalizable results on perceptions towards external factors affecting Turkish cuisine creativity, based on the stories and evidence collected in the qualitative stage.

This thesis's primary purpose was to find the design patterns in the creation processes of professional Turkish chefs after understanding the perception of creativity in Turkish cuisine and to create a model by approaching these processes with the concept of design thinking. Therefore, for Study-2, the exploratory sequential design is also useful in the following ways:

1. Whether it is Turkish cuisine or the other cuisines, professional chefs' processes before, during and after the cooking and serving have not been studied with the design discipline. Therefore, in the first stage of the study, in-depth and detailed information is obtained from the qualitative methods.
2. To create a survey to generalize the results of the data obtained in the qualitative stage and make modeling from the result of this survey.

Later, the results obtained from the exploratory sequential design Study-1 and Study-2 were combined and interpreted. Figure 3.1 is a visual diagram for the exploratory sequential design of this study.

## *3.3. Data Collection and Analysis Techniques*

### *3.3.1. Qualitative Phase*

The sequential mixed methods design presented previously incorporates a qualitative exploratory phase which was accomplished by using interviews to generate data to examine the topic. Next, the data were utilized to develop a questionnaire used in the quantitative phase to test the findings into a broader population.

The primary purpose of this qualitative phase was to explore the new dish/menu development processes of the chefs, who are the representatives of the Turkish cuisine in the professional platform, within the framework of design thinking and to discover the attributes of the creative culinary products. In addition, this study aims to determine the macro-environmental factors that affect the chefs' creative processes and thus the products (in this case, dishes) themselves.

#### 3.3.1.1. Sampling

Purposive sampling was used for this phase of the study. According to Merriam and Tisdell (2015), “purposeful sampling is based on the assumption that the investigator wants to discover, understand and gain insight and therefore must select a sample from

which the most can be learned" (p. 96). For the study, the selection criteria were (a) chefs who had been identified as influential chefs by Turkish cuisine's gastronomy industry and (b) experts who had been accepted as significant contributors to the acknowledgment of Turkish cuisine globally. The researcher first considered a recommendation from her second supervisor and prepared a recruitment list. In addition, snowball sampling was employed to inquire about additional recommendations from the participants. However, the suggested chefs or experts were already on the primary recruitment list. In this manner, snowball sampling did not provide any additional participants.

In exploratory design, the participants in the qualitative phase of the data collection are not the same as those in the quantitative phase because the quantitative phase aims to generalize the results to a population that is, a larger sample is used in the second phase. (Creswell and Plano Clark, 2007) Accordingly, participants of the qualitative phase were not taken part in the quantitative phase.

The target population for this study consists of five executive chefs, five executive chefs/restaurant owners, one the World 50 Best Restaurant academy chair, one culinary arts academy management director, one assistant professor, one full-time instructor chef, one journalist and one Turkish cuisine researcher. A total of 16 participants (seven females and nine males) were attended for the first phase of the study. The purposefully selected participants appear in Table 5 for the Study 1 and Table 6 for the Study 2. The participants interviewed reside in Izmir, Istanbul and Lyon. The participants were contacted through phone, informed about the researcher and her research project and requested an interview. The researcher visited 15 of the participants in their workplaces or offices in which she traveled to Istanbul with her second advisor. One of the participants was interviewed via phone.

Table 5. Interview participants of the Study 1

| **Study 1 participants** | |
|---|---|
| **Expert1** | Assistant professor, head of gastronomy and culinary arts department |
| **Expert2** | Instructor chef, had culinary education in Italy |
| **Expert3** | Executive chef/owner, Instructor chef, cookbook author, Meilluer Ouvrier de France |

Table 5 (Continued)

| **Study 1 participants** | |
|---|---|
| **Expert4** | Researcher, gastronom, educator, engineer, had gastronomy education in Italy |
| **Expert5** | Culinary academy managing director |
| **Expert6** | Food editor, cookbook author, One of academy chair at the World's 50 Best Restaurants |
| **Expert7** | Journalist, Coloumnist, Executive editor in food magazine |
| **Expert8** | Executive chef/owner, author of two cookbooks, rewarded as best chef in 2010, had culinary education in USA |

Table 6. Interview participants of the Study 2

| **Study 2 participants** | |
|---|---|
| **Chef1** | Executive chef, instructor chef, owns silver medal from Chaine des Rotisseurs |
| **Chef2** | Executive chef, instructor chef, had culinary education in France, judge at cooking competition show |
| **Chef3** | Executive chef, chef of Oscar awards |
| **Chef4** | Executive chef/owner |
| **Chef5** | Executive chef, instructor chef, worked with Rene Redzepi |
| **Chef6** | Executive chef/owner, Instructor chef, had culinary education in USA |
| **Chef7** | Executive chef/owner, cooking show chef, entered the World's 50 Best restaurant discovery list |
| **Chef8** | Executive chef/owner, had culinary education in France |

#### 3.3.1.2. Data Collection

Creswell (2009) explains three aspects of the qualitative research method a) natural setting, which allows the researcher collects data in the field by face-to-face interaction, b) multiple sources of data and c) inductive data analysis, which enables the researcher to form data patterns. Interviews, documents, observations and audio-

visual materials are the four different types of qualitative data collection methods suggested by Creswell (2009).

Since this study aimed to understand the perspectives and thoughts of participants about Turkish cuisine chefs' new dish/menu development processes and macro-environmental factors that influence those processes and products, the current study did not include any observations and audio-visual materials which did not imply to conform to the purpose of the study. Thus, qualitative data collection consisted of the following procedures: a) reviewing the literature regarding the research objectives, b) conducting semi-structured interviews with chefs and experts in Turkish cuisine.

#### 3.3.1.3. Interviews

The qualitative data were collected from in-depth, semi-structured interviews with open-ended questions. The in-depth interviews were conducted to obtain detailed information about the participants' perspectives and thoughts. In-depth interviews allow for the thorough examination of a specific subject or personal experience (Charmaz, 2006). The semi-structured format of these interviews ensures that participants have sufficient time and a suitable environment to freely express their views, while also allowing researchers to delve into emerging concepts (Nohl, 2009). By using open-ended questions, which encourage participants to articulate their thoughts in their own words, meaningful information can be generated as it reflects their individual perspectives (Tashakkori and Teddlie, 2009).

At this qualitative stage, the in-depth and semi-structured interviews with the participants were not applied only to reveal the approaches of Turkish cuisine professionals to their creative products and their development processes and the environmental impacts that affect these dispositions, but also they had been applied to open up new areas of discussion and further emphasis to explore ways in which a traditional cuisine could be viewed from a different standpoint in a changing and evolving industry. Open-ended questions were used to identify possible determinants of creative and innovative design approaches to traditional cuisine and to help uncover insights into how participants perceived these approaches.

The interview questions for the experts were generated to understand their positions in Turkish cuisine's professional border, to evaluate Turkish cuisine's current condition both in national and international industry by defining its advantages and disadvantages, to reveal the macro-environmental factors that contribute to the development and recognition of Turkish cuisine and to define the areas that need to be focused and improved for the global competitive advantage. The overall structure of the interviews is shown in Table 7 for Study 1. Even though this structure was followed throughout the interviews, additional questions were asked to support the main question according to the course of the conversation and the participant's expertise.

Table 7. Study 1's interview questions for the experts

| **Topics** | **Questions** | |
|---|---|---|
| Area of expertise in the gastronomy industry | 1. | Can you explain your fields of work in the gastronomy industry? |
| | 2. | What are the reasons that lead you to work in this field? |
| | 3. | What are your goals and future plans in this area? |
| Turkish cuisine | 4. | Can you evaluate Turkish Cuisine in terms of ingredients, cooking techniques and tastes? |
| | 5. | What are the pros and cons of Turkish Cuisine in terms of ingredient diversity and cooking techniques when compared to today's pioneer world cuisines? |
| | 6. | Can you explain the current position of the Turkish cuisine industry in the national sense? |
| | 7. | What do you think are the external factors that are effective in the development of Turkish cuisine? Why ? |
| | 8. | Can you explain the comparative position of Turkish cuisine in the international gastronomy industry based on these factors you mentioned? |
| | 9. | Do you think Turkish cuisine has the potential to compete in the international culinary industry? What and who is needed for this? |
| | 10. | How should chefs represent their kitchen? |

Table 7 (Continued)

| Topics | Questions | |
|---|---|---|
| Turkish cuisine | 11. | What are the pros and cons of Turkish Cuisine from your point of view? |
| | 12. | How can we improve the pros? |
| | 13. | How can we eliminate the cons? |

The questions for Study 2 (Table 8) were modified by utilizing design thinking approach so that they would fit better with the current interview questions and also included self-generated questions to correlate the researcher's culinary profession background to the design thinking approach. The items of the interview that conducted with chefs consisted of three themes. The first theme was an analytical phase of the culinary design thinking model, which aimed to gather knowledge about how chefs reach the information and data before developing new dish/menu items. The main idea of the questions of this phase included reviews from diners and restaurant industry experts, how chefs aware of their customer profile, culinary trends and developments in the industry and how they follow them and how they consider product availability before they start to compose new dish/menu. The second theme was the creative phase which aimed to understand how chefs start to compose their works, how they incorporate their colleagues, stakeholders and suppliers into the development processes, how they decide their products during the development processes and how they define their products' criteria. The third theme, the executive phase, included testing, tasting and implementing stages when a new product ready to be presented to the diners.

Table 8. Study 2's interview questions for the chefs

| Themes and topics | Q | |
|---|---|---|
| **Analytical phase** | 1. | Are you familiar with the reviews of your restaurant / hotel? How do you get the data? |
| | 2. | How do you define your customers? |

Table 8 (Continued).

| Themes and topics | Q | |
|---|---|---|
| Analytical phase | 3. | Are you communicating with your customers? If you are in communication, what are you talking about? |
| | 4. | How do you keep track of your customers' food preferences since you started working in your restaurant/hotel? |
| | 5. | Do you have regular customers? What do you share with your regular customers about your dishes? |
| | 6. | Do you follow current developments in the culinary industry? What are you doing to keep abreast of developments? |
| | 7. | Do you eat in domestic or abroad restaurants? How do you choose the restaurants you would like to eat? Does it reflect on your menu? |
| | 8. | Do you follow developments in Turkish cuisine? What are you doing to keep abreast of developments? |
| | 9. | How much space do you give to Turkish cuisine's products and techniques in your menu? |
| | 10. | How do you determine the ingredients to enter the new menu? And how do you reach? |
| Creative phase | 11. | What sets your criteria when creating the new menu? (What are the elements that determine the new menu?) |
| | 12. | Do you take note of the idea? If so, how do you take notes? |
| | 13. | Do you picture your ideas, designs? |
| | 14. | Who do you work with when creating the new menu? Or do you prefer to work alone? |
| | 15. | What are the contributions of your kitchen team to the menu/dish development? |
| | 16. | How do you decide on the variety and number of products in your menu? |
| | 17. | What are the differences between the last version of the menu and the draft? (Can you explain the change, the development?) (What were the decisive factors that made you choose and prefer?) |
| | 18. | You want to add a new starter, main course or dessert plate to your menu. How do you develop and determine the ingredients and techniques you will use for that dish? |

Table 8 (Continued).

| Themes and topics | Q | |
|---|---|---|
| | 19. | What criteria/features should a dish have to confirm that it will be included in the menu? And how do you decide (and how can you be sure of that)? |
| **Executive phase** | 20. | Before you launch your current menu to the customer, how do you decide its appropriateness to the customer? |
| | 21. | With whom are the tastes of the new menu/dish made? Why? |
| | 22. | Does the new menu have a trial period? What do you evaluate in this process? Whose ideas are important? |
| | 23. | How do you evaluate plates that are not preferred by customers after entering the menu? (Do you remove it from the menu? Or do you make adjustments?) |
| | 24. | After a dish entered the menu, have you ever removed any plate, even if your customers liked? Why and what are the reasons? (or possible reasons) |
| | 25. | Do the customers know that the new menu has been launched? |

#### 3.3.1.4. Interview Procedures

Data was collected in 15 face-to-face interviews and one phone call. The researcher started by contacting participants by phone. The time and location of each interview were determined based on the availability of the participants. Each interview lasted approximately 35 minutes to 75 minutes, with a mean duration of 55 minutes. Before each interview started, the participants were informed about the study's purpose and requested to review and confirm a consent form. For confidentially of participants' identities, each participant was assigned a number (e.g., Chef1 and Expert1) and those numbers were used in any writing quotes. The signed informed consent forms and data collected from the participants remained confidential. The interviews were conducted in Turkish. One of the participants was French; for this reason, a simultaneous interpreter accompanied the meeting. The interviews started with paper-based demographic information included date of birth, birthplace, education level, current workplace and professional specification. During the interviews, interview questions

(see Table 7 and 8) were followed and matched to ensure that all the interviewees were given the same information about the research and were asked the questions. However, questions that occurred to the researcher during the interview were also asked. Each interview was audio-recorded and was transcribed and translated by the researcher into English.

In addition, during the interviews, one chef showed his cookbook to express the change in his professional career, one chef showed his food-related art installations. Four chefs shared their current and previous menus to compare the differences between the menu planning processes. Moreover, two experts showed their culinary education syllabuses to explain the courses that contribute to students' technical skills on Turkish cuisine and world cuisines and one expert shared his Turkish cuisine culture findings regarding the ingredients and cooking techniques. Two experts showed their international projects for the recognition of Turkish cuisine. Consequently, along with interview data, these documents also were taken into consideration during the analysis of the qualitative data.

#### 3.3.1.5. Interview Analysis

Qualitative data was analyzed by importing interview transcripts and literature into data analysis software Nvivo 11 for coding and analysis and identifying themes from codes.

The text- based material permits qualitative analysis, identifying key segments of text, assigning codes to label those segments and grouping those codes into themes (Creswell, 2013).

### *3.3.2. Quantitative Phase*

The purpose of this study was to investigate external factors that influence culinary creativity in Turkish cuisine. Studies identified various external factors, namely, physical, social, cultural and educational environment (Horng and Lee, 2009); political, economic, social and technological factors (PEST model) (Peng, Lin and Baum, 2012); or creative climate, work demand, creative self-efficacy and creative role identity as an exogenous factor of the creative culinary process (Leung and Lin,

2018). To measure the culinary professionals' perceptions towards external factors, a five-point Likert scale (from *strongly disagree 1* to *strongly agree 5*) questionnaire was mainly designed into two sections: demographic information (gender, age, range job specification, experience, educational status) and six environmental factors (the culture, education, technology, science and design, politics and economics, tourism and media and globalization). The questionnaire with a total of 32 items including five items for politics and economics and creativity relation (Tröhler 2014); six items for culture and creativity relation (Harzing and Hofstede, 1996; Li, Kwan, Liou and Chiu, 2013), six items for tourism and creativity relation (Hu 2010a; Peppler and Solomou, 2011); five items for education and creativity relation (Harrington 2004; Hegarty and Antun 2008; Shephard 1997) and six items for technology and science and creativity relation (Kim, Im and Slater, 2013; Wilson and Brown, 2013) and five items for media and globalization (Lin and Baum, 2016; Pang, 2017), respectively was identified and modified based on the scaled and validated studies from the literature Table 9.

Table 9. Quantitative Survey Items for Study 1

| Items | *Quantitative Survey Items* |
|---|---|
| **Item1** | The theoretical and practical balance of academic culinary education strengthens culinary creativity. |
| **Item2** | Revealing the creativity of the students should be the priority of the chefs. |
| **Item3** | Gastronomy and culinary arts education enhance creativity. |
| **Item4** | Being strictly adhered to traditions restricts creativity in the kitchen. |
| **Item5** | Courses on world cuisines negatively affect creativity in the kitchen. |
| **Item6** | Industrial developments negatively affect culinary creativity. |
| **Item7** | Creativity is required in the kitchen for success in gastronomy tourism. |
| **Item8** | Government policies (gastrodiplomacy, agriculture and tourism) affect creativity in the kitchen. |
| **Item9** | Support of government strengthens culinary creativity. |
| **Item10** | The creative products are mostly generated by the culturally rich cuisines compared to the cuisines with low cultural diversity. |

Table 9 (Continued).

| Items | *Quantitative Survey Items* |
|---|---|
| **Item11** | The culinary culture in the family influences the creativity in the kitchen. |
| **Item12** | Chefs do not need to comprehend food science to be creative in the kitchen. |
| **Item13** | Government subsidies for agriculture and stock raising strengthen the creativity of the kitchen. |
| **Item14** | Design education reinforces creativity in the kitchen. |
| **Item15** | Technology should be used to be creative in the kitchen in modern day. |
| **Item16** | Monetary wealth is necessary to produce creative solutions in the kitchen. |
| **Item17** | Technology affects creativity in the kitchen. |
| **Item18** | Proficiency in art (painting, sculpture, music, etc.) strengthens creativity in the kitchen. |
| **Item19** | Courses about traditional cuisines enhance creativity in the kitchen. |
| **Item20** | Creativity ensures that chef candidates are successful in the industry. |
| **Item21** | Culture awareness is a powerful tool in producing creative work in the kitchen. |
| **Item22** | Creativity in tourism affects culinary creativity. |
| **Item23** | Multicultural structure enhances culinary creativity. |
| **Item24** | Divine religions affect creativity in the kitchen. |
| **Item25** | The diversity of agriculture and aquaculture makes culinary creativity strong. |
| **Item26** | Offering creative culinary products does not matter to meet customer expectations. |
| **Item27** | With globalization, it is necessary to be creative in the kitchen to be involved in the growing competition in the restaurant world. |
| **Item28** | Press and media affect kitchen creativity. |
| **Item29** | Social media channels affect culinary creativity. |
| **Item30** | Creativity in artisan restaurants is more than creativity in chain restaurants. |
| **Item31** | Protecting intangible cultural heritage suppresses culinary creativity. |
| **Item32** | Combination of local culture with foreign cultures has an impact on culinary creativity. |

A valid questionnaire was developed by first interviewing eight Turkish chefs valued as fine dining chefs in Turkey's gastronomy industry. Seven of them are fine-dining chefs and one is a pastry chef who produces high-quality products. Interview questions were generated and modified according to culinary context under the design thinking approach (Chou, 2018; Sung and Kelley, 2019) and divided into three primary constructs according as shown in Table 10; analytical, creative and executive phases.

Table 10. Quantitative Survey Items for Study 2

| Items | *Quantitative Survey Items* |
|---|---|
| **Item1** | I follow the reviews and comments about my restaurant. |
| **Item2** | After the food service, chefs should go to each table one by one and get the opinions of their diners. |
| **Item3** | I know a customer portfolio who prefers my restaurant. |
| **Item4** | During the service, a report about the status of the dining area should be obtained from the service staff and the reactions of the customers should be observed. |
| **Item5** | In order for a chef to offer better products, he needs to understand his customers' wishes and expectations very well. |
| **Item6** | There is no need to communicate with customers to better understand them. |
| **Item7** | Non-eaten products should be followed up in the plates collected after service. |
| **Item8** | I regularly follow the current developments in the culinary world. |
| **Item9** | Social media channels and web pages are an important tool to follow the developments in the culinary world. |
| **Item10** | I dine to be inspired by domestic restaurants. |
| **Item11** | I eat in the restaurants in Turkey to observe the culinary industry. |
| **Item12** | I dine to get ideas and inspiration from restaurants abroad. |
| **Item13** | I eat at restaurants abroad to understand the restaurant industry of foreign countries. |
| **Item14** | Traveling is not so important for a chef. |
| **Item15** | There are Turkish chefs whose work I follow. |
| **Item16** | There are foreign chefs whose work I follow. |

Table 10 (Continued).

| Items | *Quantitative Survey Items* |
|---|---|
| **Item17** | I am inspired by different fields. (Science, visual arts, music, literature, philosophy, history, etc.) |
| **Item18** | Nature is an important source of knowledge and inspiration. |
| **Item19** | A chef should follow seasonal changes. |
| **Item20** | Feedback from customers should be taken into account when planning the new menu. |
| **Item21** | When the work on creating a new menu begins, all chefs should come together and share ideas. |
| **Item22** | I have a notebook where I write down the ideas that come to my mind about food. (or take notes on my mobile phone, tablet, computer.) |
| **Item23** | I draw draft pictures (sketches) of the dishes I plan for the menu. |
| **Item24** | I try different cooking techniques. |
| **Item25** | Combining different ingredients while working on a plate can produce creative results. |
| **Item26** | We can achieve the results we want with the trial-and-error method in the kitchen. |
| **Item27** | When planning a new menu, interpreting the ingredients and techniques of a traditional kitchen in different ways can inspire new ideas. |
| **Item28** | Brainstorming with the team while creating a new menu provides more ideas and options. |
| **Item29** | Chefs do not need to value each other's ideas. |
| **Item30** | Current developments and trends in the culinary world should be taken into account when planning the menu. |
| **Item31** | Seasonality is an important determinant in new menu or plate trials. |
| **Item32** | Working with people from different disciplines (scientist, anthropologist, artist, sociologist, folklorist, etc.) provides new ideas during the menu creation phase. |
| **Item33** | Before the new menu prepared is put into service, it should be tasted with the service staff and their ideas should be taken. |
| **Item34** | The trial of the new menu should be done with regular customers or who you trust. |
| **Item35** | In the tasting stage of the new menu, changes should be made according to the feedback. |

Table 10 (Continued).

| Items | *Quantitative Survey Items* |
|---|---|
| **Item36** | The waiting time should not take much time after ordering a meal in the new menu. |
| **Item37** | If preparing a dish takes a long time during service, that dish should either be reorganized or removed from the menu. |
| **Item38** | A well-planned menu does not need to be sustainable. |

Grounded theory was used to clarify their working processes. Transcripts of interviews were produced. After repetitive reading, they were coded and organized under themes. The culinary design thinking model's core elements were specified, which were empathize, eating out, idea generation, prototyping, menu development, testing/tasting and implementation (cooking and serving). A total of 38 survey items were generated and reviewed by three scholars who are experts on gastronomy and culinary arts and design discipline.

The interviews conducted in Study 1 and Study 2 explored the way chefs and experts described a dish, leading to the development of survey items for Study 3. The survey in Study 3 was administered in conjunction with Study 2, but during the analysis stage, the items were separated and categorized. The items from Study 3 are presented in Table 11.

Table 11. Quantitative Survey Items for Study 3

| Items | Quantitative Survey Items for the Product |
|---|---|
| **Item 1** | Meets customer expectations |
| **Item 2** | Tasteful |
| **Item 3** | Surprising |
| **Item 4** | Filling |
| **Item 5** | Authentic |
| **Item 6** | Unique |
| **Item 7** | Evokes emotions |
| **Item 8** | Tells a story / has background |

Table 11 (Continued).

| Items | Quantitative Survey Items for the Product |
|---|---|
| **Item 9** | Well-crafted |
| **Item 10** | Understandable |
| **Item 11** | Stimulates five senses |
| **Item 12** | Healthy |
| **Item 13** | Pioneer |

3.3.2.1. Sampling and Data Collection

To collect the data, a focus group was defined as chefs (hotel, restaurant), academicians (instructor chefs and lecturers) and the questionnaire was sent online to the chefs of Turkish cuisine (168 chefs) and academicians (74 academicians) involved in gastronomy and culinary arts education in Turkey. Data were collected from 145 participants from two professions, that is, 100 chefs (59.52% respondent rate) and 45 (58.11% respondent rate) academicians. This study employed combination of purposive and snowball sampling. Lecturers and instructor chefs who work at gastonomy and culinary arts department of the universities were recruited via purposive sampling. Restaurant and hotel chefs were identified through snowball sampling. All the participants received an online link to the questionnaire and the purpose of the research through e-mails obtained through universities contact information, social or professional networks and the confidentiality of participants' answers was assured. The data was collected from July 18 to October 23 in 2018.

After evaluating qualitative comments regarding the design thinking approach, a 38-item survey was sent online to Turkish chefs via SurveyMonkey. A purposive sampling method was used to reach chefs who work at international luxury hotel chains, leading catering firms and upscale restaurants.

Respondents were asked to respond to a 5-point Likert scale ranging from 1 ('strongly disagree') to 5 ('strongly agree') and demographic data such as gender, age, educational background, professional experience and job classification. The analysis was conducted over the period of February to April 2020. The survey was sent to 280 chefs; 156 complete surveys were returned. By the survey closing date, 55,7% of those

chefs responded to the survey. The gender ratio of the participants was 79.5% men to 20.5% women. The demographic characteristics of the sample are given in Table 17.

#### 3.3.2.2. Data Analysis

For the analysis of the quantitative data from the survey questionnaire, SPSS 23.0 was used. Descriptive statistics were calculated for all variables. Exploratory factor analysis (EFA) was used to identify factors that best explained the model's dimensions (the macro-environmental factors). Prior to factor analysis, Kaiser-Meyer-Olkin's (KMO) measure of sampling adequacy and Bartlett's test of sphericity were conducted to confirm if the distribution of values was adequate for conducting factor analysis.

Differences between restaurant, hotel and instructor chefs and academicians in external factors perceptions were analyzed with non-parametric Kruskal-Wallis H-test with adjusted p-values and Mann-Whitney U-test as the variables were not normally distributed. Significance level of 0.05 was applied in all statistical tests. The respondent related (gender, age, education, experience) variables were analyzed by Kruskal-Wallis H-test or Spearman’s correlation coefficients with Bonferroni correction in case of pairwise comparisons or Mann-Whitney U-test.

In order to evaluate the measurement model, outer loadings, composite reliability (CR), average variance extracted (AVE), or convergent validity and discriminant validity were assessed. First, the measurement model was analyzed for internal consistency and convergent validity. Composite reliability was calculated to observe, assuming that each indicator could evaluate/determine the latent construct. The CR indices of each factor were greater than the recommended value of 0.7 thresholds (Bagozzi, 1980; Hair et al., 2013). Furthermore, the convergent validity of the constructs was measured by examining the factor loadings and the AVE.

This study used SmartPLS 3.0 software to test the structural model and hypotheses. To assess the structural model, predictive capabilities and the relationships in the model were executed via goodness-of-fit, coefficient of determination (R2), path coefficients and predictive relevance (Q2) (Hair et al., 2017) and they were reported using a bootstrapping procedure with 5,000 iterations suggested by Cheung and Lau (2007). The multicollinearity among the constructs was assessed by the variance inflation factor (VIF). As all the values were below the VIF threshold value of 5, which

was recommended by Hair et al. (2017) and Ringle, Wende and Becker (2015), showing multicollinearity is not an issue in the structural model. Although the explanatory power of the model is evaluated through R2 since PLS does not accomplish goodness of fit indices, Tenenhaus, Vinzi, Chatelin and Lauro (2005) introduce goodness-of-fit (GoF) index, a diagnostic tool, which is calculated by the geometric mean of the AVE and the average R2 of the endogenous constructs. For assessing the results of the GoF, the reported cutoff values are GoFsmall 0.1, GoFmedium 0.25 and GoFlarge 0.36 (Hoffmann and Birnbrich, 2012). For the model in this study, a GoF value of 0.540 was calculated, which indicated a very good model fit. According to Henseler et al. (2014), GoF is not a validity tool; thus, Henseler, Hubonai and Ray (2016) suggested employing the standardized root mean residual (SRMR) to validate approximate model fit. Concerning model validation, the analysis reveals an SRMR value of 0.70, verifying the overall fit of the path model.

# CHAPTER 4: RESULTS AND DISCUSSION

This thesis had three research questions. These were:

- RQ1. What are the macro-environmental factors that influence Turkish cuisine's culinary creativity?
- RQ2. What are the concerns and steps of chefs during the development of a new dish or menu in the framework of design thinking?
- RQ3. What are the creative and design-related attributes of culinary products that contribute to the promotion and recognition of Turkish cuisine?

Each research question was analyzed separately and independently. The analyses for each research question were labeled as Study 1, Study 2 and Study 3 (refer to Table 12). The analysis of Research Question 1 identified external factors that impact creativity in Turkish cuisine. The analysis of Research Question 2 revealed the processes followed by chefs in utilizing the design thinking approach when creating new dishes or menus. Finally, the analysis of Research Question 3 determined how chefs and experts define Turkish cuisine products by examining them through the lens of design and creativity disciplines.

Table 12. Research questions and related analyses

| **Research Questions** | | **Analyses** | |
|---|---|---|---|
| RQ 1 | What are the macro-environmental factors that influence Turkish cuisine's culinary creativity? | Study 1 | Macro environmental factors that influence Turkish cuisine's creativity |
| RQ 2 | What are the concerns and steps of chefs during the development of a new dish or menu in the framework of design thinking? | Study 2 | Culinary design thinking modelling |
| RQ 3 | What are the creative and design-related attributes of culinary products that contribute to the promotion and recognition of Turkish cuisine? | Study 3 | Creative culinary product |

In this chapter, the analysis results of RQ1, RQ2 and RQ3 will be presented and discussed, respectively.

## *4.1. Study 1 – Macro-Environmental Factors that Influence Culinary Creativity of Turkish Cuisine*

The research aimed to identify and verify the macro-environmental factors that influence the culinary creativity of Turkish cuisine according to the RQ1 of this thesis. In order to achieve this aim, first of all, eight experts who have knowledge of Turkish cuisine were interviewed. Afterward, Turkish chefs' perceptions of external factors affecting Turkish cuisine creativity were examined with a 5-point Likert scale created by combining interview results and creativity literature.

### *4.1.1. Interview Results with Experts*

*Q4 – Can you evaluate Turkish Cuisine in terms of ingredients, cooking techniques and tastes?*

All eight experts who participated in the interview agreed on how rich Turkish cuisine is in terms of ingredients, cooking and taste. In addition to its resources, its geographical location and multiculturalism were among the subjects emphasized. Moreover, it was one of the thoughts that experts agreed that all of these features were an essential source of inspiration. Although the abundance of Turkish food culture is an internationally known subject, some answers to this question have shown that it is possible to approach the frequently used discourse differently. For example, Expert3, who frequently visits Turkey, stated that Turkish cuisine is rich in pastry and that he experiences Turkish cuisine better in artisan restaurants;

> *"I knew that Turkish cuisine is a vibrant cuisine in terms of ingredients. I was able to observe the cooking techniques they used as I had the opportunity to come here and taste them. Nevertheless, I was able to see this in artisan restaurants and it caught my attention. I manage mostly hot and cold stations in my restaurant in France and these are my specialties. However, I am much more interested in the desserts and pastries of Turkish cuisine and the techniques of preparing them. The dishes are delicious. For*

*example, we use butter a lot in French cuisine and we can feel the taste and smell of butter in our dishes. Butter is also very dominant in Turkish dishes, but we do not use as much tomato paste and spices as you do."*

Expert4, on the other hand, mentioned the diversity of terminology as well as the diversity of ingredients:

*"I have traveled all over Turkey village by village, region by region. Every place I go has always surprised me. The variety of our ingredients is huge. But at the same time, the same ingredient used in two or three different regions has a different name used in each region. This also applies to dishes. For example, Tirit. Is Tirit a dish? Or cooking technique? Tirit is different when the Aegean region is mentioned, different when the Black Sea region is mentioned. In general, the main ingredient of this dish is red meat, but elsewhere the main ingredient is also dry beans."*

Expert6 said that Turkish cuisine is very traditional besides richness and explained the nuance between traditionalism and modernity as follows;

*"Due to my profession, I have eaten in restaurants that we call the best restaurants in the world. There are many differences between eating at a regular restaurant in Italy and eating at a Michelin-starred restaurant. Like its ambiance, presentations, dining time, services. However, you can catch the same taste in homemade pasta in a grandmother's restaurant and pasta offered in a Michelin-starred restaurant. Starred restaurants put different elements next to this flavor and they may surprise you. Unfortunately, I cannot experience this in Turkey. We are a very rich cuisine, but sticking to our traditions too much cannot move us forward."*

Expert9 also touched on traditionalism and modernity like Expert6;

*"We are very rich in materials and techniques and thanks to this, our aroma and flavor profile is also extensive. I like to play with what Turkish cuisine offers in my own restaurant. We are a very traditional cuisine and for me, modern Turkish cuisine should be interpreted on the plate without breaking that tradition. That is why we have to add innovations to our techniques. "*

Consequently, participants' responses to this question highlighted that Turkish cuisine is viewed as a significant source of inspiration and recognized for its richness. Rather than strict adherence to traditions, there is an emphasis on drawing inspiration from them. Furthermore, Expert5 mentioned that although Turkish cuisine boasts a wide range of ingredients, there are challenges in accessing and procuring these materials.

*Q5 – What are the pros and cons of Turkish cuisine regarding ingredient diversity and cooking techniques compared to today's pioneer world cuisines?*

While the diversity of Turkish cuisine is considered an advantage, not being able to use these opportunities sufficiently has emerged as a disadvantage. Expert3 answered this question in terms of professional standardization of cooking techniques;

*"I can compare it to the cuisine of my own country (French cuisine). There is no standardization in Turkey. A cooking technique is not just a sequence of actions. What equipment is used during those processes and why it is used should be explained. In addition, cooking techniques need to be explained scientifically. I learned that there are many culinary schools in Turkey. I don't know if these schools are doing academic studies on ingredients and techniques collectively in order to put their own country's cuisine on a foundation. Every process done in the kitchen has a reason and purpose. Instructor chefs should be able to explain these to students in detail. Students should be able to explain to me why only egg yolk is used when preparing mayonnaise. Will you use vinegar or lemon? When choosing these, students should be able to state their reasons why particular oil was chosen. Why do we fail to prepare mayonnaise when we add the oil in one go and put it in the kitchen*

*aid to whisk. Students should know this. If cause and effect relationships are known that kitchen can develop."*

Expert4 mentioned that despite the richness and diversity of Turkish cuisine, what is known is very limited and he attributed this to the fact that the government did not support the producers and therefore could not protect their products;

*"Turkish cuisine is a very hidden cuisine. Its international recognition consists of very limited food. My purpose in visiting Turkey was to reach the products and their producers by myself and bring their products to our restaurant. Unfortunately, the government does not support the artisan producers who produce these particular products. On the contrary, they prevent it with taxes. I studied at my second university in Italy at the University of Gastronomic Science. There I saw how the Italian government was protecting their kitchens and, therefore, their producers."*

Expert5 stated that the government is working on gastronomic tourism, but before that, it is necessary to strengthen agriculture in order to ensure sustainability;

*"Our advantage is our wealth. Our disadvantage is that we are losing our wealth. We have no sustainability. Because we do not see government support. If the politicians want to revive gastronomic tourism, they must first support agriculture. "*

Expert6 also put the responsibility on the Turkish government;

*"We are fortunate, thanks to our ingredient means, when compared to other countries. We have much material. However, promoting Turkish cuisine is an economic situation. The government needs to support it. The supports made for the restaurants to survive intact are insufficient. The rules are fierce. "*

Expert7 emphasized that innovations should come to gastronomy tourism;

*"While having a rich cuisine is our advantage, not being able to use that richness is our disadvantage. We need to dig deep into the reasons for our disadvantages. Nevertheless, gastronomy tourism, which will highlight the cuisine in Turkey, has become monotonous and is handled based on hotels. Innovations must also come to gastronomic tourism because most chefs working in those hotels have no training, although they are experienced. They gain their experience from daily routine work. People now travel to Norway just for the gastronomic experience and I am not even talking about France or Italy."*

Expert8 mentioned financial support and challenges;

*"Our advantages are clear. Compared to other countries, for example, when a very successful chef wants to open a restaurant in Turkey, she/he needs to find a sponsor so that she/he can support her/him financially. This is very common abroad. People invest in restaurants, even governments. However, in Turkey, the chefs are alone. Chefs should be supported financially so that they can only focus on their work. Unfortunately, the current phrase of chefs in Turkey is "how do I close this debt, how do I pay there." Whereas chefs should focus on their restaurants and customer satisfaction."*

Expert9 explained the government's lack of support over the problems of illegal hunting;

*"I would like to talk about our disadvantages as a chef here, not our advantages. Today, in countries with restaurants that we call good or best or starred, some policies can both preserve and strengthen the diversity of their cuisines. On the other hand, we are losing our endemic fish population through uncontrolled and illegal fishing in our seas. Fishermen are destroying crustaceans at the bottom of the sea in case they catch a lot of fish."*

In this question, it is the richness and diversity of the subject that all participants agree on the advantages of Turkish cuisine. The cons, on the other hand, are mainly from the government. They stated that current state policies and economic weakness negatively affect Turkish cuisine.

*Q6 – Can you explain the current position of the Turkish cuisine industry in the national sense?*

In this question, different answers were obtained according to the expertise of the experts. However, the origins of the answers are again based on the government and the economy. Expert3 said that in comparison with France, the country allocated significant funds for its cuisine;

> *"I can only explain this within the framework of my short trips to Turkey. I was taken to several restaurants on each visit, but most of them were the same for me, except for the artisan restaurants. I attended festivals. Public interest is the same as in France. However, in France, huge budgets are allocated for these works. I saw that there was a funds problem here."*

Viewing the explanation of Clarke's (1975) production of cuisine (see chapter), Expert4's answer delivers one think how difficult it was for Turkish cuisine to emerge from Turkish food culture. None of the actors of the sectors that contribute to the formation of cuisine can encourage each other.

> *"I can say that Turkish cuisine is crying. Producers complain that they cannot get support to produce their products. Chefs, on the other hand, complain that they cannot reach the producer and that the raw substance is too expensive. Customers also complain that the food prices are too high. Everyone is crying because of the expensiveness. That is why producers stop producing, chefs buy cheap ingredients and customers prefer fast food. Today, the Turkish kitchen industry has begun to monopolize."*

Expert5, on the other hand, addressed the issue of education;

*"I see that Turkish cuisine in great distress. My field is education oriented. Many scholarly institutions provide culinary education. We are lucky. We have made an influential investment to provide a comprehensive education to our students. But some institutions do not even have kitchens. We continue to purchase the latest equipment in terms of industrial kitchens. This industry is developing. We aim to train our students internationally and try to incorporate universally used equipment so that our candidate students can graduate from our school ready for the sector. The Turkish kitchen industry lags far behind when compared to other countries in terms of technology. Unfortunately, it is very costly to bring technology from our country's borders."*

Expert6 talked about how people's eating patterns have changed;

*"Today's conditions from the past have shaped the eating patterns of people in our country. Moreover, I cannot see people talking only about a meal while eating a dish with their friends just to enjoy their restaurant experience. Alternatively, there are no customers who appreciate the efforts of the chefs. There is a group of communities that promote good food. However, they are very few in number. On the other hand, in standardized, ordinary restaurants, a very crowded segment fills the weekend to get service outside and not work at home. I do not think any of them go out to have a good meal. And unfortunately, the restaurant industry in Turkey has become ordinary and restaurants without creativity dominate. Moreover, they are also the winners because people prefer them."*

Expert7 explained the changing eating patterns like Expert6 on social media;

*"I have been doing journalism for years and we have precious food writers. Once upon a time, a group of writers took action to change the perception of Turkish cuisine. Already thanks to them, culinary arts education has become active in our country. The deceased Tuğrul Şavkay initiated this. Valuable research has been done and*

*resources have been added to our gastronomy. I know that there are still attempts, but rather than articles or books, food photos shared on social media, presented with a colorful and beautiful composition, pulled people's attention. On social media, instead of seeing the dishes with traditions and tastes that people eat in artisan restaurants, I see gestures and poses that are shared for entertainment."*

Expert8 complained that chefs' efforts were not appreciated;

*"There is a logic in our sector that the more food you sell, the more you earn, but Turkish cuisine cannot be advanced this way. Quality is as important as quantity. Nevertheless, circumstances do not allow it. Although you force yourself to produce different products, very few customers see and appreciate the chef's effort. Unfortunately, the expectations of the customers are satiated and, if possible, cheaply."*

Expert9 talked about how chain restaurants dominate the Turkish restaurant industry;

*"There are a few well-known chain restaurants and people get satisfaction when they eat there. Ok, their location is nice, their decorations are nice, their services are good. But how beautiful the food on their plate is, is questionable. What can be expected from an organization that launches itself as the top restaurant of Turkish cuisine and sells fajitas? Is it Turkish cuisine when fajitas are served in traditional earthenwares?"*

It is understood from the answers given to this question that the Turkish restaurant industry, mainly chain restaurants, causes the loss of food identity in the national sense. It is observed that people's eating patterns change with social media. Participants attached this because people prefer to be liked and fascinated rather than eating good food. In addition, the uniformity of restaurants standardizes people's eating patterns.

*Q7 – What do you think are the external factors that are effective in the development of Turkish cuisine? Why?*

In this question, experts primarily concentrated on education, politics, economy and culture. Expert3 argued that education is the most important and that culture can be protected by education;

> *"Education first and foremost. I learned that there are already studies in the field of education in your country. These need to be strengthened. You can protect your culture through education. However, the support of the government is always necessary and there should only be regulations that will support the development of your cuisine."*

Expert4 discussed the importance of preserving culture and that culture is a source of inspiration;

> *"Due to my profession, I met many Turkish citizens with different ethnic origins and religious beliefs. All the people who have been on this land for centuries. They are the representatives that Turkish cuisine is not just about impressions that the world perceives. They are also the people who inspire our restaurant. If we want to improve our cuisine, I think we need to preserve the cultures that constitute it."*

Expert5 said that science and technology should be integrated into culinary arts education and stated that they expect support from the tourism industry for education;

> *"Education. And a comprehensive education. Education programs given abroad should be evaluated and plans should be made accordingly. We do not call it "culinary arts" education for nothing. Art should be included in education. But we must also combine it with science and technology. We need support to strengthen education. First of all, the support of the government. Educational institutions are experiencing state-based difficulties and resources*

*are meager. In addition, hundreds of students graduate every year. They have to complete an internship before they graduate. I think the tourism industry should open its doors to students. After all, we train chef candidates for them."*

Expert6 suggested that the number of written sources on Turkish cuisine should be increased;

*"Every channel that will increase our awareness will contribute to our development. The government should not block the paths. Gastronomy tourism should be strengthened and education should be supported. There is a solid communication network between the chefs abroad. Turkish chefs should also be included in this. Foreign references describing Turkish cuisine should be increased. Valuable works should be translated into English. Internationally renowned chefs, my friends, always ask me for a book on Turkish cuisine."*

Expert7 said that thanks to the training, the research side of the chefs could gain qualifications;

*"To keep up with the current and trend. We need chefs who understand the importance of research. Through education, chefs can develop these skills better. The government must allocate significant funds to promote the cuisine. If these are provided, the rest is easy. Think about it; we have an ancient culture, ingredient diversity and flavor richness. The important thing is the chefs who can combine innovation by transforming them into opportunities."*

Expert8 informed about the conflict between government and culture;

*"The government should not restrict the functioning of restaurants. On the contrary, it should be facilitated. In the history of beer and wine, the lands of our country take place and we are still discussing alcohol. This country has been and still is home to people of many*

*religions. Moreover, these origins also have a huge impact on our food culture. You cannot destroy a culture."*

Expert9 suggested the necessity of education and argued that tourism should be directed.

*"We need people to promote our cuisine. Education is necessary. The tourism sector should be managed in a way that supports candidate chefs."*

*Q8 – Can you explain the comparative position of Turkish cuisine in the international gastronomy industry based on these factors you mentioned?*

Referring to the education and policy issues in the previous question, Expert3 stated that Turkish cuisine education has an extensive area and that the chef candidates should be disciplined during the training. He explained state aids in France;

*"You can make your education much more diverse with the food culture you have. A separate undergraduate program can be opened only on Turkish cuisine desserts, thanks to your food culture wealth. Only culinary education is a discipline-requiring process. I have seen problems with the discipline of students in educational institutions. Apart from this, the state in France gives importance to the food habits of its people and makes the necessary arrangements for its protection. Also, producers are always supported."*

Expert4 expressed the culture and government conflict that Expert8 mentioned in the previous question and said that governments make people suffer their tolerance qualifications in multicultural countries.

*"It is obvious that we have problems with ethnic origins. However, this was not the case throughout history. People were tolerant of each other. The reason for today is wrong to government policies. They made brothers enemies. But when politics and ethnicity come into play, I always see a disagreement. Like Basques and Catalans. I think the governments should not intervene in cultural affairs too*

*much. Whatever they do politically, they should not interfere with the meal."*

Expert5 emphasized that the number of educational institutions is too many, but they are insufficient in terms of quality.

*"Due to a large number of our educational institutions, we are capable of competing. We have more culinary education institutions than many countries in Europe. But I do not think that the quality of our training is inadequate, I see it and I have seen it many times. Before opening the academy in Istanbul, I visited many schools abroad, which is the reason why we have the best educational kitchen in Turkey today is that our references at the establishment stage were solid."*

Expert6 discussed the disconnect and competition between chefs and considered that foreign chefs write books to formalize their work.

*"It provides support to restaurants in many countries abroad. Gastronomic tours are organized. Even though the chefs are competitors of each other, they are also friends. Nevertheless, I do not see this at all in Turkey. No chef appreciates the other chef's work. I always see disconnection instead of unity. In addition, foreign chefs write books. In fact, thanks to this, they formalize their prescriptions and their own styles and philosophies. If Turkish chefs did the same, maybe the polarization between them would be disappeared."*

Expert7 explained how Nordic cuisine emerged with the government's support,

*"I know that countries allocate large funds for the promotion of their cuisines abroad. How could Nordic cuisine exist without government support?"*

Referring to the opposition of culture and government in the previous question, Expert8 said that only the country needs tolerance. "We are now in the era of tolerance."

Expert9 argued that academic studies in education should be strengthened;

> *"I have participated in many food events abroad. I represented Turkish cuisine there. We can do the same in our country. We can invite foreign chefs here. Educational institutions can do this. An academic approach always draws foreign chefs. Alternatively, municipalities can carry out these activities in cooperation with universities. The MAD Symposium is the most important example of this. Chefs from all over the world are aspiring to attend that symposium."*

*Q9 – Do you think Turkish cuisine has the potential to compete in the international culinary industry? What and who is needed for this?*

All participants said that Turkish cuisine has great potential and that people from all sectors that form a cuisine are needed.

Expert3 “Of course. Good restaurants, good chefs and good customers are needed.”

Expert4;

> *“We need freedom, no restrictions. There is a need for a producer so that chefs can reach quality products. The producer needs his land so that he can produce his products. Because of GMO seeds, many producers lost their endemic seeds and later lost the fertility of their lands. Many producers I know sold their lands to companies and left their villages. Or people who will continue after them do not prefer village life.”*

Expert5 “There is a need for culinary academics and instructor chefs. We need chef candidates whose enthusiasm will not fade.”

Expert6 “There is a need for producers to provide quality food to chefs and customers to enjoy their meals. There is a need for writers who are experts in Turkish food culture to record Turkish cuisine.“

Expert7 “Everyone who can contribute to Turkish cuisine is needed. This may be a politician or a company owner. However, there should be people who will support the interests of the cuisine, not their businesses.”

Expert8 said, “First of all, there is a need for well-trained chefs who have passion and a purpose. There is a need for producers who produce products that have not lost their natural characteristics. Fair people are needed. There is a need for domestic and foreign customers.”

Expert9 “There is a need for chefs with art, science, technology and design knowledge as well as practical skills.”

*Q10 – How should chefs represent their kitchen?*

In this question, the participants primarily informed about the personal characters of the chefs and the products they created in their kitchens.

Expert3 discussed stability, philosophy and taste;

> *"They have to be stable in the first place. They should have their philosophy and should not deviate from it. His culinary skills should be effective and his meals should be delicious. Moreover, they should not just stay in the kitchen. They should show themselves to their customers. It was not like this before. Chefs would not come out of their kitchens."*

Expert4 advocated modernization without splitting with tradition and said that they should prepare good dishes.

> *"They have to represent it with the good dish they prepare and cook. They should show the richness of Turkish cuisine with their plates. They should try to modernize without breaking with family traditions. They should try to be creative."*

Expert5 "They should represent Turkish cuisine with the diversity and differentiation they bring to their kitchens."

Expert6 "They should participate in international competitions. They should enter international reward systems or guides. They should try to do so."

Expert7 "They should be reported to the international media with their success. Not like Nusret, of course. They should establish a communication network with foreign chefs. They should be able to show that Turkish cuisine is different from what is known."

Expert8 "They should represent it with unusually different dishes, but without breaking with their essence."

Expert9 explained in detail that they need to cook good and tasty dishes.

> *"He should represent by making good and tasty food. However, this situation is not as easy as the shortness of this sentence. They should use different ingredients, sometimes even combine two or three dishes in a single dish, pushing the limits of their cooking techniques. But the result should never be absurd. Therefore, every stage should be within the framework of logic."*

*Q11 – What are the pros and cons of Turkish Cuisine from your point of view? How can we improve the pros? (Q12) How can we eliminate the cons? (Q13)*

In general, the answers given to this question were about the richness and diversity of Turkish cuisine, which has been repeated since the beginning of the interviews and the obstacles experienced due to government policies.

Expert3

> *"You are very rich in ingredients and technique. I see that you have difficulties with government policies and economics…. You should develop and protect your diversity by researching. It will help if you get the heart of the sources of your wealth. And then you have to commercialize them…. Chefs may choose a spokesperson chef to*

*represent them. They can share their difficulties with government officials. "*

Expert4;

*"Our culture, ingredients, techniques, flavors are rich and diverse. However, I do not know how long we can continue this because everyone who relates to the restaurant industry has great economic problems. We are also losing our ecosystem due to wrong policies…. We should increase our awareness. We must preserve rich sources of flavor—for example, artisan restaurants. We must protect them. Educational institutions can provide that…. Can you eliminate the government?"*

Expert5;

*"The most significant advantage is its wealth and geographical location. Politics and economy are also the most consequential unfortunate ones…. If we can only protect what we have, we can improve our cuisine. We need to strengthen and diversify education. We must train conscious chefs…. The restaurant industry has been struggling with the government for years. The biggest obstruction is government policies, restrictions, limitations, taxes. Maybe internationally renowned Turkish chefs can come together and convey the concerns of the entire industry to the authorities."*

Expert6;

*"We have the most beautiful geography and climate in the world. We have a great food history and culture. Now I feel like what we have is lost. Everything is standardized…. We can improve what we have by expressing ourselves to the world. Because I know the importance of sharing and participating has progressed, especially in the world of haute cuisine or fine-dining restaurants. Chefs now support each other and they inspire each other. We can also make our voices*

*heard academically. Chefs are now also involved in academic studies…… I know the government is aware of how rich our cuisine is. I know that they also attempt unfinished commitments. If we can show how the international gastronomy world has evolved and how Turkish cuisine can readily adapt to this development, maybe we can take a moderate path."*

Expert7 "We have a vibrant cuisine. Tourism has become commonplace. We are very weak economically and there is no support from the state."

### *4.1.2. Summary of the Interviews*

When the answers received from the interviews with the experts are generalized, education, culture, economy and politics, have been the most fundamental topics and each is interconnected.

Different approaches were made by experts to the richness of Turkish culinary culture. For example, in addition to the Mediterranean influence or the dominance of doner or kebab, the French chef stated that he was impressed by the preparation techniques of pastry products and that he liked Turkish butter very much. On the other hand, another expert spoke of ethnic diversity. In other words, while Turkish cuisine is rich in terms of products and techniques, it is also rich in terms of people.

Its geographical location and multiculturalism were among the subjects. This geographical location and multiculturalism bring with it a rich diversity. This cannot be ignored. Nevertheless, the critical point to be noted is the location of the geographical location. Turkey's location in the world's geography and geological structure is a great advantage. However, it is necessary to add multiculturalism to this situation because the food culture may differ even in villages in the same region in Turkey. Alternatively, the same food can be expressed differently in different regions.

Both Turkish food culture and Turkish cuisine are rich. Moreover, they are traditional at their core. Traditional cuisine can be an important source of inspiration and creativity but has side effects. Especially from the perspective of creativity, being traditional has been a limiting factor. This was also revealed in interviews with experts. In order to modernize, it is necessary to move away from tradition. However, this does

not mean rejecting tradition. Having a traditional culinary structure is wealth and always a source of inspiration.

On the other hand, while diversity is an advantage, being unable to evaluate it has emerged as a disadvantage. Therefore, it is of great importance to register endemic products and cooking techniques from region to region. Another important point that emerged from the interviews was that government support was needed to code Turkish cuisine, which has a rich variety. The state should support the producer of both the product and the knowledge. Otherwise, the studies carried out with the volunteer approach were either interrupted or completed in a limited way.

The government continues to work on Turkish cuisine within the scope of tourism. Gastronomy tourism has also increased its popularity in Turkey. Nevertheless, although all participants stated that tourism is an important step, Turkish cuisine inevitably needs a more systematic update. Maintaining product diversity and reviving ancestral seeds can be achieved with sustainability in agriculture. Based on their experiences and observations, experts emphasized that there are problems and deficiencies regarding this issue and they stated that the most significant responsibility falls on the government again.

It is understood from the interviews that putting Turkish cuisine products into a systematic equation requires a collective effort, not an individual one. Some chefs and restaurants strive for this. Here again, the support of the government is needed. However, contrary to this situation, it has been seen that the application of heavy sanctions to the food service sector in production and consumption hinders forward-looking research and development.

Undoubtedly, the most significant factor in the recognition of Turkish cuisine is gastronomy tourism. However, according to experts, this situation has entered a vicious circle and the reason why Turkish cuisine is known in the world as doner and kebab cuisine is tourism activities, especially the services provided in hotels. Therefore, it has been understood from the interviews that gastronomy tourism needs innovations.

It is understood that the richness of Turkish cuisine is a privilege that cannot be ignored. Nevertheless, this is very inadequate in today's culinary industry. The essential actors that will make Turkish cuisine a universal cuisine are the chefs who will produce it and chefs in Turkey need financial support. Lack of sponsors and financial inadequacy came to the fore as factors affecting the creativity of Turkish cuisine.

Another critical point is that in addition to the insufficient support of the government, its sanctions reduce and spoil diversity. This has emerged mainly in the hunting size problem of bluefish. It is understood from the statements of eight experts, who have an important place in the culinary sector in Turkey, that the state support is very insufficient.

Kitchens are also part of the food system. Experts, who stated that the quality of the ingredients decreased due to the economic and social problems experienced by the producers who are part of the food system, stated that sustainable agricultural policies should be developed.

While talking about the richness and diversity of Turkish cuisine, the standardization of the restaurant industry in Turkey contradicts this situation and changes the eating patterns of people. Social media has also proven to have a considerable impact.

Another element that emerged in the interviews with the experts is education. Although there are institutions that provide culinary education in Turkey, some of them have minimal opportunities. However, every academic study on Turkish cuisine is of high value and should be supported. Research and preservation of Turkish food culture, which enhances Turkish cuisine, should be supported by education. A culinary education should be supported by different disciplines; science and art are very important. Why are the term culinary arts used? "Is there any art training?" the question must be asked.

As a result, when viewed rationally, the richness and diversity of Turkish cuisine give it an essential advantage in the international culinary arena. Unfortunately, some factors either support or hinder the use of this opportunity. With education, Turkish cuisine can be systematically coded and recorded. Again, with education, well-

equipped chefs can be trained to represent Turkish cuisine. Turkish food culture always offers unlimited sources of inspiration and can support new ideas. When economic support or facilities are provided to production and producers, the welfare of Turkish cuisine increases and the disappearing products and traditions can be saved. Turkish cuisine will have its strongest supporter if the government encourages producers, educators and consumers. Nevertheless, in these interviews, it was observed that the government has a conflict with education, the restaurant industry and culture.

### *4.1.3. Perceptions of Turkish Cuisine Professionals Towards Macro-Environmental Factors of Culinary Creativity*

#### 4.1.3.1. Demographic Profile

In total, 242 questionnaires were sent to all four participant groups, from which 145 completed and valid questionnaires were returned. All the respondents were classified based on their business profile and four different categories were titled as academicians (N=45), instructor chefs (N=29), hotel chefs (N=39) and restaurant chefs (N=32). The respondent sample contained many more males (69.7%) than females (30.3%) and nearly half of the respondents (45.5%) were aged 26–35 years, followed by respondents aged 36–45 years (30.3%). Respondents' demographic profile is summarized in Table 13.

Table 13. Demographic profile of the survey participants of the Study I (n=145)

| **Characteristics** | **Frequency** | **%** |
|---|---|---|
| *Gender* | | |
| Female | 44 | 30.3 |
| Male | 101 | 69.7 |
| | | |
| *Age* | | |
| 18 - 25 | 16 | 11.0 |
| 26 - 35 | 66 | 45.5 |
| 36 - 45 | 44 | 30.3 |
| 46 - 60 | 17 | 11.7 |
| Over 60 | 2 | 1.4 |

Table 13 (Continued).

| Characteristics | Frequency | % |
|---|---|---|
| *Years in service* | | |
| 1 - 5 | 27 | 18.6 |
| 6 - 10 | 27 | 18.6 |
| 11 - 15 | 31 | 21.4 |
| 16 - 20 | 26 | 17.9 |
| More than 21 | 34 | 23.4 |
| | | |
| *Education* | | |
| Secondary school | 4 | 2.8 |
| High school | 24 | 16.6 |
| Associate degree | 17 | 11.7 |
| Bachelor degree | 46 | 31.7 |
| Graduate degree | 54 | 37.2 |
| | | |
| *Job Classification* | | |
| Restaurant chef | 32 | 22.1 |
| Hotel chef | 39 | 26.9 |
| Instructor chef | 29 | 20.0 |
| Academician | 45 | 31.0 |

#### 4.1.3.2. Exploratory Factor Analysis Results

To explore the underlying dimensions of external factors that influence Turkish cuisine's culinary creativity, 32 items with six main titles were identified. EFA with principal component analysis method was used following with an orthogonal rotation which was performed using varimax with Kaiser normalization. The sampling is adequate or sufficient if the value of Kaiser-Meyer-Olkin (KMO) is larger than 0.5 and also (Field, 2005; Kaiser, 1974). KMO value was 0.804 and, Bartlett's Test of Sphericity was found to be 1089.531, with significance lower than 0.001. Thus, the sample was considered adequate and data were suitable for factor analysis (Hair et. al., 2006). Factor loadings were investigated and solutions improved by deleting items that either loaded on several factors or had low loadings. Comrey and Lee (1992) suggest that loadings with a cut-off point of 0.71 are considered excellent; 0.63 loadings are very good; 0.55 loadings are good; 0.45 loadings are fair and 0.32 loadings are poor. Hair et al. (2006) also indicated that the factor loadings between 0.30 – 0.40 are minimally accepted; however, loadings above 0.50 are significant. According to Jung and Lee (2011), in a small number of sample cases, factor loadings can be considered

meaningful if above a threshold of 0.35. Items with a 0.50 threshold and above with the factor were thought to describe the factor and its related scale the best. Thus, those items would provide the best assessment for the particular case. Therefore, these items were dropped to improve the further analysis. As a result, from the orthogonal (varimax) rotated factor matrix, six factors with 21 variables were identified by the original 32 variables with loadings above 0.50 were accepted as eligible items in describing the factors.

According to Nunnally (1967), the results of factor analysis should explain at least 60% of the total variance. A comparison of the data revealed six components of external factors that influence culinary creativity identified by the culinary professionals in this study had eigenvalues greater than 1.00, explaining a total of 63.607% of the variance. Component 1 was labeled political and economic factors comprised of four items that explained 28.79% of the variance. Component 2 was labeled education comprised of four items that explained 9.27% of the variance. Component 3 was labeled media and globalization, comprised of three items that explained 7.27% of the variance. Component 4 was labeled culture comprised of four items that explained 6.91% of the variance. Component 5 was labeled technology, science and design, comprised of three items that explained 6.05% of the variance. Finally, component 6 was labeled tourism, comprised of three items that explained 5.31% of the variance.

Cronbach alpha reliability of each indicator, composite reliability (CR) and average as an extended (AVE) model of reliability was studied. The results were evaluated based on the recommended values of 0.7 points in the case of composite reliability (Jöreskog, 1971) and 0.5 in AVE (Fornell and Larcker, 1981a, 1981b). Hair et al. (2006) also indicated that the generally agreed upon lower limit for Cronbach's alpha is 0.70, although it may decrease to 0.60 in exploratory research. The Cronbach alpha coefficients ranged from a high 0.782 (domain labeled as media and globalization) to a low 0.604 (domain labeled as tourism). Table 14 shows the factor loadings, Cronbach alpha, CR and AVE values for the labeled factors and their items.

Table 14. Factor loadings, Cronbach alpha, CR and AVE results for Study I

| Items | | Loadings | Cronbach's Alpha | CR | (AVE) |
|---|---|---|---|---|---|
| | ***Politics and economics*** | | **0.744** | **0.841** | **0.576** |
| Item13 | Government subsidies for agriculture and stock raising strengthen the creativity of the kitchen. | 0.868 | | | |
| Item9 | Support of government strengthens culinary creativity. | 0.862 | | | |
| Item8 | Government policies (gastrodiplomacy, agriculture and tourism) affect creativity in the kitchen. | 0.700 | | | |
| Item25 | The diversity of agriculture and aquaculture makes culinary creativity strong. | 0.564 | | | |
| | ***Education*** | | **0.727** | **0.827** | **0.547** |
| Item19 | Courses about traditional cuisines enhance creativity in the kitchen. | 0.811 | | | |
| Item18 | Proficiency in art (painting, sculpture, music, etc.) strengthens creativity in the kitchen. | 0.787 | | | |

Table 14 (Continued).

| Items | | Loadings | Cronbach's Alpha | CR | (AVE) |
|---|---|---|---|---|---|
| Item3 | Gastronomy and culinary arts education enhance creativity. | 0.716 | | | |
| Item1 | The theoretical and practical balance of academic culinary education strengthens culinary creativity. | 0.631 | | | |
| | ***Media and globalization*** | | **0.782** | **0.874** | **0.700** |
| Item28 | Press and media affect kitchen creativity. | 0.907 | | | |
| Item29 | Social media channels affect culinary creativity. | 0.865 | | | |
| Item27 | With globalization, it is necessary to be creative in the kitchen to be involved in the growing competition in the restaurant world. | 0.728 | | | |
| | ***Culture*** | | **0.744** | **0.834** | **0.558** |
| Item10 | The creative products are mostly generated by the culturally rich cuisines compared to the cuisines with low cultural diversity. | 0.822 | | | |
| Item32 | Combination of local culture with foreign cultures has an impact on culinary creativity. | 0.770 | | | |

Table 14 (Continued).

| Items | | Loadings | Cronbach's Alpha | CR | (AVE) |
|---|---|---|---|---|---|
| Item23 | Multicultural structure enhances culinary creativity. | 0.727 | | | |
| Item21 | Culture awareness is a powerful tool in producing creative work in the kitchen. | 0.660 | | | |
| | ***Science, technology and design*** | | **0.609** | **0.777** | **0.540** |
| Item12 | Chefs do not need to comprehend food science to be creative in the kitchen. | 0.807 | | | |
| Item14 | Design education reinforces creativity in the kitchen. | 0.757 | | | |
| Item15 | Technology should be used to be creative in the kitchen in modern day. | 0.630 | | | |
| | ***Tourism*** | | **0.604** | **0.784** | **0.549** |
| Item7 | Creativity is required in the kitchen for success in gastronomy tourism. | 0.784 | | | |
| Item20 | Creativity ensures that chef candidates are successful in the industry. | 0.746 | | | |

Table 14 (Continued).

| Items | | Loadings | Cronbach's Alpha | CR | (AVE) |
|---|---|---|---|---|---|
| Item22 | Creativity in tourism affects culinary creativity. | 0.688 | | | |

#### 4.1.3.3. Relationships between culinary professionals and external factors that influence Turkish cuisine culinary creativity.

According to demographic profile, the differences in the perceptions of the participants towards external factors that influence Turkish cuisine's creativity among the four different job specifications were examined, specifically restaurant chefs, hotel chefs, instructor chefs and lecturers. The non-parametric tests including Kruskal-Wallis H test was performed, followed by pairwise comparison using the Mann-Whitney test as an ad hoc test to determine the differences between groups. All the results were summarized in Table 15.

All four occupational groups perceived educational factors as most important, followed by cultural factors. Restaurant chefs gave education (M = 4.23) and culture (N = 4.23) the greatest importance and the media and globalization (M = 3.90) the lowest. Hotel chefs gave education (M = 4.50) the greatest importance and the media and globalization (M = 4.00) the lowest. Instructor chefs perceived tourism (M = 4.16) and the politics and economics (M = 3.78) to be the highest and lowest, respectively. Finally, lecturers put more emphasis on education (M = 4.53) and less on politics and economics (M = 3.88).

According to Kruskal Wallis H test, there were statistically difference in the mean scores of *cultural factors* $x^2(3) = 8.630$, $p = 0.035$, *politics and economics factors* $x^2(3) = 12.262$, $p = 0.007$, *educational factors* $x^2(3) = 10.374$, $p = 0.016$, *technology science and design factors* $x^2(3) = 9.618$, $p = 0.022$ and finally *tourism factors* $x^2(3) = 8.115$, $p = 0.044$. No significant differences were revealed for *media and globalization factors*.

Mann-Whitney U-test indicated that perceptions of hotel chefs towards cultural factors was significantly higher than instructor chefs U = 350.00, z =-2.701, $p = 0.007$. For the educational factors there was a significant difference between lecturers (mean rank = 44.62) and restaurant chefs (mean rank = 31.09), U = 467.00, z=-2.662, $p = 0.008$. Similarly, there was a significant difference between academics (mean rank = 45.37) and restaurant chefs (mean rank = 30.05) towards tourism factors, U = 433.50, z=-3.026, $p = 0.002$. Perceptions of hotel chefs (mean rank = 41.26) towards politics and

economics factors were significantly higher than instructor chefs (mean rank = 25.41), U = 302.00, z=-3.298, $p$ = 0.001. Likewise, there was a significant difference between hotel chefs (mean rank = 40.13) and instructor chefs (mean rank = 26.93) towards technology, science and design factors, U = 346.00, z=-2.768, $p$ = 0.006. The results of pairwise comparison showed that the differences occurred either between hotel chefs and instructor chefs (cultural, political and technological factors) or between restaurant chefs and instructor chefs (educational and tourism factors).

The tests revealed differences among demographic characteristics in specific items in the identified factors. Similarities were identified in the majority of the external factors. However, only differences among job specifications were found in external factors namely, politics and economics, culture, education, technology, science and design and tourism. Nevertheless, no significant correlations ($p$>0.05) were found in media and globalization factors.

Table 15. Results of the Kruskal-Wallis Test and Mann-Whitney U Test on Demographic Characteristics

| Characteristics | Politics and Economics | | | Education | | | Media and Globalization | | | Culture | | | Technology, Science and Design | | | Tourism | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean (SD) | Mean Rank | *p*-Value | Mean (SD) | Mean Rank | *p*-Value | Mean (SD) | Mean Rank | *p*-Value | Mean (SD) | Mean Rank | *p*-Value | Mean (SD) | Mean Rank | *p*-Value | Mean (SD) | Mean Rank | *p*-Value |
| *Gender* | | | | | | | | | | | | | | | | | | |
| Female | 3.99 (.56) | 68.90 | .434⁺ | 4.34 (.53) | 65.95 | .175⁺ | 3.89 (.48) | 67.66 | .297⁺ | 4.24 (.54) | 70.40 | .618⁺ | 4.05 (.65) | 68.13 | .350⁺ | 4.33 (.44) | 79.24 | .229⁺ |
| Male | 3.98 (.83) | 74.79 | | 4.41 (.61) | 76.07 | | 3.94 (.80) | 75.33 | | 4.21 (.77) | 74.13 | | 4.14 (.73) | 75.12 | | 4.16 ( .67) | 70.28 | |
| *Age* | | | | | | | | | | | | | | | | | | |
| 18 - 25 | 3.92 (.91) | 73.41 | | 4.31 (.81) | 73.16 | | 3.98 (.75) | 75.44 | | 4.17 (.89) | 76.44 | | 4.02 (.56) | 64.72 | | 3.96 (.78) | 58.53 | |
| 26 - 35 | 3.96 (.67) | 68.68 | | 4.34 (.42) | 64.56 | | 4.01 (.59) | 76.65 | | 4.26 (.60) | 71.47 | | 4.18 (.66) | 76.39 | | 4.28 (.48) | 75.42 | |
| 36 - 45 | 3.99 (.92) | 78.34 | .761 | 4.41 (.75) | 81.00 | .222 | 3.83 (.90) | 70.65 | .785 | 4.19 (.77) | 74.06 | .695 | 4.09 (.83) | 74.09 | .727 | 4.16 (.74) | 71.78 | .581 |
| 46 - 60 | 4.10 (.52) | 77.29 | | 4.56 (.36) | 83.12 | | 3.84 (.64) | 63.41 | | 4.32 (.58) | 77.59 | | 4.04 (.70) | 67.59 | | 4.27 (.56) | 78.35 | |
| Over 60 | 3.88 (.53) | 58.25 | | 4.63 (.53) | 88.25 | | 3.83 (.71) | 66.25 | | 3.13 (1.59) | 33.75 | | 3.67 (.94) | 49.50 | | 4.50 (.71) | 90.00 | |
| *Years of experience* | | | | | | | | | | | | | | | | | | |
| 1 - 5 | 3.88 (.75) | 65.93 | | 4.39 (.66) | 74.31 | | 3.96 (.61) | 73.65 | | 4.21 (.69) | 72.52 | | 4.19 (.57) | 75.56 | | 4.15 (.65) | 70.33 | |
| 6 - 10 | 3.73 (.94) | 61.44 | | 4.25 (.38) | 55.98 | | 3.79 (.52) | 61.19 | | 4.02 (.85) | 61.81 | | 4.00 (.78) | 68.09 | | 4.12 (.55) | 64.24 | |
| 11 - 15 | 4.09 (.64) | 78.50 | .229 | 4.50 (.41) | 79.53 | .199 | 4.10 (.62) | 85.26 | .169 | 4.36 (.46) | 77.92 | .579 | 4.15 (.66) | 72.97 | .774 | 4.32 (.53) | 79.66 | .516 |
| 16 - 20 | 4.15 (.76) | 85.17 | | 4.42 (.53) | 74.52 | | 3.76 (.94) | 78.50 | | 4.37 (.48) | 78.60 | | 4.27 (.58) | 80.96 | | 4.36 (.50) | 80.83 | |
| More than 21 | 4.02 (.68) | 73.47 | | 4.36 (.80) | 78.35 | | 3.92 (.71) | 66.49 | | 4.14 (.88) | 73.50 | | 3.98 (.87) | 68.81 | | 4.11 (.77) | 70.01 | |
| *Education* | | | | | | | | | | | | | | | | | | |
| Secondary school | 4.63 (.43) | 114.25 | | 4.50 (.71) | 86.00 | | 3.50 (1.73) | 70.75 | | 4.56 (.59) | 96.13 | | 4.67 (.47) | 107.38 | | 4.33 (.77) | 77.50 | |
| High school | 4.07 (.91) | 82.56 | | 4.15 (.96) | 67.44 | | 3.83 (.83) | 67.52 | | 4.26 (.86) | 83.08 | | 4.07 (.93) | 75.60 | | 4.03 (.94) | 69.19 | |
| Associate degree | 4.22 (.64) | 84.71 | .057 | 4.46 (.52) | 76.62 | .274 | 4.12 (.85) | 85.35 | .714 | 4.22 (.65) | 69.15 | .436 | 4.00 (.82) | 67.35 | .495 | 4.26 (.58) | 73.26 | .374 |
| Bachelor degree | 3.96 (.69) | 70.54 | | 4.31 (.52) | 64.08 | | 3.92 (.66) | 71.10 | | 4.19 (.80) | 73.70 | | 4.15 (.62) | 73.74 | | 4.12 (.57) | 64.80 | |
| Graduate degree | 3.83 (.77) | 64.10 | | 4.54 (.37) | 80.97 | | 3.94 (.55) | 73.33 | | 4.20 (.57) | 67.43 | | 4.09 (.65) | 70.44 | | 4.35 (.43) | 81.26 | |
| *Job Classification* | | | | | | | | | | | | | | | | | | |
| Restaurant chef | 3.91 (1.00) | 74.97 | | 4.23 (.49) | 59.53 | | 3.90 (.71) | 71.50 | | 4.23 (.59) | 70.70 | | 4.11 (.60) | 71.58 | | 4.04 (.49) | 56.09 | |
| Hotel chef | 4.29 (.56) | 89.97 | **.007** | 4.50 (.44) | 79.55 | **.016** | 4.00 (.83) | 77.76 | .828 | 4.44 (.57) | 87.81 | **.035** | 4.38 (.62) | 89.47 | **.022** | 4.25 (.66) | 75.27 | **.044** |
| Instructor chef | 3.78 (.59) | 55.52 | | 4.15 (.78) | 61.05 | | 3.87 (.79) | 73.48 | | 4.00 (.76) | 58.62 | | 3.84 (.85) | 60.28 | | 4.16 (.71) | 73.19 | |
| Academician | 3.88 (.75) | 68.16 | | 4.53 (.56) | 84.60 | | 3.92 (.56) | 69.63 | | 4.16 (.80) | 71.07 | | 4.04 (.69) | 67.93 | | 4.33 (.58) | 82.93 | |

*Bold indicates significant difference (p<0.05)*

*Notes: p-values with ⁺ symbols indicate Mann-Whitney U test results, p-values without symbols indicate Kruskal-Wallis test results*

4.1.3.4. Differences among groups on different factors based on demographic criteria.

**Gender**

Although the study showed that there were no significant differences on the factors (Table 15), there was a significant difference on the item of educational factors which was the theoretical and practical balance of academic culinary education strengthens culinary creativity among female (mean rank = 63.69) and male (mean rank = 77.05) participants A Mann-Whitney test indicated that this difference was significant, U ($N_{male}$ = 101, $N_{female}$ = 44) = 1812.50, z =-2.20, p <0.05.

Mean ranks showed that commonly male participants had greater scores than female participants on all items. However, the mean ranks of items of the female participants' tourism factor resulted in greater scores than males. Besides item25 in politics and economics, item23 in cultural factors showed that females gave higher scores than males in which those two items were about diversity.

**Age**

According to the Kruskal Wallis test, shown in Table 15, no significant differences were observed across factors and items. However, it was observed that mean scores of political factors and educational factors were increased as the age range of the participants increased. As for the social media factor, mean scores were decreased as the age range increased. Nevertheless, this study showed that, in general, age did not make any difference in perceptions of chefs and academics towards external factors that influence culinary creativity.

**Education**

According to the mean scores of the education profile of the participants, while educational factors gained the highest score (M = 4.39), social media gainedd lowest score (M = 3.86). Kruskal Wallis test showed that there were no significant differences revealed in terms of external factors. However, on the item base there were significant differences between groups. Mann-Whitney test indicated that the first significant

difference was between associate degree (mean rank = 82.88) and bachelor degree (mean rank = 62.81) on the item19 which was about *traditional cuisine education* $U(N_{bachelor} = 46, N_{associate} = 17) = 265.50$, $z = -2.075$, $p < 0.05$. There was significant difference on item25 which was about *diversity and administration of agricultural and aquacultural products* dependent on political factors between high school degree (mean rank = 89.96) and graduate degree (mean rank = 62.81), $U(N_{graduate} = 54, N_{high\ school} = 24) = 404.50$, $z = -2.950$, $p < 0.01$.

**Years of experience**

No significant differences were observed either in factors or in the item level. Participants who have 6-10 years of experience gained the lowest mean rank across external factors. Moreover, as expected, years of experience were correlated significantly with age ($r_s = 713$, $p < 0.001$).

4.1.3.5. Summary

The study was conducted to examine the relationships between environmental factors and culinary creativity among chefs and academics in Turkish cuisine. More specifically, culture, education, politics and economics, media and globalization, tourism and technology, science and design on culinary creativity were investigated among the chefs and the academicians participating in Turkish cuisine. The EFA results revealed a clear factor structure for each construct with high factor loadings (see Table 12).

*Politics and economics.* This study reveals that political and economic factors are the most important concerns of the chefs and academics that impact Turkish cuisine creativity. The items are mainly related to government policies and supportive strategies on culinary creativity, particularly issues related to resources and diversity protection. Government policies can catalyze or inhibit creativity (Kim and Yoon, 2015). In fact, Sternberg (1999b) says that while democracy is expected to be the form of government that will most encourage creativity, it is not a guarantee because being creative can annoy other people and where most of them rule, creativity can be suppressed by the voting procedure. The study revealed that the participants stay recessive about government policies, yet they agree that government support

strengthens culinary creativity. The purpose of government policies is to change a particular, real-life situation through a course of action. There are government policies designed to support agriculture, aquaculture and food diversity directly. Some policies aim to support only monetary issues through food resources, which can cause deterioration in food quality and eating habits. In other words, government support can be positive and negative. However, there are no particular government policies or regulations that aim to support Turkish cuisine's development. For instance, the South Korean government has enacted policies to connect the academy, industry and public research sectors to support research and development activities; thus, they have become one of the most important research and development investors in the world (Kim, Chon and Chung, 2003). Consequently, studies have found that the political and economic governmental policies can impact culinary creativity (Horng and Lee, 2009; Peng, Lin and Baum, 2012).

In this study, government support and protection of agricultural and aquacultural products, which define resource diversity, have prominence. Agriculture and aquaculture diversity are critical building blocks that sustain and shape cuisines—founded on the preservation and development of agriculture and aquaculture, policies to protect the food diversity of the country and lead to the re-emergence of endemic products (Altieri, Funes-Monzonte and Petersen, 2012; Koohafkan and Altieri, 2011). The study participants agree that the rich diversity structure of Turkish cuisine can be supported and protected by the government policies. The current example of this in the world is New Nordic cuisine, which has changed the course of the gastronomic world today, creating diversity from its restrictions and as this movement progressed, Scandinavian food, agriculture and fishery ministries wanted to do their part to support creativity (Byrkjeflot, Pedersen and Svejenova, 2013). As a result, governmental support for gastro-nationalism, creative cities, or food movements such as slow food can be supportive strategies to improve culinary creativity (DeSoucey, 2010; Van Bommel and Spicer, 2011; Byrkjeflot et al., 2013).

*Education.* This study's results reveal that the second external factor that influences Turkish cuisine creativity is education. The educational items are about traditional cuisine education, the balance between theoretical and practical education and proficiency in the art regarding gastronomy and culinary arts education. Joy Paul

Guilford's speech at the American Psychological Association in 1950, a pioneering step in creativity studies, he asked by emphasizing education, "Why is there so little apparent correlations between education and creative productiveness?" Many researchers, scholars and theorists have agreed that creativity can be learned and taught (Parnes, 1992; Torrance, 1987; Amabile, 1988; Plucker and Renzulli, 1998; Seltzer and Bentley, 1999). Solving the problems that societies must manage today is actualized through education. The participants gave the highest score to traditional culinary training. The traditional structure of Turkish cuisine is the most crucial feature that makes it strong and it has come to this day through generations. Therefore, traditional cuisine courses might also have an impact on culinary creativity as the literature stated that creativity in cuisine consists of introducing radical changes to the traditional techniques or experimentally mixing the new ingredients (Chossat and Gergaud, 2003; Slavich, Capetta and Salvemini, 2014). Also, Ottenbacher and Harrington (2007a) state that the traditional new product development process is an additional character for creativity development.

According to Sternberg (2012), a person should thoroughly understand the field to take it further. A chef's or an apprentice's in-depth knowledge about their cuisine provides an advantage in producing creative ideas and solutions to advance a cuisine. Fundamentally, culinary knowledge is about how an individual knows and understands the food today and is a noticeably broad subject. Food preparation, presentation, flavor combinations and ethnic influences are the features of culinary knowledge (Baldwin, 2018). However, culinary knowledge is higher than in those aspects. Culinary knowledge is beyond the kitchen and comprises written sources such as cookbooks, diaries, newspapers, official documents, inventories and verbal and visual sources of countries and their people. To be aware of and informed on such a broad subject, it is necessary to reach the information systematically and accurately and that can only be achieved through education in culinary arts. Participants of the study agree that gastronomy and culinary arts education enhance Turkish cuisine creativity. In addition, Sarıoğlan (2014) concluded that the ministry of education in Turkey could not provide quantitative and qualitative adequacy in the science and education of gastronomy. Similarly, in this study, participants agree that the importance and

necessity of the balance between practical and theoretical academic culinary education strengthen culinary creativity.

Education in arts, food culture and ethnicity courses are the essential elements in a culinary training program and after teaching the basic skills and professional knowledge, the courses should be combined with the art courses for establishing greater creativity in the culinary industry (Peng, Lin and Baum, 2012). Our study shows that gastronomy, culinary skills and art education could either enhance or strengthen culinary creativity in the kitchen. Horng and Lee (2009) also stated that culinary creativity could be either inspired or restricted by the education method. A friendly learning environment generated by the generous and supportive mentor has a strong influence on the culinary students; however, there is no critical and creative thinking system in the traditional mentor system because there is a lack of standardization in gastronomy education in Turkey (Eren and Güldemir, 2017).

*Media and globalization.* The third factor of this study is media and globalization. The change in societies is reflected in the transformation of cultural identities, especially with the consolidation of globalization and the media (Chen and Zhang, 2010). According to Carayannis and Gonzales (2003), globalization can be an essential tool of beneficial and sustainable economic integration in countries where creativity and innovation are effectively implemented, while in non-competitive countries, it can be a powerful trigger for poverty, inequality, marginalization and economic disruption. Likewise, the concept of creativity trying to achieve novel results may be influenced by the processing of information through the media (Healy, 2004). The transition from traditional media to new media has changed the way people access and consume information about products and services. Social media is a means to share innovative ideas and novel artifacts and create platforms to discuss those ideas; thus, observing how creative ideas grow within a community or a domain is possible (Peppler and Solomou, 2011). The participants of the study agree that press and media channels have an impact on culinary creativity. The spread of social media usage and abundance of food publishing cause proliferation of knowledge about food (necessary and unnecessary) and also informed customers. Although this situation seems to prevent creativity because it can be difficult to surprise people, the creative result will be much more effective when managed correctly.

For this reason, reputations can be built and career opportunities opened utilizing social media (Tang, Gu and Whinston, 2012). Furthermore, Ergul, Johnson, Cetinkaya and Robertson (2011) suggested that incorporating social media can promote Turkish cuisine and culture. Social media takes staff interaction, networks, information exchange and knowledge management (KM) applications beyond organizational and contextual boundaries. It has become mandatory to distinguish the role of creativity in interactions between employees within these networks on the KM lens (Sigala and Chalkiti, 2015). As a result, being creative has become a complex issue and a challenge in the culinary world, where borders are removed and the pool of knowledge is overflowing.

Globalization and media issues reflect interactions with customers. According to Sabir, Irfan, Akhtar, Pervez and ur Rehman (2014) the restaurant world is in the age of globalization and the development of the media is causing the culture and habits to narrow because people lean to fashionable food trends. This situation causes the food to be standardized. The increasing competition in the restaurant world, which intends differentiation, with globalization protects food from standardization and this can only be done with creative approaches. There were no statistically significant differences in globalization and media factors in this study and the participants remained recessive. This may be that both subjects are very new both in the world and in Turkish cuisine. Batu and Batu (2018) stated that the culinary culture of Turkish gastronomy had been influenced by globalization.

*Culture.* The fourth factor with four items concerns the perception of cultural influences on the culinary creativity in Turkish cuisine. The studies pointed out the relation between culture and creativity has generally focused on multiculturalism, which is closely connected to traditions and knowledge regarding the culture (Harzing and Hofstede, 1996; Li et al., 2013). People from different cultures may have different concepts and methodologies in their processes of culinary creativity. A study on the effect of multiculturalism on creativity indicated that when people interest in foreign cultures and compare and combine the differences of foreign cultures with their home cultures, this can encourage creativity, namely, "multicultural experience increases creative performance" (Leung, Maddux, Galinsky and Chiu, 2008).

On the other hand, the grounded knowledge and beliefs of a culture, particularly its traditions, may also establish "perceptual and mental" barriers (Chiu and Kwan, 2010). Based on our results, the multicultural environment, cultural interactions and awareness can have a high impact on culinary creativity and culture can be an element of the gastronomic identity. Turkish cuisine's cultural roots consist of Central Asian Turks, Anatolian civilizations, Seljuk and Ottoman periods and Republican period (Kızıldemir, Öztürk and Sarıışık, 2014) and also China, Mesopotamia, Africa, Balkans, Europe and even America are the regions that affect the culinary culture of Turkish cuisine (Aydin and Corbaci, 2019). Accordingly, the awareness of the intangible experiences such as historical information, story-telling and regional or local cooking techniques can be the value-added elements to the creative products and the multiculturalism exchanges can nourish the culinary creativity (Ottenbacher and Harrington, 2007; Horng and Lee, 2009; Peng et al., 2013).

Another subject on culture is the comparison of the wealth of cultural diversity between different cuisines. It can be thought that rich cultures are advantageous than underprivileged culinary cultures regarding offering creative products. However, in creativity, constraints are accepted as opportunities that need to be turned into benefits. According to Stokes (2005), constraints limit the search in a problem area, obstructing it and thus helping to structure the solution by encouraging it. Moreover, Peppler and Solomon (2011) state that creativity can occur within the constraints of community values. In this study, the participants think that cuisines with more cultural richness will produce more creative products. Even though diversity and multiculturalism are supportive elements in creativity, constraints will contribute to the emergence of creative products when handled correctly and rationally.

Consequently, Beghetto and Kaufman (2013) indicated that creativity is a combinatorial process in which original and useful products and ideas can be achieved by combining various views and thoughts of diversity. The chefs of successful restaurants in today's culinary industry have generated their brand-new menus using local ingredients and traditional culinary culture and combining them with the techniques inspired by foreign culinary cultures.

*Technology, science and design.* The fifth factor that influences Turkish cuisine creativity is the technological, scientific and design factors. These three factors are intertwined, interdependent and have tension with creativity. When technology is used within the scope of people's demands, creativity can be developed in society, otherwise, when technology is left to its own, productivity is the ultimate goal and there can be no creativity because there is no time to explore (Edwards, 2001). The most prominent examples of this in the kitchen industry are mass production and fast-food chains. Another aspect of technology, for instance, although firms that incorporate technological trends in their operations generate more novel products in the context of art and personal creativity, technology can disrupt the traditional identity between the artist and her or his work and force the accepted techniques and skills (Kim, Im and Slater, 2013; Wilson and Brown, 2013). In other words, it is crucial to establish a balance between creativity and technology and to manage the valuable application of technology. The knowledge of using developed and modern culinary technology equipment is one of the most important elements, along with creative thinking in the development of innovative culinary applications in the kitchen (Hu, 2010b). In this study, the mean value of technology is lower when compared to science and design. The reason for this is that traditional Turkish cuisine is far from technology. When this study's cultural factors are considered, chefs may be considering the negative effects of technology because the chefs are people who are connected to their culture.

Another aspect that emerged in this study is that chefs support food science. According to Penick (1996), creativity cannot happen by chance and so there must be science teaching and knowledge to help develop creativity in a subject so that one can experiment, take risks and ask critical questions. The balance between the arts of gastronomy and science also enhances culinary creativity. This study shows that chefs support food science more than technology.

A complex and ill-structured problem-solving approach of design requires creativity (Casakin, 2007). The relationship between food and design has come to the fore in recent years because the creative and innovative processes of well-known chefs have been associated with the design process (Albeniz, 2018). Although there is no such

work in Turkish cuisine, in this study, participants rated design issues higher than technology as well.

Tourism. The final factor revealed in the study is tourism and its effect on Turkish cuisine creativity. Tourism is one of the most important drivers of economic growth in the field of culture and creativity. Also, it has a role for creative industries in the development of tourism and particularly in influencing the image of destinations (Richards, 2011). Gastronomy is considered as one of the creative industries and is a part of creative tourism activities. Richards and Raymond (2000) defined creative tourism as "Tourism which offers visitors the opportunity to develop their creative potential through active participation in courses and learning experiences which are characteristic of the holiday destination where they are undertaken" (p.18). In recent years, the development in the creative tourism areas also has a notable impact on the growth of gastronomy or culinary tourism (Richards, 2011; Richards and Wilson, 2006). Participants of the study agree that creativity in tourism affects culinary creativity. Likewise, participants also agree that culinary creativity is required for the success of gastronomy tourism. Consequently, there is a loop between culinary creativity and tourism, both have an impact on each other and they should be managed by considering the tension among them.

Chefs' contributions are paramount in success in the gastronomic industry and tourism. Furthermore, one of the factors that will determine chefs' success who will step into this sector is creativity (Hu, 2010a; Leschziner, 2015; Lin and Baum, 2016). Culinary industries demonstrate culinary creativity commercially different from general creativity. For this reason, a chef as a creative person should consider the market perspectives within a limited time (Lin and Baum, 2016). Participants of the study agree that the creative views of chef candidates ensure success in the industry. Saying that only creativity is required for sectoral success may seem insufficient. In fact, this is an issue that needs to be studied more broadly. In creativity studies, creative individuals are distinguished by examining their qualities, skills, traits and attributes (Puccio and Cabra, 2010).

In summary, the study shows that education is the most important factor affecting culinary creativity. In particular, the theoretical and practical balance of academic

culinary education has an essential contribution to culinary creativity development. Secondly, multiculturalism and diversity also have an impact on culinary creativity in Turkish cuisine. Likewise, the third factor that gains close scores with cultural factors is tourism. Fourthly, the study reveals that technology, science and design factors impact Turkish cuisine's creativity, especially participants who consider that food science has a higher impact. Politics and economics are the fifth factors that influence Turkish cuisine's culinary creativity; that is, the governmental support or the developed strategies can play an important role in developing gastronomic identity and, thus, culinary creativity. Lastly, media and globalization are the sixth factors that impact Turkish cuisine's creativity; specifically, social media has the highest impact compared to traditional media.

### *4.2. Study 2 – Development of Culinary Design Thinking Modelling*

The purpose of the study was to identify chefs' new dish/menu development processes under the design thinking framework and analyze the attributes that chefs refer to their product during the interviews. Moreover, according to the scope of the RQ2, three hypotheses were postulated and tested. Three hypotheses were;

> **$H_a1$:** The working (creative) processes of chefs could be defined utilizing a design thinking approach.
>
> **$H_01$:** The working (creative) processes of chefs could not be defined utilizing a design thinking approach.
>
> **$H_a2$:** The emergent culinary design thinking model stages are positive and have direct effects on one another.
>
> **$H_02$:** The emergent culinary design thinking model stages are not positive and have direct effects on one another.
>
> **$H_a3$:** The emergent culinary design thinking model stages have positive indirect effects.
>
> **$H_03$:** The emergent culinary design thinking model stages do not have positive indirect effects.

As a result, Study 2 consisted of two analyses which were content analysis for the interviews and conducting survey and analysing its results.

### *4.2.1. Interview Results with Chefs*

Interview questions were generated under Archer's (1976) analytical, creative and executive phase of design process and Brown's (2009) design thinking model, Figure 18 shows the interview flow.

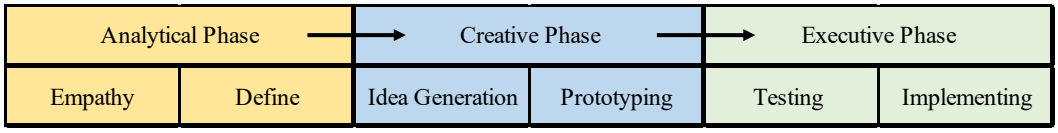


Figure 18. Interview flow according to design process and design thinking.

#### 4.2.1.1. Analytical phase

The analytical phase of design thinking process is to gain empathic understanding of the problem designers are trying to solve and to put together and define the information gathered during the first empathize stage. This phase includes understanding customers' concerns through observing, engaging and empathizing with people to understand their experiences as well as immersing designers themselves in the physical environement to gain a deeper personal understanding of the issues involved and to experience the situations. Thus, a designer gains insights into customers and their needs and expectations to be able to synthetize them in order to define the problems. Defined problems help the designers to produce ideas to establish elements that will allow them to solve the problems.

***Empathy***

The aims of the empathy questions were to understand how chefs define and understand their diners, how they track their restaurants' current situation.

*Q1 - Are you familiar with the reviews of your restaurant / hotel? How do you get the data?*

Previously, restaurant reviews were only done by experts and as a matter of fact, only their reviews were available. Nowadays, it is effortless to reach the opinions of other customers about a restaurant. Online reviews can provide convenience in accessibility but can also have adverse effects. In the abundance of information brought by the information age, it is almost impossible to distinguish which information is real, which information is accurate, or which information is false.

Although all of the interviewed chefs follow the comments about their restaurants on social media, online review sites and their web pages, they try not to comply with them individually. Chef2 explained this as follows.

> *"Generally, I review the comments about my restaurant after every evening service from different platforms. Since I have been doing this for a long time, I can now distinguish which is sincere and not."*

Chef4 said that looking at negative comments positively can inspire them.

> *"As long as a negative comment is constructive, it will take us forward. In such cases, I open the problem up for discussion in the kitchen. Is there really a bug or not? Whether it's a mistake or not, trying to solve it, thinking about this situation will take us forward."*

Also, all chefs participating in the interview stated that they also follow the comments made for rival restaurants besides their restaurants. They give more importance to professional press and media.

*Q2 - How do you define your customers?*

The purpose of this question was to see how much awareness chefs have of their customers. Each chef provided in-depth and detailed information about their customers, from the age range, food preferences, eating patterns, ethnic identities, to education levels.

*Q3 - Are you communicating with your customers? If you are in communication, what are you talking about?*

The communication of chefs with their customers is not only during the foodservice. This situation has before and after. In addition, in recent years, chefs' communication tools are not only the dish they offer to their customers. Now, chefs can express themselves and their work through publications they prepare or social projects they are a part of. Therefore, the communication area and scope of chefs with their customers has expanded.

In restaurant operation, direct communication with customers starts from the moment the reservation is received and continues until the customer leaves the restaurant.

Moreover, even this contact status can continue as a comment written by the customer and respond to it. All chefs have stated that they are sometimes in direct or indirect communication with their customers.

> *"Yes, I am always in communication. If I can't do this directly sometimes, my waiting staff is there for them. The effect of customers seeing me is always different. Nevertheless, there is also a situation like this… They can tell my team more easily what they cannot tell me. That's why I want this work to be balanced."*

Five of the eight chefs said they went to their customers after the service whenever possible and talked with them about their dishes.

*Q4 - How do you keep track of your customers' food preferences since you started working in your restaurant/hotel?*

Keeping track of customer preferences is one of the most critical requirements for restaurants to progress in the sector. Because customer preferences are variable and a trend-setting factor, customer preferences and chefs' style can be among the most significant tensions in the restaurant industry because chefs do not want to compromise their philosophy just because the customer wants it. This may affect their devotion to the cuisine they call "passion". On the other hand, besides the customers' preferences, the chefs' movements can be a trendsetter. Hence, the preferences of both customers and chefs are in a reciprocal cycle.

Each of the eight chefs stated that they monitor their customers' food preferences by observing them. Chef5 expressed this situation as follows:

> *"In recent years, our customers have started to make more healthy choices in the menus we offer. They also wonder where every ingredient we use comes from. This is one of the reasons why our restaurant is transparent."*

Menus are one of the communication channels of restaurants. It turns out that chefs understand the variability in their customers' food preferences and their reactions to

the menus they offer them. This situation shows the cycle between customer and chef again.

*Q5 - Do you have regular customers? What do you share with your regular customers about your dishes?*

The transformation of a customer from one-time to a regular is a successful step for the restaurant. This does not happen with a single service and restaurants must earn it over time. Moreover, loyal customers are essential collaborators for restaurants to succeed in the competitive industry. For this reason, especially in restaurants that work with reservation systems, the frequency of visits of customers is followed.

> *"We have customers that we address by name. We know which food products they are allergic to, which wine they prefer, or how they prefer their meat's cooking degree. These customers are important to us because when we plan a new menu, we can ask them for their opinions. During the service, we get their opinions by offering a tasting plate from the new menu."*

Chef6 explained his thoughts on loyal customers as follows:

> *"Our regular customers are one of the most important supporters that keep us alive. Because they do not come alone, they bring their guests with them. This situation creates a different pressure on us and creates responsibility. There is a question of trust here and every new customer that arrives is a potential regular customer. I am not saying that the same customers always come, but our increasing number of regular customers is our success and we always need new ones."*

Eight chefs each talked about the importance of regular customers. In Turkey, there are no restaurants full of their reservations months in advance. This is not about the success of restaurants, but about the customers' approach to dining out patterns. Therefore, each restaurant aims to create a specific portfolio of loyal customers because regular customers are the most crucial factor to ensure restaurants' sustainability under challenging times.

**Define**

The aims of define questions were to understand how chefs follow current trends in the culinary industry to serve better dishes to their customers, how chefs observe Turkish cuisine industry to express it to the diners and international restaurant industry and how they reflect the data and information they gathered during their research before they start to their dish/menu development processes.

*Q6 - Do you follow current developments in the culinary industry? What are you doing to keep abreast of developments?*

The restaurant industry is undergoing rapid changes. That is why chefs must keep up with industry trends to keep restaurants fresh and modern. However, this is not just the task of the chefs. Chefs need support to learn about industry trends and to make them operational. Chef7 explained this situation as follows:

> *"There are trend analysis reports abroad. Restaurants buy these. There are no independent publications that will prepare this report in Turkey. Instead, I attend restaurant industry fairs at home and abroad. And yet, unfortunately, there are huge differences. Thus, as a Turkish chef working to improve Turkish cuisine, I can not reach enough sources within Turkey's borders."*

Developments in the kitchen industry require both an operational approach and a kitchen-oriented approach. In recent years, culinary approaches such as healthy foods, fermented kitchen products, no-waste kitchen products, sustainable products and micro-regional cooking have emerged. Their effects are also seen in Turkish cuisine. Chef1 expressed his concerns about this issue as follows.

> *"Fermentation is one of the most important techniques in the kitchen and has become very popular. As Turkish cuisine, while our fermented products will inspire others, why do we serve kombucha? Yes, it is a healthy product, but our tarhana is also healthy."*

Eight chefs stated that they follow the current developments in gastronomy and that Turkish cuisine does not keep up with these developments with a focus on Turkish cuisine.

*Q7 - Do you eat in domestic or abroad restaurants? How do you choose the restaurants you would like to eat? Does it reflect on your menu?*

In order for chefs to bring innovations to their products, they must be able to reach the limits of their thinking. They can both interpret and question their practice-oriented work when they see different plates. Eight chefs stated that they ate in different restaurants, for both business and pleasure-oriented.

> *"If I eat in Turkey, I prefer street food delicacies and artisan (esnaf) restaurants. There is always something to learn from them. Since they have been cooking the same dishes and using the same techniques for years, their craft's mastery is very impressive and I would like to reflect this in my kitchen."*

Chef3, on the other hand, stated that he travels abroad with a particular restaurant focus:

> *"I travel abroad whenever I find the opportunity. I definitely go to Michelin star restaurants. But I also make trips to discover street flavors. I can spend one day only on street food and another day for producers. I go to wine houses or attend olive oil or mustard tastings. I try to reflect the information I have obtained there to my restaurant, but I never do the same. I do not copy. This is not ethical. I can not apply it even if I want to, first of all, there are geographical differences."*

Chefs improve their techniques as well as their palates. For this, they should try dishes from different hands. Chef6 explained this situation as follows:

> *"There are chefs that inspire me. It is a privilege for me to go to their restaurants and eat their meals. Experiencing what I have seen on social media or books by the chefs that inspire me is definitely*

*reflected in my menu because sometimes I can come across the food I never expected. What I see never goes on the same path as what I tasted. I'm either disappointed or surprised. Of course, the result of this will be a reflection on my menu."*

*Q8 - Do you follow developments in Turkish cuisine? What are you doing to keep abreast of developments?*

All eight chefs interviewed are the chefs who have made significant contributions to Turkish cuisine and represent Turkish cuisine abroad. They attribute importance to the issue of adapting Turkish cuisine to changing trends and have expressed their concerns about this issue. Chef2:

*"Trends in the culinary world are changing very rapidly and I think Turkish cuisine does not have the power to keep up with this change. Some restaurants try to achieve this and the reverse is unsuccessful. I attribute this to their inexperience or not having full knowledge of the subject."*

Some restaurants have characteristics style and offer fine dining service in Turkey. However, when observed at the changes in Turkish cuisine, more collective movements are seen and these are not developments that can bring success to Turkish cuisine on the international platform. Chef5:

*"For a while, Turkish cuisine entered the age of hamburger. It was possible to see almost a hamburger on every street. A pulled hamburger made of veal ribs cooked for long hours can be delicious. But how far? This is not a suitable situation for Turkish people's eating patterns. There are novice chefs who have graduated from very well-educated culinary schools and do this. I believe that the education they receive will make them aware. But I guess they have to fail first."*

In Turkey, special publications are demonstrating Turkish cuisine's ingredients, the technical and historical richness. Referring to one of these sources, Chef4:

*"Turkish cuisine is a rich cuisine that responds to the gastronomy world's developments with its innate structure. We as chefs, our duty is to bring them out and I think we should be the trendsetters one day."*

The most important issue emerged from this question because the chefs admire Turkish cuisine, but they view Turkish cuisine's developments with anxiety. Each chef gave comparative answers to the developments in Turkish cuisine and the developments in the world of gastronomy. In other words, all eight chefs have detailed information about both Turkish cuisine and world culinary trends and they are making an effort to comprehend this knowledge. They regularly follow the culinary trends in the culinary world from reliable sources and make critical approaches to Turkish cuisine with developments.

*Q9 - How much space do you give to Turkish cuisine's products and techniques in your menu?*

Chefs remain loyal to the Turkish cuisine ingredients, except for some products which can not be produced or suitable to geographical conditions.

*"I used to bring products from Japan to my restaurant. But since we adopted the 0km approach, I have not used products outside my restaurant's city limits. This reminds me of the local richness of Turkish cuisine."*

Although they remain loyal to Turkish cuisine's richness, they do not limit cooking techniques only to Turkish cuisine. Production technology in the kitchen has undergone radical changes in recent years. The technical problems experienced by the chefs during their production can be solved with what technology offers.

*"I use Turkish cuisine techniques, but I cannot limit myself to them. Inspired by a traditional crunchy pepper obtained by sun drying, I use a dehydrator to create different crunchy textures."*

Chef3 has also stated that he cannot limit himself only to Turkish cuisine techniques:

*"When I look at Turkish cuisine technically, in general, Turkish cuisine consists of dishes prepared in pots. But there is no pot food in my restaurant. There is also no sauce concept in Turkish cuisine. I use French cuisine cooking techniques to turn the juice that I will get from the pot meal into sauces. As an ingredient approach for my restaurant, I can say that it is Turkish cuisine, but technically, I cannot limit it to Turkish cuisine."*

Technological developments in the restaurant world often happen to improve cooking techniques or create new cooking techniques. Adhering to the techniques of traditional Turkish cuisine can be an obstacle to modernization. The Eight chefs depend on the Turkish cuisine's ingredients that geography offers, but with some exceptions. However, the chefs do not limit themselves in cooking techniques and they believe that limitation is an obstacle in the modernization process of a cuisine.

*Q10 - How do you determine the ingredients to enter the new menu? And how do you reach?*

All chefs have mentioned two indispensable properties of the ingredients that make up the dishes that will enter the new menu: seasonality and quality. They stated that a product that is not offered in its season would never reach its true quality. In addition, they said that they tried to reach local products produced from real seeds, although they were seasonal. Chef1 explained it as follows:

*"There are outstanding real tomato producers in the city where my restaurant is located. However, on a trip south, I found a much more flavored tomato. At that time, I learned how effective the geographies of seasonal products are."*

Chef1 made the following statement about the honey he has been using for years.

*"I use honey from the North Aegean in a sauce that I never remove from my menu every year. This year, they could not get enough production that I could use in the season. That's why I had to give up that sauce. "*

Chef4 has a research team to determine the products to be used while creating his new menu:

> *"I cannot be both in the kitchen and outside. I have a team of researchers who have adopted my taste and restaurant. They reach the product, taste it and, if necessary, follow the production processes. In some periods, we buy the producer's crop in one go. This situation provides the producers' development and motivation for the future and provides us an environment of new plates that we can make with that product and financial convenience."*

What emerges from this question is that ingredients are the most critical determinants for chefs. They spend serious resources to reach the products they want. Furthermore, even if they cannot achieve their goals, they do not prefer to use alternative products. While chefs are flexible about their cooking techniques, they are strict with ingredients.

#### 4.2.1.2. Creative Phase

The creative phase of design thinking process is about generating ideas and producing many alternative solutions of the product or specific features found in the product. Through idea generation stage, designers identify new solutions to the problem statement they have created at previous stages by presenting many ideas. Thus, designers can investigate the problem solutions by prototyping to identify best possible solution.

**Idea Generation**

The idea generation stage questions were aimed to understand how chefs generate many ideas and how thet define their products' (dishes) elements, do they work collaboratively and do they use techniques of idea generation stages and

- *Q11 - What sets your criteria when creating the new menu? (What are the elements that determine the new menu?)*

Since the concept of design thinking is cyclical and repeats itself in some stages, the questions asked to the chefs are repeated in a similar way with this logic. The purpose

of this is to capture the same or similar answers to questions that have been asked differently—as in the design thinking approach, asking similar questions is to improve the subject by adding on the previous answers.

In this question, determining factors have emerged in the new menu planning. Moreover, it is a compilation of answers to previous questions. Chef6:

> *"Seasonality and accessibility to products are the most important determining criteria in the new menu. But this situation has operational, economic and political conditions that I cannot ignore. If I reflect on the hike on raw materials affected by the increase in inflation to my menu, I will lose my customers."*

As for Chef8, when planning the new menu:

> *"While planning the new menu, I definitely open to discussing the success and mistakes we experienced from the previous menu. While criticizing the dishes and techniques we prepare with my kitchen team in my restaurant, I increase and support these conversations with the front house team. The feedback I will receive from each individual in my restaurant operation will determine my criteria in planning the new menu. But still, the starting point of these criteria will be seasonality."*

In summary, the criteria that affect chefs' ideas in planning new menu; Seasonality, comments made to the previous menu, current culinary trends, availability of ingredients, operational status of the restaurant and the political and economic conditions of the country.

*Q12 - Do you take note of the idea? If so, how do you take notes?*

Eight chefs stated that they made notes either in their notebooks, on their cell phones, or both.

Chef1;

> *"I always carry a pocket notebook in my pocket. If I do not have my notebook, I take notes on my mobile phone and then transfer the notes to my notebook."*

Chef2;

> *"Yes, I always take notes. Ideas especially come to mind in my sleep at night. That's why I don't take my cell phone away from my bedside."*

Chef4;

> *"I take notes so as not to forget the ideas I can think of, but I either lose my notes or cannot remember when I read them. I am aware of this bad side of me. Therefore, whenever an idea comes to my mind, I want to apply it immediately."*

They also stated that they prepared a to-do list for them apart from the ideas that came to mind.

*Q13 - Do you picture your ideas, designs?*

Only four of the eight chefs stated that they draw sketches. The other three said they did not have drawing skills and one found sketching unnecessary.

Chef3;

> *"I used not to do sketches before, but after seeing the chefs who inspired me to work like this, I tried to improve my skills in this area. I am not a perfect painter, but I can express what I cannot explain to my team in words with images.*

Chef6;

*"Sketches are a must, especially if you work in the pastry field. I draw layered sketches of all my desserts, which was shown to me in my training."*

*Q14 - Who do you work with when creating the new menu? Or do you prefer to work alone?*

The kitchen operation, which is teamwork, appears to be a more individual job at the first stage of creating new plates or menus. The chefs' answers to this question are similar. Chef4;

*"If I plan a new plate or menu, I will work alone in the first stage and prefer to be separate from the kitchen environment. Even if I have my own office in my restaurant, I cannot create an environment to listen to myself. "*

Chef2 made a statement as follows:

*"Kitchen environment is crowded and noisy. When ideas come to my mind during the operation, I immediately take a note and then work on it alone."*

*Q15 - What are the contributions of your kitchen team to the menu/dish development?*

This question is a continuation of the previous question. Chefs, who prefer to be alone in the first stage of planning a new menu, attach importance to teamwork during the development phase. The only exception to this situation is Chef3, whose chef is the pastry chef:

*"When I develop a new product, I always work alone. I do trials and calculations. After reaching the final product, I share the recipe of the finished product with my team. My team's opinion is always important to me, but it is not a decisive factor in the recipe. As long as the standard recipe will not change during the production phase, I am open to all contributions."*

The remaining seven chefs care about their entire team's contributions and they also expect them to do so.

Chef5;

> *"I expect contributions from my intern chefs as well as from my sous chef. As my restaurant's kitchen is also part of the hotel, I leave open spaces or assign tasks for my intern chefs at the night shifts to try new plates."*

Chef8;

> *"I show that I value the opinions of my entire team because every single dish that comes out has an effort from everyone working in my restaurant. Kitchen operation requires teamwork. Even if the initial idea comes out of me, the final version may not be as I planned and it usually is."*

As can be seen from the answers to this question, chefs work both individually and as a team. There is a concise time lag between individuality and being a team. Considering the restaurant operation as a system that continually repeats and renews itself, it is impossible for a single person not to get into a vicious circle with what they offer. Starting here, Şef7 explained the contributions of the team as follows:

> *"I have an idea, but my sous chef and sommelier also have ideas. I call this team our little think tank. 'It was my idea,' and 'I made this' approach now must be overcome in Turkey. No chef can not exist alone. It takes a short time, though. Because working in the kitchen requires teamwork and everyone should respect each other's effort."*

**Prototyping**

The prototyping stage questions were asked to understand how chefs' initial and final experiment results change, do they use trial and error approch and how they decide to their final product.

*Q16 - How do you decide on the variety and number of products in your menu?*

This question may vary according to the structure and purpose of restaurants and the purposes of head chefs. There may also be consequences of unavailable external factors such as economics, politics, or environmental problems. Chef3

> *"I used to put limits on menu items before; It looks like there will be a total of eight courses in my tasting menu. Since I think this restricts us, I removed the numerical limits. As long as the cost does not exceed our plans, we have no limits on our products' number and variety. However, we have determining factors and the most important is seasonality and product quality."*

In this question, it has emerged again that using quality products in the season is an indispensable rule for all chefs. Also, they talked about the importance of balance and harmony of the products at hand. Chef5

> *"I evaluate the seasonal offerings in my kitchen, but I do not plan a meaningless dish because I will use every product. Every dish should have a story, an emotion. I plan the ingredients I will use according to whatever experience I want to give my customers the dishes I prepare."*

From what Chef5 said this, it is revealed that he pre-visualized the plate he will prepare and plans what kind of experience he wants to offer his customers. Chef6 also showed a similar approach.

> *"While planning a new menu, we have an uncertainty first, along with our target. Those uncertainties are gradually erased as we begin to test what we have planned. It is the clarification of the products we will use in our menu that removes these uncertainties."*

It is understood from the answers given that a new menu or dish's planning phase starts with uncertainty and progresses to the target. Product variety becomes an essential determining factor. Another approach to chefs is the eating patterns and taste of their customers. Chef1

*"Our Turkish customers' palate habits and the flavor diversity are not opened to the different products when they assembled. That is why I cannot always do what I planned."*

Although Turkish cuisine is rich in terms of ingredients and techniques, Turkish people's taste is not as vibrant as this variety. This may be that meals cooked at home are not very different from meals cooked in restaurants. In other words, while chefs are planning new menus, the number of ingredients to be included in their dishes can offer them many alternatives. Simultaneously, the limited palate of their customers also affects the number and variety of ingredients to be used in the plates.

*Q17 - What are the differences between the last version of the menu and the draft? (Can you explain the change, the development?) (What were the decisive factors that made you choose and prefer?)*

When chefs plan a dish and start experimenting with making it actual, they go through a series of stages peculiar to the kitchen. Before cooking, that dish must be ready to cook. To put it simply; It can be peeled, chopped, kneaded, portioned, smoked, marinated, frozen, fermented. The last stage, a dish that can be presented to the customer with cooking, has to go through many stages. In other words, a dish does not need only heat treatment in order to become edible. While this situation complicates the processes in the kitchen, it also diversifies and increases the alternatives. Chef8:

*"There is much difference between the initial and the final version of a dish, I imagine. Sometimes it goes through so many trial and error processes. I never interfere with the main ingredient of the plate. I play with side-products. If my experiments are causing a change in the main ingredient, I'm not on the right track. I look for other solutions. A plate that I present to my diners should be able to stimulate all five senses. When a sense is missing or insufficient, that plate is missing for me."*

This question revealed how chefs benefit from clarity and uncertainty in planning new dishes or menus. After the chefs have planned their plates in detail in their minds, they can start with the application immediately and they can reach a result that they did not plan before by starting with uncertainty and doing more trial and error. However, while

it is not clear how they will reach the result in the latter possibility (which is uncertainty), it is clear what kind of result they want to reach. This situation makes them more open to ideas.

> *"If I have determined and named the main and side ingredients before starting to create a plate, there would be no big difference between the original and the final version of this plate, which I have clarified in my mind. I can only make slight changes to the plating part. But if I approach creating a new plate with the question "what if", there will be huge changes from the point where I started to the final version because I can go through trial and error many times while trying to resolve the uncertainties that arise. This is the stage where the kitchen evokes passion in me, where the technical skill that will lead to a delicious result is more elaborate than a plate with defined inputs. A dish must be well-prepared."*

Chef2, on the other hand, replied,

> *"There are differences mostly in portion and styling. Sometimes, we may need to make changes due to the disruptions in the supply of a material we plan to use."*

*Q18 - You want to add a new starter, main course or dessert plate to your menu. How do you develop and determine the ingredients and techniques you will use for that dish?*

Each menu brings a concept and this concept is linked to the philosophy of the restaurant. Eight chefs stated that they could add a new plate without disturbing the flow of the menu.

> *"Adding a new product to a predetermined menu can sometimes be difficult, but we may face such situations. That's why we are aware that we must have alternative solutions. For example, if we are going to add a new starter instead of an existing starter, we must first know the reason for removing the starter we replaced. There may be*

*reasons such as a course not preferred by customers or a problem in product supply. Moreover, both situations must be approached in different ways. For the first case, we need to know why customers do not prefer so that we can make arrangements accordingly. The reasons for not choosing may be problems with the senses caused by techniques or products coming together. Sometimes customers may not like the prices they pay for the starter. Unfortunately, there is a perception that the main course will be more expensive than the starter. There may be a problem of not reaching ingredients originating from the season or supplier in the second case. Instead of using a less quality and tasteless alternative to tomato, I would give up on that plate."*

Chefs do not prefer to add a new dish to their existing menu unless necessary. They stated that they could do this if there is a problem in the procurement process or customers' preferences because they do not want to disrupt the integrity and flow of a planned, designed, tested and ready-to-serve menu.

*Q19 - What criteria/features should a dish have to confirm that it will be included in the menu? And how do you decide (and how can you be sure of that)?*

In this question, all chefs emphasized that a dish's unique characteristics came together, formed a whole and then the result was tasted by the people involved in the processes.

*"First of all, it needs to feel comfortable with me. For this, its taste, balance and appearance should satisfy me. But besides these, it is teamwork and my sous chef has to like it too. Then, the whole kitchen team starts to taste it. After being sure of the kitchen, we present it to the front house team. When it passes through them, everyone involved in the entire restaurant operation is involved."*

Besides the restaurant team's involvement in the testing/tasting phase, Chef4:

*"All my suppliers are small local producers. I want to make them taste my dishes prepared using their products. Because they know that ingredient better than anyone else."*

Chef5, on the other hand, emphasized the taste and harmony of the dish like Chef4 and stated that he included the closest friends and relatives in the tasting phase.

*"It should appeal to the five senses and have a balance of taste. Also, even if I like a dish, I may not include it in my menu if it does not match the other dishes on the menu. Everyone in my team has to taste the menu to be able to master the menu. Otherwise, how will they present it to customers? We do tastes with my family and closest friends and we get constructive results even if their ideas are critical. No judgment."*

Chef7 stated that he included his customers in the testing/tasting phase.

*"When my loyal customers, whom I trust, arrive, I talk about our new menu preparation and send them small plates to taste."*

4.2.1.3. Executive Phase

The executive phase of design thinking process aims to test the complete product and its implimentation in actual conditions. Although this is the final phase, the products generated during the testing stage are often used to redifne the emergent issues. Thus, during testing stage alterations and refinements can be made. Once product is formed into its final version, it is ready for implementation. The feedbacks gained during the implementation stage inform the first phase of design thinking model which confirms its iterative structure.

**Testing**

The testing stage questions were asked to understand how chefs ensure about the final product, how they evaluate the final version of the dish to accept its appropriateness of the serving.

*Q20 - Before you launch your current menu to the customer, how do you decide its appropriateness to the customer?*

When restaurants want to present a new dish to their customers and prepare it, they do not put it directly into production. Even with this customer-oriented question, chefs do not prefer to stray from their restaurants' style and manifesto. Chef1 explained this situation as follows:

> *"Our restaurant has a line. Our customers know us. But still, there should be some surprising dishes on the menu that I will present. First of all, my menu must meet the criteria of my restaurant and me. Of course, these criteria must be approved by the management part of the restaurant."*

How the eight chefs participating in this study dominate their customers' preferences has reappeared in this question. Furthermore, Chef2 talked about the benefits of knowing more about their customers:

> *"We know what our customers like and dislike. Of course, every dish on my menu may not necessarily be put for my customers' liking. Sometimes we can go experimental as well, this is the stage that moves us forward and those plates are always among the most admired. We try not to limit ourselves."*

It is understood from the answers given to this question that each of the eight chefs possesses their customers' preferences and expectations. The challenge for them is managing the menu's financial parts because a menu that can bring difficulties to their restaurant will indirectly affect a dish designed to be liked by its customers.

*Q21 - With whom are the tastes of the new menu/dish made? Why?*

Again, this question is also one of the repetitive questions. Its purpose is to adapt to the design thinking approach, the iterative cycle and get detailed answers to similar questions. Chef2 explained as follows how collaboration brings the desired result cumulatively.

*"First of all, I do my main tasting with my sous chef and sommelier. The most important complement to our menu is wine pairing. Anyway, during our plate work, our sommeliers can be included in small tastings and express their opinions according to the season's harvest. According to our menu, after the wine match is complete, we meet our bartender friend because sometimes our customers may not want to complete their menu with wine."*

Chef6 explained an answer similar to that of Chef5 in question 19:

*"I will do it with my wife. I trust the opinions of someone who knows me better than me. Sometimes I get comments unexpectedly and it directs me. After writing my wife's ideas aside, we proceed a little hierarchically and continue my tasting with my sous chef (he's always involved), our restaurant manager and the head waiter. In this way, the whole team is doing the tasting in turn."*

*Q22 - Does the new menu have a trial period? What do you evaluate in this process? Whose ideas are important?*

In the kitchen, in chefs' creation processes, the most parallel phase with the design thinking approach seems to be the trial-error processes. Chef8

*"Every meal included in the preparation of the menu goes through a trial period. Then we look at the menu as a whole. In this process, the harmony of the meals with each other is fundamental. In addition, the management department of our restaurant analyzes the cost. Therefore, all stakeholders from the purchasing team to their suppliers are involved in this process and everyone's opinion is technically important."*

Chef3's situation is slightly different due to the frequency of their menus changing.

*"In our restaurant, the menus change every month. Moreover, depending on the season, the weight we give to the trial period necessarily changes. We are swamped in the summer season.*

*Sometimes the new menu can be determined automatically during the service. In the winter season, we can spend more time in the kitchen, talking and discussing, sharing ideas as a team. In fact, this process prepares us for busy seasons and we become more confident."*

Chef4 has to modify their menus in the international chain restaurant continually. He explained this situation as follows:

*"My restaurant is the Istanbul branch of an international chain of fine-dining restaurants. Menus usually come from the restaurant's database. But we evaluate it and sometimes modify it to adapt it to the tastes of Turkish customers. If we do not make modifications, we can not stand the conditions of Turkey as a restaurant."*

**Implementing**

The implementation stage questions were asked to understand how chefs evaluate their final product when served to the actual customer, how they inform their customers and what are the feedbacks that they obtained that require any alterations during serving and how implementing stage inform future ideas.

*Q23 - How do you evaluate plates that are not preferred by customers after entering the menu? (Do you remove it from the menu? Or do you make adjustments?)*

From the answers given to this question, it is seen that chefs are not preferred to remove the dishes they put on their menus for whatever reason. Chef1 described this situation as follows:

*"There is much work for our front house team here and I expect them to make observations during the service. I wonder why the uneaten plates are just tasted and not eaten. This may be caused by a mistake in the kitchen at that moment (our chef may have put too much salt during the busy and paced service) and it may be an unpredictable situation during the formation of the plate in general. A momentary error can be fixed, but if there is a general reason for not being*

*preferred, I would not consider removing that plate from the menu. Instead of 10 people, two people can eat. Sometimes our customers do not prefer to eat dessert at the end of the meal. Then should I not put dessert on my menu? I approach this situation like this."*

Chef4 answered this question from the ingredient perspective:

*"We buy the ingredients we use in some of our dishes seasonally. If there is a dish that is not liked, I cannot remove it from the menu. It will harm us. I look for alternative solutions and make changes to that plate."*

Chef3's approach to this question connects the entire restaurant operation:

*"After service, we sometimes give our customers questionnaires to evaluate our service. They tell us their views about the meals in detail. We return to them in the same way."*

Chef6, on the other hand, answered this question through an experience he had:

*"On one occasion, a customer was not satisfied with the food she ate and after she left my restaurant, she made severe comments about my restaurant on a review site. I was able to access our customer's contact information from my friend in charge of reservations and called her. After a long conversation, I realized that her dissatisfaction was not caused by the food she ate but by my service staff's behavior."*

The reasons for undesirable or non-eaten dishes should be investigated thoroughly before changes are made because the restaurant operation is holistic. The burden of the problem with any part of this whole is often placed on the dishes.

*Q24 - After a dish entered the menu, have you ever removed any plate, even if your customers liked? Why and what are the reasons? (or possible reasons)*

There may be undesirable events where the chefs have to give up their meals even though their customers like them and when the customers do not like their meals. There are differences between the two situations. Chef1 answered this question as follows:

> *"Yes, we may encounter such situations because, as per the philosophy of our restaurant, we only prepare plates from the products of the region we are in. Sometimes an ingredient on the menu can run out. Then we have to remove it from the menu, even if we don't want to."*

Chef7 made a similar statement with Chef1:

> *"These situations are usually caused by the disruptions in the supply process. If I cannot reach a product with the same quality as a product that I cannot supply, I have to remove that dish from my menu."*

Chef5, on the other hand, answered this question by explaining a problem he experienced during the service:

> *"We realized that it takes a long time to prepare a dish we put on our new menu during service. It was disrupting the flow of service. So we removed that dish completely from our menu to modify it for the next menu."*

Surprisingly, considering the answers to the previous question, diners' unwillingness to a particular dish is the last reason for a chef to give up on any dish.

*Q25 - Do the customers know that the new menu has been launched?*

Considering customers' preferences and expectations at every stage of planning a new dish or menu, chefs' most distinctive feature is that chefs do not make great efforts to announce their new menus. They do not make social media channels the primary source for launching their new menus to their customers. However, they use social media to express themselves, showcase their work and communicate with a larger audience. As a result, they state that their customers have already visited their restaurants. Chef8 explained this situation as follows:

*"Our customers who follow us know that the new menu has been launched. We make related announcements on our social media accounts. We also share our work on the new menu. In this way, I think we arouse more interest in our customers."*

Chef2 stated that they reached their customers via e-mail:

*"Our restaurant has an e-mail system. We inform our customers who have visited our restaurant before that the new menu is ready via e-mail. We also share on social media."*

Chef3 stated that they informed their customers about their new menu face to face:

*"We tell our customers that our new menu is prepared, while we are passing them to our restaurant. And sometimes, at that moment, we can get a new reservation right away. Our website is always updated. Our customers can follow that the new menu has been released from there, but now social media is much more powerful in this regard."*

### *4.2.2. Summary*

Table 16 shows the themes that emerged during the interviews. The common terms used by all eight chefs who contributed to the interviews were called “common themes”. For example, all eight chefs used the word observation in both empathy and implementing stages, or they used the terms inspiration, culinary trends and seasonality in their research, idea generation and prototyping stages. The colored common themes that emerged in one or more stages indicate the nonlinear structure of chefs’ new dish/menu development processes in which they consult the same theme in different stages to improve and enhance their processes.

The terms used by at least two of the eight chefs were called “uncommon themes”. For example, while four chefs used the word brainstorming in the idea generation stage, three chefs used the word trial-error in the prototyping stage.

Empathy is the ability to become aware of another person's feelings, thoughts, tendencies and character by sharing and experiencing them. Lack of concrete techniques of empathic knowledge that will contribute to companies' daily workflow and facilitate them, design thinking's empathy methods can be used to develop empathetic perspective both towards customers and among team members (Köppen and Meinel, 2014). In the design thinking context, empathy is the realization of what is seen as meaningful by taking the multiple perspectives of others (co-workers, customers, stakeholders, competitors), identifying their behaviors, as well as both explicit and latent physical and emotional desires and needs (Connel and Tenkasi, 2015; Glen, Suciu and Baughn, 2014; Brown, 2008).

Table 16. The common and uncommon themes emerged after thematic analyis of the interviews

| | Empathy | Define | Idea Generation | Prototyping | Testing | Implementing |
|---|---|---|---|---|---|---|
| Common themes under constructions | | | Teamwork | Teamwork | Teamwork | Teamwork |
| | Feedback | | | Feedback | Feedback | Feedback |
| | Diners | | | | Diners | Diners |
| | | Inspiration | Inspiration | Inspiration | | |
| | | Culinary trends | Culinary trends | Culinary trends | | |
| | | Seasonality | Seasonality | Seasonality | | |
| | Observations | | | | | Observations |
| | | | Conversations | | | Conversations |
| | | | | | Service staff | Service staff |
| | | Social media | | | | Social media |
| Uncommon themes under constructions | Comments | Developments | Brainstorming | Combination | Cost | Quality |
| | Expectations | Eating Out | Menu development | Cooking | Criterias | Solutions |
| | Needs | Practical knowledge | Motivation | Diversity | Family and friends | Supply chain |
| | Opinions | Restaurants | Multidisciplinarity | Draft and final | Harmony | Sustainability |
| | Perceptions | Theoretical Knowledge | Nature | Evaluation | Management | |
| | Preference | Travelling | Note taking | Failure | Modification | |
| | Reviews | | Respect | Five senses | Producers | |
| | Understanding | | Science, music, art | Ingredients | Stakeholders | |
| | | | | Interpreting | Suppliers | |
| | | | | Questions | | |
| | | | | Tastes | | |
| | | | | Trial-error | | |

By using observation and empathy methods, such as interviewing, conducting feedback surveys, or engaging with people in the real environment, designers better understand the essence of a project task or problem and thus have the most extensive knowledge of the users of their future products (Tschimmel, 2012).

Chefs stated that they need to understand their customers' desires and expectations to provide better products and services. Their professional passions and skills can elaborate on the positive feedback they will receive. Moreover, all chefs have stated that their doors are open to customers from all segments as long as they realize the limits of their restaurants' service and have good management of the customer portfolio who prefer their restaurants.

Today, the dining experience has gone beyond eating good food and has been about how we interact with our senses and appreciate that food. This has strengthened the work experience by opening closed doors between chefs and customers through communication. In other words, understanding customers means seeing their needs and expectations, understanding the way customers perceive while meeting those expectations, observing their experience and as a result receiving their feedback or satisfaction. Parasuraman, Zeithaml and Berry (1988) introduced SERVQUAL method to measure expectations and perceptions of customers by using five service quality assessment dimensions which are tangible, reliable, responsive, assurance and empathy. Empathy expectations of customers from restaurants are low in previous studies conducted on this basis (Zopiatis and Pribic, 2007; Cheng, Chen, Hsu and Hu, 2012) and Cheng et al. (2012) recommended that empathy resources be redirected to other dimensions to satisfy customer expectations. However, in this study, it has been an essential feature of the culinary design thinking model to provide customers with quality products and experiences by approaching them empathically, understanding and observing them. As a result, chefs can collect data from and work on the four key customer factors that they should focus on when empathizing; (1) needs and expectations, (2) perception, (3) experince and (4) satisfaction. A restaurant operation that dominates these four customers factors and examines them with a design thinking approach can find a place in the competitive gastronomy world.

Unlike design thinking, culinary design thinking empathy is limited to what the restaurant offers in its borders of style and philosophy. A customer should not expect a meat-based meal from a vegan restaurant, but a vegan meal on offer can sensually create a meat-eating experience. The question is, how empathetic is the customer to the restaurant?

In the interviews, at the define phase of design thinking, chefs continously talked about dining out. For that reason, in the culinary design thinking model define stage of design thinking has been alson entitled as “dining out” for this thesis. In the define stage of design thinking, insights and data gathered from the empathy stage are reviewed, selected and eliminated to focus on the project and deeper definition of users, the problem and context (Henriksen, Richardson and Mehta, 2017; Tschimmel, 2012). What will be obtained here is a roadmap for the progress of the project and the project ideas are analyzed and defined in a broader context.

Chefs should follow the current restaurant industry to process the data they gain in the empathy stage. Chefs simply offer dishes to the customers. In order to differentiate the products, they present, they need to be aware of their competitors in their industry. A meal is not just a meal; it is a multisensory dining experience that makes the customer sense the environment in which it is served, how it is presented and awakens all the senses. That is, chefs should encounter the dining experience themselves. As a fashion designer goes to other designers' fashion shows, shops, or an architect goes to other architects' buildings, chefs can visit other chefs' restaurants. Moreover, in the culinary operation, it is out of the question for a consultant agency to execute competitor analysis within the scope of the content of the menus or dishes. Therefore, either the chefs themselves or their colleagues from the operation can visit competitors.

Chefs can do work-driven and work-related eating, or a combination of the two, so they can both appreciate the meal and observe close competitors (Leschziner, 2015). However, eating at their competitors' restaurants is an internalized problem by chefs because they do not want to give the impression that they are taking others' opinions (Ibid.) Whereas observing competitors and then differentiating from them is crucial for organizations to achieve success in their products. As long as they dominate the industry, chefs position themselves in the competing industry. In other words, they

should observe the national and international restaurant business and get to know their competitors. There are several types of design thinking that organizations implement to achieve design outcomes (Chen and Venkatesh, 2013) and one of them is thinking about competitors (Beverland, Napoli and Farrelly, 2010; Dell'Era and Verganti, 2007). It is the managerial skill of organizations to observe and differentiate from competitors. Competitors' activities may change according to customer expectations and preferences. Therefore, organizations can derive ideas to develop their projects from external sources (i.e., customers, competitors, distributors and suppliers) as well as internal resources (i.e., employees, managers). (Bhuiyan, 2011). As can be seen from here, observing competitors is not the duty of only chefs. Observation should be done by everyone who is in service, such as managers, front house staff. The data obtained should be evaluated together.

Another stage that emerges in the culinary design thinking model and is compatible with design thinking is idea generation. In order to achieve the problem objectives outlined during previous phases, members generate many ideas by handling unstructured data. In this study, brainstorming, inspiration and teamwork elements are at the forefront of idea generation. Namely, the insight, experience and inspiration obtained from the previous phases are used during ideation to brainstorm ideas and refine concepts with the highest opportunity for an effective solution (Brown and Wyatt, 2010; Brown, 2008).

One idea generation aspect in culinary design thinking model which conforms to design thinking approach is brainstroming which helps draw on others' ideas in the team and translate knowledge about the problems and their roots into ideas that solve problems (Scheer, Noweski and Meinel, 2012).

In this study's qualitative phase, the interviewed chefs stated that they met with their teammates and exchanged ideas, but only three used the term brainstorming.

In the study of Lane and Lup (2015) with 40 Michelin starred chefs, brainstorming was mentioned only by one chef. However, Albors-Garrigos, Monzo and Garcia-Segovia (2017) stated that brainstorming between chefs and scientists solves the problem of applying the vacuum impregnation technique in the kitchen for cooking vegetables. Besides, in ElBulli Foundation, there is room for brainstorming sessions

(Abend, 2011). In both the literature and this study, it is observed that although the exchange of ideas is important for chefs, they do not include the brainstorming tool in their processes, which may be because no professional can show them how to do this. Specifically, why chefs should seek help from designers to incorporate brainstorming or other idea generation tools into the kitchen, thus exchanging ideas processes can both be facilitated and their work can gain quality.

Inspiration is the motivation of the search for solutions that seem to arise, such as social issues or future opportunities (Chou, 2018). In such a manner, what are the design problems that could be in the restaurant industry? Dorst (2006) defines design problems as ill-structured, which are lacks definition (Simon, 1973) and requires a combination of data sources to understand related elements and structure the design problem (Daly, McKilligan, Murphy and Ostrowski, 2017). In the culinary industry, design problems can be geographic, economic and socio-cultural conditions, political movements, aesthetic concerns (Leschziner, 2010; Fine, 2008), the sequence of sensorial sensations, multisensory experience (Ulloa, Roca and Vilaseca, 2017; Spence, Wang and Youssef, 2017), imitation of recipes and ethical code (Braun and Bockelman, 2016), human resources and managerial issues (Johnson, Surlemnont, Nicos and Revaz, 2005), product availability and supply chain (Murphy and Smith, 2009; Smith and Xiao, 2008; Strohbehn and Gregorie, 2003), health concerns (Schifferstein, 2015), environmental and animal rights (Piqueras-Fiszman, Varela and Fiszman, 2013; Honkanen, Verplanken and Olsen, 2006), ambiguous application of concepts of culinary product and culinary product development in haute cuisine context (Stierand, Dörfler and MacBryde, 2014).

The problems mentioned above constitute the sources of inspiration for the chefs, whether they are aware of it or not. In this study, seasonality and nature emerged as the most important source of inspiration and problem that chefs were trying to solve. Seasonality reflects the quality, freshness and regional characteristics of a product. Throughout history, societies have struggled with seasonal obstacles. In these periods, when the seasonality of almost every ingredient is globalized, chefs strive to achieve the seasonality offered by the past.

In teamwork at design thinking, as a result of the supporting and challenging of each other, more remarkable results are obtained compared to individual contributions, as there are interpersonal interaction and cooperation in tasks, because each individual creates different problem frameworks, different customer perspectives and different prototype solutions (Sonalkar et al., 2020). Another feature of design thinking processes is that it brings mutual understanding to both problems and possible solutions by collaborating multiple professions and team-based learning power (Lindberg, Noweski and Meinel, 2010).

Teamwork is an inevitable necessity in kitchens because the kitchen brigade system works to support teamwork. Today, even if the kitchen brigade system continues, chefs' strict hierarchy has started to disappear. Still, some chefs prefer to work alone when creating ideas, have a creative team, or give the whole team a chance.

Today, in the world of gastronomy, it is seen that chefs collaborate with different professional groups such as scientists, academics, designers, nutritionists, food technologists, psychologists, artist, artisans, architects and industrial engineers, etc. (Aguilera, 2018; Parasecoli, 2018; Caporaso and Formisano, 2015; Adria, Blumenthal, Keller and McGee, 2006)

Conceivably, noticeable progress has been made in culinary creativity and innovation because teamwork has developed and chefs have started collaborative work with other professions.

In design thinking, ideas are first created physically at the prototyping stage (Royalty, Chen, Roth and Sheppard, 2019). This stage also enables evaluating the potential for further idea generation (Seidel and Fixson, 2013), which shows a nonlinear design thinking approach. In this work, the prototyping stage is about experimenting, combining and interpreting ideas with different techniques and materials, which is the kitchen's experimental stage and requires repeated trial and error.

Trial-and error learning via iterative forms, prototyping and trials explores several potential solutions with end-users and other project stakeholders and characterizes design thinking (Beverland, Wilner and Micheli, 2015).

In haute cuisine restaurants, the most used cooking gel agents such as agar, xanthan, alginates and gelatines are achieved for ideal consistency through trial-and-error experiments since manufacturers do not provide fundamental information (Barham et al., 2010). In the study of Slavich, Cappetta and Salvemini (2014) with two haute cuisine restaurant chefs, one chef mentioned that he must prepare the best prototype so that his products can be prepared perfectly again and again by his team. The implementation phase of culinary innovation development involves creating prototypes, which includes sensory analyzes of prototypes with internal (staff) and external (customers, stakeholders) customers and also a comparison of the new prototype to competitors' similar products (Ottenbacher and Harrington, 2007b; Harrington, 2004). In the recently presented method of Participatory Research through Gastronomy Design (PRGD), the material artifacts and gastronomic experiences are prototyped by "designer-chefs" with participants (Wilde and Bertran, 2019). Culinary applications are primarily craft-based and progress with the experience and intuition of chefs gained over the years. Although, according to Von Thienen et al. (2018), initial prototypes do not require technical ability, in the kitchen, technical skills and knowledge of chefs are essentials. The restaurant operation's prototyping phase and the tools used here will naturally be unique to the kitchen. Prototyping is when data is combined with technical skills after being transformed into ideas with creative methods during Idea generation. Chefs can also devote a short time to their experimental work in the kitchen; like El Bulli, they can also devote six months of the year to their work for the new menu.

During the testing phase, customers and stakeholders are contacted to get feedback for prototypes and prototypes are clarified, redefined, or reconsidered, requiring the designer to return to previous stages (Henriksen, Richardson and Mehta, 2017). Likewise, in restaurant operations, products are developed by receiving feedback from internal and external customers in order for a product or service to add value to both the customers and the operation itself and to maintain a competitive advantage.

In the qualitative part of the study, all eight chefs stated that they included the entire team, producers, family, close friends and regular customers in the testing. In addition, a chef declared that after the menu was determined, they gave a restaurant simulation and that each station in the kitchen performed their duties as if the remaining team

were customers. In culinary design thinking, idea generation, prototyping and testing have an iterative structure as in design thinking. Based on an idea, a prototype is created, tested and modifications can be made according to the feedback. When a second prototype is determined, this time, it is also crucial that the first and second prototypes together are compatible with the concept that the chefs have planned. Ensuring harmony in products is a cumulative study. Tests start with the chef's brain team; as the dishes progress, the number of people participating in this stage increases because the menu gradually forms. The sommeliers have to match wines for the dishes, or the front house has to serve each dish in the dining room. In restaurants, customers receive the service with the dishes; hence every individual involved in this service should know what is being served and should be tested with them. This study revealed that new products should be tested with the whole team during the testing phase and changes should be made according to the feedback. Also, it has been revealed that the waiting time for the kitchen service should not be excessively long after the customer orders a meal and this will be determined during the testing phase of the new menu.

Tasting is one of the most critical actions of the kitchen operation, starting from raw to processed product. While the outcome is tested, it is also tasted. Even if both actions take place in parallel, the information and opinions to be obtained will affect the effort to create a new dish in diverse directions. While testing simulates the kitchen and service operation, the tasting evaluates the dish itself. At this stage, besides the team involved in testing, there are external staff, including families, close friends, regular customers and producers. Each of the chefs interviewed stated that they included people whose ideas and opinions they trusted in the tasting processes of a new dish or menu.

According to the problems determined in design thinking, ideas are produced, synthesized, prototyped and a concept is determined to be tested, prototypes are prepared for real-world application after repeated testing (Brown, 2009). During the implementation phase, the solution can be improved by further prototyping and testing to make it scalable, communicable and sustainable (ibid). This situation is distinctive in restaurant operation because restaurants deliver dishes every day and change them in line with their styles, daily, weekly, monthly, or seasonally according to customer expectations and culinary trends. In the culinary design thinking model, implementing

refers to cooking and serving, i.e., the actual dining experience. At the end of the previous stages, the menu is determined, tested and ready for service. Chefs generally do not change their menus after their new menus have been determined and launched, except for unexpected situations (e.g., running out of raw materials) because every element that will ensure the sustainability of a menu is planned and designed. The implementing stage is a performance where the whole team is in communication with customers. In this study, the service team will observe the customers; if necessary, the chefs communicate with them. The feedback, reviews and comments will provide new data for the next menu or dishes. Each data obtained from here will be a source for the empathize stage of the culinary design thinking for the next meals and menus. Thus, based on customer expectations for the new menu, experiences can be designed based on perceptions. In this study, two important factors of the implementation phase have emerged to ensure the continuity of the operation—first, cooking of the food and then serving the dish.

According to Brown (2009), in order for an idea to become an experience, it must be implemented with the care it was designed for and he explained this idea by emphasizing the difference between cooking and experience designing activities. Accordingly, if a chicken becomes like rubber, the effect of the experience will be lost (ibid). The cooking stage of the implementation phase is to prepare the perfect dish and make it ready for service. This process occurs in the kitchen, where chefs concentrate on their duties and work against time under intensive and pressure conditions.

In addition to the physical features of the tangible product of the kitchen, abstract dimensions start to emerge when food is served to the diners. Meanwhile, the shaping of the dining experience is a holistic plate with detailed efforts behind it. Thus, the material object becomes an experience in the dining room. The service phase is the moment when customers are communicated face to face. Every feedback, opinion and insights obtained here will produce new data for the following new menu.

### *4.2.3. Development of Culinary Design Thinking Model*

The results of interviews that were conducted under three phases (analytical, creative and executive phases) and six stages (empathy, define, idea generation, prototyping, testing and implementing) revealed that there was an additional stage which was occurred during chefs' new dish or menu development processes was menu development Figure 19. Thus, according to the culinary design thinking model, the measurement model was generated by including the menu development stage.

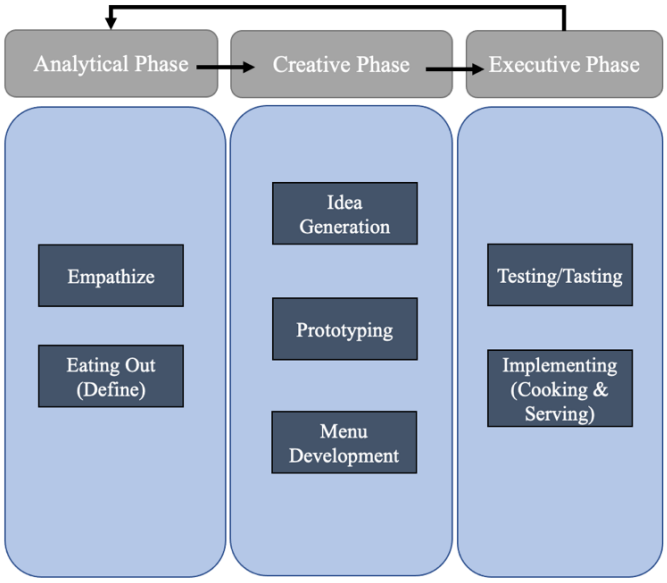


Figure 19. Culinary design thinking model

#### 4.2.3.1. Descriptive Statistics

The survey was sent to 280 chefs; 156 complete surveys were returned and valid questionnaires were returned. All the respondents were classified based on their current employment and job classification. Current employments were titled as instructor chefs (N=33), hotel chefs (N=66) and restaurant chefs (N=57). Job classifications were titled as executive chef (N=63), sous chef (N=25), chef de partie (N=10), pastry chef (N=14), commis chef (N=11) and instructor chef (N=33). The respondent sample contained many more males (79.5%) than females (20.5%) and nearly half of the respondents (42.9%) were aged 26–35 years, followed by respondents aged 36–45 years (36.5%). Respondents' demographic profile is summarized in Table 17.

Table 17. Demographic profile of the survey participants of the Study 2 (n=156)

| **Characteristics** | **Frequency** | **%** |
|---|---|---|
| *Gender* | | |
| Female | 32 | 20.5 |
| Male | 124 | 79.5 |
| | | |
| *Age* | | |
| 18 - 25 | 22 | 14.1 |
| 26 - 35 | 67 | 42.9 |
| 36 - 45 | 57 | 36.5 |
| 46 - 55 | 10 | 6.4 |
| Over 56 | 0 | 0 |
| | | |
| *Years in service* | | |
| 1 - 5 | 23 | 14.7 |
| 6 - 10 | 30 | 19.2 |
| 11 - 15 | 26 | 16.7 |
| 16 - 20 | 34 | 21.8 |
| More than 21 | 43 | 27.6 |
| | | |
| *Education* | | |
| Secondary school | 10 | 6.4 |
| High school | 45 | 28.8 |
| Associate degree | 39 | 25.0 |
| Bachelor degree | 42 | 26.9 |
| Graduate degree | 20 | 12.8 |
| | | |
| *Current Employment* | | |
| Restaurant chef | 57 | 36.5 |
| Hotel chef | 66 | 42.3 |
| Instructor chef | 33 | 21.2 |
| | | |
| *Job Classification* | | |
| Executive chef | 63 | 40.4 |
| Sous chef | 25 | 16.0 |
| Chef de partie | 10 | 6.4 |
| Pastry chef | 14 | 9.0 |
| Commis chef | 11 | 7.1 |
| Instructor chef | 33 | 21.2 |

#### 4.2.3.2. Measurement Model

In order to evaluate the measurement model, outer loadings, composite reliability (CR), average variance extracted (AVE), or convergent validity and discriminant validity were assessed. First, the measurement model was analyzed for internal consistency and convergent validity. Composite reliability was calculated to observe, assuming that each indicator could evaluate/determine the latent construct. The CR indices of each factor were greater than the recommended value of 0.7 thresholds (Bagozzi, 1980; Hair et al., 2013). Furthermore, the convergent validity of the constructs was measured by examining the factor loadings and the AVE. As shown in Table 18, all of the factor loadings were, except item9 0.589, in the range from 0.620 to 0.849 and significant at 0.001, which are above the recommended value of Chin, Peterson and Brown (2008). The item9 was not deleted since it did not contribute to an increase in composite reliability and average variance extracted (AVE). Moreover, according to Hair, Black, Babin and Anderson (2009), convergent validity was indicated by an item factor loading 0.5 and $p<0.05$. AVE should exceed the 0.05 threshold (Bagozzi and Yi, 1988; Hair et al., 2013). All the constructs included in this study ranged from 0.467 (for the construct of implementing) to 0.626 (for the construct of menu development). Although there were values lower than 0.5 considering Fornell and Larcker's (1981) suggestion if AVE is less than 0.5 yet composite reliability is higher than 0.6, the construct's convergent validity is still adequate Table 18.

Table 18. Factor loadings, AVE, CR and Cronbach's Alpha for the Study 2

| | | Loadings | AVE | CR | Cronbach's Alpha |
|---|---|---|---|---|---|
| | ***Empathize*** | | **0.469** | **0.814** | **0.719** |
| Item22 | I regularly follow the current developments in the culinary world. | 0.717 | | | |
| Item19 | There are Turkish and foreign chefs whose work I follow | 0.715 | | | |
| Item3 | I know customer portfolio who prefer my restaurant. | 0.707 | | | |
| Item8 | In order for a chef to offer better products, he needs to understand his customers' wishes and expectations very well. | 0.686 | | | |
| Item9 | Social media channels and web pages are an important tool to follow the developments in the culinary world. | 0.589 | | | |
| | ***Eating Out (Define)*** | | **0.548** | **0.828** | **0.728** |
| Item12 | I dine to get ideas and inspiration from restaurants abroad. | 0.817 | | | |
| Item13 | I eat at restaurants abroad to understand the restaurant industry of foreign countries. | 0.763 | | | |
| Item11 | I eat in the restaurants in Turkey to observe culinary industry. | 0.740 | | | |
| Item10 | I dine to be inspired in domestic restaurants. | 0.630 | | | |
| | ***Idea Generation*** | | **0.494** | **0.795** | **0.657** |
| Item17 | I am inspired by different fields. (Science, visual arts, music, literature, philosophy, history, etc.) | 0.761 | | | |
| Item32 | Working with people from different disciplines (scientist, anthropologist, artist, sociologist, folklorist, etc.) provides new ideas during the menu creation phase. | 0.714 | | | |

Table 18 (Continued).

| | | Loadings | AVE | CR | Cronbach's Alpha |
|---|---|---|---|---|---|
| Item18 | When the work on creating a new menu begins, all chefs should come together and share ideas. | 0.680 | | | |
| Item15 | Brainstorming with the team while creating a new menu provides more ideas and options. | 0.651 | | | |
| | ***Prototyping*** | | **0.524** | **0.814** | **0.703** |
| Item25 | Combining different ingredients while working on a plate can produce creative results. | 0.778 | | | |
| Item27 | When planning a new menu, interpreting the ingredients and techniques of a traditional kitchen in different ways can inspire new ideas. | 0.775 | | | |
| Item28 | I try different cooking techniques. | 0.711 | | | |
| Item26 | We can achieve the results we want with the trial-and-error method in the kitchen. | 0.620 | | | |
| | ***Testing (Tasting)*** | | **0.564** | **0.794** | **0.611** |
| Item24 | In the tasting stage of the new menu, changes should be made according to the feedback. | 0.812 | | | |
| Item33 | Before the new menu prepared is put into service, it should be tasted with the service staff and their ideas should be taken. | 0.745 | | | |
| Item35 | The waiting time should not take much time after ordering a meal in the new menu. | 0.691 | | | |
| | ***Menu Development*** | | **0.626** | **0.833** | **0.705** |
| Item31 | Nature is an important source of knowledge and inspiration. | 0.849 | | | |

Table 18 (Continued).

| | | Loadings | AVE | CR | Cronbach's Alpha |
|---|---|---|---|---|---|
| Item21 | Seasonality is an important determinant in new menu or plate trials. | 0.762 | | | |
| Item30 | Current developments and trends in the culinary world should be taken into account when planning the menu. | 0.759 | | | |
| | ***Implementing (Cooking and Serving)*** | | **0.467** | **0.777** | **0.631** |
| Item1 | I follow the reviews and comments about my restaurant. | 0.662 | | | |
| Item4 | After the food service, chefs should go to each table one by one and get the opinions of their diners | 0.763 | | | |
| Item5 | During the service, report about the status of the dining area should be obtained from the service staff and the reactions of the customers should be observed. | 0.673 | | | |
| Item20 | Feedback from customers should be taken into account when planning the new menu. | 0.627 | | | |

In the next step, the discriminant validity was assessed by obtaining the square roots of AVE scores were higher than the related correlation coefficients, which indicated adequate discriminant validity (Fornel and Larcker, 1981). Table 19 shows the correlation matrix of the latent constructs and the square roots of AVE values are presented boldface along the diagonal. Furthermore, discriminant validity was also confirmed by employing the Heterotrait-Monotrait ratio (HTMT) of correlations (Table 19). When the HTMT criterion's predefined value is higher than the threshold, a lack of discriminant validity is expected (Henseler, Ringle and Sarstedt 2015). Authors propose a threshold value of 0.85 of Kline (2011) when constructs are conceptually more distinct, which is the most conservative criterion.

Table 19. Fornell-Larcker criterion and HTMT results

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| *Fornell-Larcker criterion* | | | | | | | |
| Cooking and Serving | ***0.683*** | | | | | | |
| Eating Out (Define) | 0.290 | ***0.741*** | | | | | |
| Empathize | 0.521 | 0.437 | ***0.685*** | | | | |
| Idea Generation | 0.316 | 0.495 | 0.461 | ***0.703*** | | | |
| Menu Development | 0.325 | 0.365 | 0.455 | 0.459 | ***0.791*** | | |
| Prototyping | 0.302 | 0.288 | 0.465 | 0.377 | 0.431 | ***0.724*** | |
| Testing (Tasting) | 0.195 | 0.331 | 0.368 | 0.410 | 0.525 | 0.469 | ***0.751*** |
| | | | | | | | |
| *Heterotrait-Monotrait ratio (HTMT)* | | | | | | | |
| Cooking and Serving | | | | | | | |
| Eating Out (Define) | 0.411 | | | | | | |
| Empathize | 0.739 | 0.573 | | | | | |
| Idea Generation | 0.473 | 0.695 | 0.644 | | | | |
| Menu Development | 0.442 | 0.501 | 0.623 | 0.651 | | | |
| Prototyping | 0.429 | 0.366 | 0.612 | 0.510 | 0.583 | | |
| Testing (Tasting) | 0.393 | 0.493 | 0.541 | 0.635 | 0.783 | 0.697 | |

***Notes:*** *Italic values represent square root of average variance extracted; Correlations of paired constructs are on the off-diagonal. All squared correlations are significant at p<0.05*

As shown in Table 19, all the values are under 0.85, indicating that discriminant validity is not an issue. In summary, the measurement model's convergent and discriminant validity were adequately supported by data analysis. Results of the measurement model showed that seven variables demonstrated convergent validity since the analysis revealed seven components with factor loadings displaying the

expected patterns linked to the culinary-related design thinking approach. Table 19 shows correlations among the factors. As a result, Hypothesis 1 predicted that chefs' working (creative) processes could be defined utilizing a design thinking approach. The emerging seven phases showed that this was so—the results of the measurement model analysis supported Hypothesis 1.

#### 4.2.3.3. Structural Model and Hypotheses Testing

This study used SmartPLS 3.0 software to test the structural model and hypotheses. To assess the structural model, predictive capabilities and the relationships in the model were executed via goodness-of-fit, coefficient of determination (R2), path coefficients and predictive relevance (Q2) (Hair et al., 2017) and they were reported using a bootstrapping procedure with 5,000 iterations suggested by Cheung and Lau (2007). The multicollinearity among the constructs was assessed by the variance inflation factor (VIF). As all the values were below the VIF threshold value of 5, which was recommended by Hair et al. (2017) and Ringle et al. (2015), showing multicollinearity is not an issue in the structural model. Although the explanatory power of the model is evaluated through R2 since PLS does not accomplish goodness of fit indices, Tenenhaus, Vinzi, Chatelin and Lauro (2005) introduce goodness-of-fit (GoF) index, a diagnostic tool, which is calculated by the geometric mean of the AVE and the average R2 of the endogenous constructs. For assessing the results of the GoF, the reported cutoff values are GoFsmall 0.1, GoFmedium 0.25 and GoFlarge 0.36 (Hoffmann and Birnbrich, 2012). For the model in this study, a GoF value of 0.540 was calculated, which indicated a very good model fit. According to Henseler et al. (2014), GoF is not a validity tool; thus, Henseler et al. (2016) suggested employing the standardized root mean residual (SRMR) to validate approximate model fit. Concerning model validation, the analysis reveals an SRMR value of 0.70, verifying the overall fit of the path model.

Next, R2 was used for structural evaluation, which is the primary way to evaluate the explanatory power of the predictor variables on the respective constructs (Figure 20).

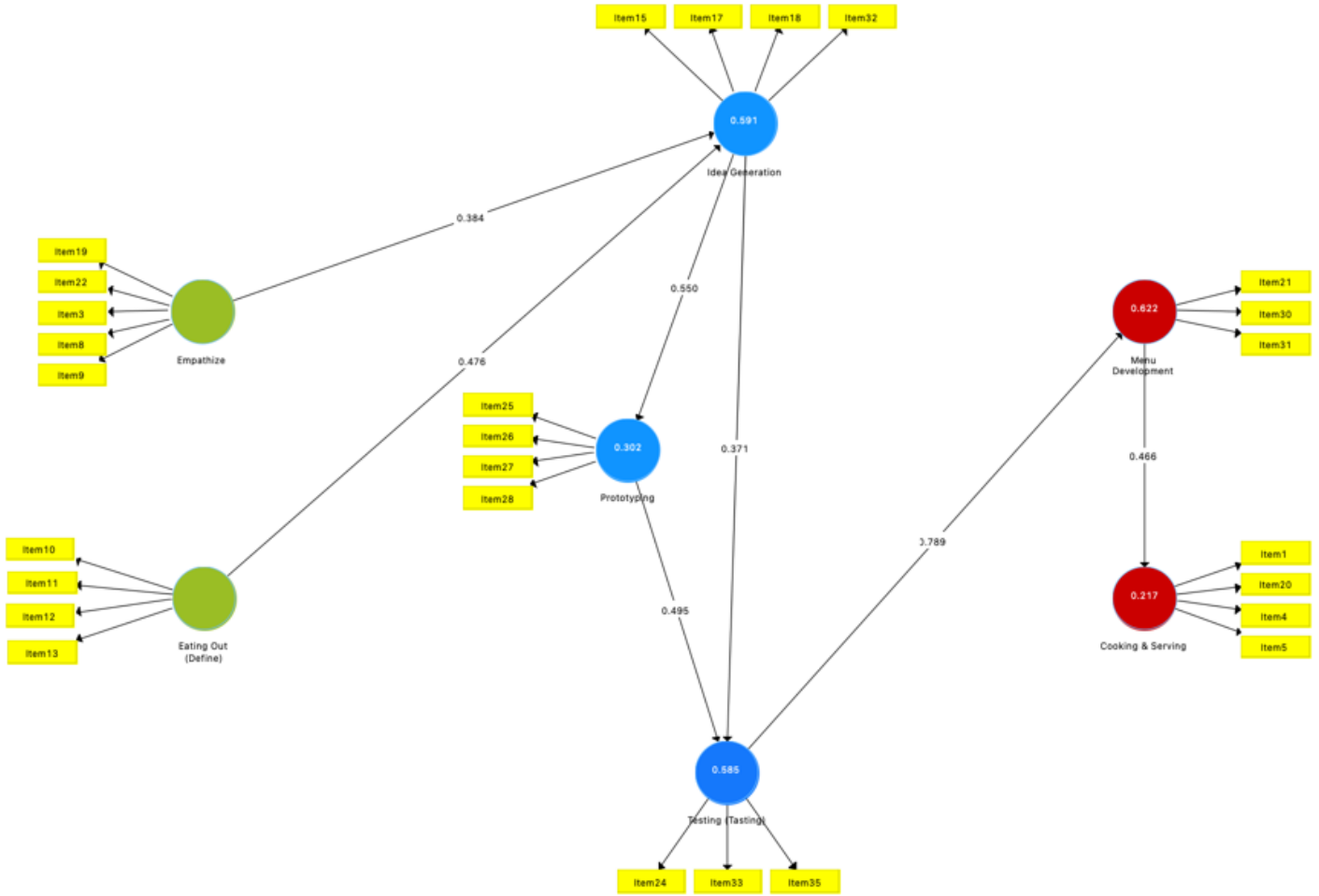


Figure 20. Structural Model for the proposed model

Empathize and eating out explained 59.1% of idea generation ($R^2$=0.591). Idea generation predicted 30.2% of prototyping ($R^2$=0.302). Whereas idea generation and prototyping explained 58.5% of testing ($R^2$=0.585). Testing 62.2% of menu development ($R^2$=0.622). Moreover, menu development predicted 21.7% of the implementing (cooking and serving) ($R^2$=0.217). Regarding model validity, Chin, Peterson and Brown (2008) classified endogenous latent variables as substantial, moderate, or weak based or $R^2$ values of 0.67, 0.33, or 0.19, respectively. Accordingly, idea generation ($R^2$=0.591), prototyping ($R^2$=0.302), testing ($R^2$=0.585), menu development ($R^2$=0.622) and implementing ($R^2$=0.217) can all be described as moderate. In addition to the size of $R^2$, cross-validated redundancy $Q^2$ (Stone-Geisser criterion) values were calculated to examine the predictive relevance using a blindfolding procedure. Chin (2009) suggested that with a $Q^2$ greater than 0, the model has predictive relevance. As shown in Table 20, $Q^2$ values of the constructs range from 0.038 to 0.166, indicating that the model has good predictive relevance.

Table 20 Stone Geisser criterion

| | **$R^2$** | **$Q^2$** |
|---|---|---|
| Cooking and Serving | 0.217 | 0.038 |
| Idea Generation | 0.591 | 0.136 |
| Menu Development | 0.622 | 0.166 |
| Prototyping | 0.302 | 0.065 |
| Testing (Tasting) | 0.585 | 0.139 |

The complete result of the structural model and hypotheses testing are presented in Table 21. According to the H2, it was expected positive relationships and direct effects between the phases. Furthermore, H3 predicted that phases of the culinary design thinking model have indirect effects on each other. Table 21 shows that culinary design thinking

Table 21. Results of structural model and hypotheses testing

| | Direct Effects | Path Coefficient | Standard deviation | t-value | p-value | Decision |
|---|---|---|---|---|---|---|
| H2 | Eating Out (Define) -> Idea Generation | 0.363 | 0.077 | 4.692 | 0.000** | Supported |
| | Empathize -> Idea Generation | 0.302 | 0.074 | 4.109 | 0.000** | |
| | Idea Generation -> Prototyping | 0.377 | 0.072 | 5.229 | 0.000** | |
| | Idea Generation -> Testing and Tasting | 0.271 | 0.092 | 2.958 | 0.003** | |
| | Menu Development -> Cooking and Serving | 0.325 | 0.070 | 4.638 | 0.000** | |
| | Prototyping -> Testing (Tasting) | 0.367 | 0.099 | 3.693 | 0.000** | |
| | Testing and Tasting -> Menu Development | 0.525 | 0.066 | 7.911 | 0.000** | |
| | Total Indirect Effects | | | | | |
| H3 | Eating Out (Define) -> Cooking and Serving | 0.025 | 0.012 | 2.166 | 0.030* | Supported |
| | Eating Out (Define) -> Menu Development | 0.078 | 0.025 | 3.119 | 0.002** | |

Table 21 (Continued).

| | | | | | |
|---|---|---|---|---|---|
| Total Indirect Effects | | | | | |
| Eating Out (Define) -> Prototyping | 0.137 | 0.040 | 3.397 | 0.001** | |
| Eating Out (Define) -> Testing and Tasting | 0.149 | 0.037 | 4.023 | 0.000** | |
| Empathize -> Cooking and Serving | 0.021 | 0.012 | 1.691 | 0.091* | |
| Empathize -> Menu Development | 0.065 | 0.031 | 2.128 | 0.033* | |
| Empathize -> Prototyping | 0.114 | 0.042 | 2.705 | 0.007** | |
| Empathize -> Testing and Tasting | 0.124 | 0.050 | 2.464 | 0.014** | |
| Idea Generation -> Cooking and Serving | 0.070 | 0.027 | 2.583 | 0.010** | Supported |
| Idea Generation -> Menu Development | 0.215 | 0.059 | 3.675 | 0.000** | |
| Idea Generation -> Testing and Tasting | 0.410 | 0.080 | 5.138 | 0.000** | |
| Prototyping -> Cooking and Serving | 0.063 | 0.031 | 2.043 | 0.041* | |
| Prototyping -> Menu Development | 0.193 | 0.066 | 2.926 | 0.003** | |
| Testing and Tasting -> Cooking and Serving | 0.170 | 0.044 | 3.848 | 0.000** | |

Notes: *$p<0.05$, **$p<0.01$

### *4.2.4. Summary*

As a result of the interviews with eight chefs, it was observed that the chefs' designing a new dish or menu was a separate stage and it was assumed that this situation could be added as a new step to the design thinking processes in the kitchen. Since this additional event is specific to the kitchen, this model was named "culinary design thinking."

H1 established within the scope of RQ3 was to explain the creation processes of chefs with a design thinking approach. As a result of measurement model analysis, H1 was supported. Another issue was that the stages that the chefs carried out in their creation processes had both direct and indirect effects on each other. Structural model analysis has revealed that direct (H2) and indirect (H3) effects are supported.

As a result, the chefs' culinary design thinking model consists of seven stages. These were empathize, define, idea generation, dish/menu development, prototyping and testing/tasting, cooking/serving. Each stage impacts the next stage and a stage can also affect the next 2nd or 3rd stage. In other words, the culinary design thinking model is linear, circular, cumulative and holistic.

## *4.3. Study 3 – Creative Culinary Product Modelling*

The aim of the study was to understand how Turkish cuisine professionals express and define Turkish cuisine products (dishes) by utilizing the creative product and design thinking product characteristics. In this third study, the interviews of Study 1 and Study 2 were examined within the scope of creative product approaches of creativity discipline and design product approaches of the design discipline. The 5-point Likert scale created later examined how the chefs perceived the creative products of Turkish cuisine.

### *4.3.1. Understanding Creative Culinary Product Attributes from the Interviews with Chefs and Experts*

Table 22 shows the interview results of the Study I and Study II that summarize and categorize the views of the participants with reference to creative product attributes.

Table 22. Interview results of Study 1 and 2 related to the product attributes

| **Chefs** | **Creative Culinary Product Attributes** | **Experts** |
|---|---|---|
| Chef2; There are so many *unrevealed dishes* in Turkish cuisine. I know that discovering and interpreting them instead of the known ones will bring innovation to my plates. Chef6; Sometimes when preparing my dishes, I use ingredients that do not belong to the geography of Turkey, but I finish that dish with a yogurt-based sauce. I am ready to argue for the dishes that I have prepared in this way. I don't like the terminology of fusion cuisine. My inspiration is Turkish cuisine. Every dish you will see in my restaurant has the basics of Turkish cuisine. | ***Authentic / Original*** | Expert4; When we look at the sources of Turkish food culture, we see *authentic* and genuine dishes unique to Turkish cuisine. For real Turkish cuisine, we should look for traces of these on the plates of the chefs. Expert7; I can experience authenticity in China but never in the UK. The past depth of food cultures can be sought as authenticity in the modern restaurant industry. But the authenticity of Turkish cuisine is not kebab. |

Table 22 (Continued).

| | | |
|---|---|---|
| Chef1; I think the point that will determine the *extraordinaryness* of the dishes of the chefs is not the ingredients they use. It's how they use those ingredients, how they process them. Chefs make dishes by combining a lot of ingredients. In the same way, I think different cooking techniques should be applied in a meal. | ***Unique*** | Expert6; I go to the same restaurants abroad at least twice a year for my job. And every time I come across unique plates. Chefs never repeat themselves and that's their goal. |
| Chef4; The dish I prepare must have a meaning. I usually try to create this meaning by taking advantage of our food culture. In Turkish food culture, there are traditional dishes made for celebrations and laments. Of course, if I'm offering my customer halvah, I'm not doing it to make him sad. Chef3; I always aim to give my customers an experience they will remember. Who does not like candy apples? | ***Evokes emotions*** | Expert6; There are tables prepared for special occasions in traditional Turkish food culture. People associate specific foods and their smells with their emotions or memories. Chefs abroad work on fragrances to stimulate their customers' feelings. |

Table 22 (Continued).

| | | |
|---|---|---|
| Modernist cuisine and science add new products to the kitchen. In recent years, we have started to use chemistry-based products that have never been used in the kitchen before. I think this takes a lot of courage. Yes, great success, new and pioneering products may emerge as a result, but there is also the other side of the coin. Chefs may have to lock the doors of their restaurants just because they're going to do something different from everyone else. | ***Pioneer*** | Gastronomy has a short history when we look at it. We see pioneering meals and presentations that shape history and they turn into a culinary movement. And these culinary movements dominate the periods. |
| I love to surprise. In my work outside the kitchen, I direct my focus to being able to prepare unexpected products for my customers. Also, working on this subject outside of the kitchen both gives me pleasure and motivates me. | ***Surprising*** | "What" or "Waow" were the only two restaurants where I said these words, frankly, in Turkey. Our food is already delicious there is nothing I can say. But after I put that first fork in my mouth like this, I want my pupils to dilate, I want to say, "what the heck". You go to a restaurant abroad, you read the menu, it simply says "mushroom soup", but in the first bite you realize that it is not just a mushroom soup. |

Table 22 (Continued).

| | | |
|---|---|---|
| Turkish cuisine is a versatile rich cuisine. We should use this power in the dishes we prepare. Recently, there has been a concept called "food should tell a story". Actually, I think it's always been there. I still go back to my childhood when I was cooking. I feel my mother's, my grandmother's cooking. A piece of those memories is always in my meals. First of all, taste. Of course, there are also chefs who build this on specific events. I am planning a seafood menu and I am preparing it by remembering and inspired by the fishing trips I went out with my father. | ***Tells a story / has background*** | So now everything started to become uniform. This also applies to culinary products. Open the web pages or instagram accounts of the restaurants that say they cook so-called fine dining, uniform. The chef himself is important, what he tells us is important, what I get from his meal is important. The difference is now entirely in the chefs themselves. I go to chefs, not restaurants. |

Table 22 (Continued).

| | | |
|---|---|---|
| You're not a chef if you're making a tasteless dish.<br><br>Taste is always the priority.<br><br>What's the point of a dish that isn't tasty?<br><br>The first expectation of our customers and myself from my plate is a tasteful dish. | ***Tasteful*** | If it's a tasteless meal, why would I go to that restaurant again?<br><br>I'm not biased, never. But before I go to a restaurant, I read the reviews about it and the first word that always catches my eye is taste.<br><br>Put everything aside. It is different, innovative, special, unique but tasteless. Forget that meal. |
| I think my food is healthy because Turkish cuisine is a healthy cuisine. Like fish, tail fat is healthy. I am not presenting a green or fit concept here, but I also do not use industrial products. I think everything is balanced.<br><br>If people ate at my restaurant every day, their health would improve hahaha. That's right! Really! All my products are from the producers, natural, fair, clean and real. There is no artificial product, nor will there be. | ***Healthy*** | Nutritional values may not always be balanced, there is no such rule. But a healthy balance can be achieved as a result of the overall experience in a fine dining restaurant. There are chefs who aim for this. Of course, when you eat a single dessert plate, you will not consume a healthy product, but the chefs aim to consume a quality product. |

Table 22 (Continued).

| | | |
|---|---|---|
| I don't believe those who say that "we got up without being satiated". I think there is something else behind this sentence. In fact, when you look at the whole, even our simplest course is too much for a standard person in terms of nutritional values and weights.<br><br>If you leave hungry after eating at my restaurant and if you eat kokoreç or a wet hamburger on top of that, you are doing injustice to the chefs of those dishes. Yes, a successful meal should be hearty, but this is true for any segment of restaurant. However, at our restaurant, our goal is not to physically feed people. In addition, our customers, who have already encouraged us, leave our restaurant full of satisfaction. | ***Filling*** | If I leave a restaurant hungry, it's because their food is tasteless. After a successful dining experience, I feel completely fulfilled with a light digestive drink. |

Table 22 (Continued).

| | | |
|---|---|---|
| When my plate is served, my customers should look with curiosity, not with a frivolous expression. That's why I think the expressions we use in the menu are very important.<br><br>We may want to surprise our customers, but in the end, they need to know what food they are eating. They should be able to argue among themselves and come to a conclusion. Or, when asked to the service team, they should say "aaa yes" in response to the answer they received. | ***Understandable*** | Regardless, I need to be able to understand what I'm eating. Or it must have some meaning as to why the chief applied specific techniques. Therefore, it is very important that the menu and service team inform us. Maybe there should be open meals like an open kitchen. Of course, chefs should keep the secrets that make them special. |

Table 22 (Continued).

| | | |
|---|---|---|
| We have been chopping onions for years, picking parsley and not complaining. Good thing I did them. My expectation from the trainee chefs who come to my restaurant is chopping onions. Not that they will make my job easier. This is the meaning of internship. Let them get to work. If they want to be like me, they have to cross the paths I've gone through.<br>Our job is labor. Effort. Not easy. I worked hard, worked for hours. Like any craft job, it takes time and patience. Now newly graduated chefs are coming, their knowledge is enormous, but knowledge alone is not enough in the kitchen. It takes years of experience. I'm not a culinary school graduate, but I have experience. That's why it's only natural for me to put more experienced chefs in the final touches. Everything from the broth to the sauce and cutting shapes should be prepared with care.<br>I create and write a detailed recipe for each of my plates. In my absence, my teammates should prepare the same product, but first they prepare it under my supervision, if I feel comfortable, I can hand over the work to them. Each product must be carefully prepared. | ***Well-crafted*** | A good dish requires care, just as a fine meal must be perfectly plated and served.<br>The first sight can mean a lot sometimes. Preparing a smooth designed plate is not easy, it takes years of experience. It is possible to see a chef's dexterity on the plate he/she presents. This can be good or bad. |

Table 22 (Continued).

| | | |
|---|---|---|
| After all, I can make a profit as I serve my meals to my customers. That's why they are always my priority. It's a completely reciprocal process, actually.<br><br>I can't cook just for my own pleasure. We always have to make concessions. Customers always come first.<br><br>My family and friends are my clients. It is not easy to please everyone, but the most difficult is to please my relatives. | ***Meet customer expectations*** | I am a chef, I have a cookbook and I am an educator. All my life my goal was and still is to make my customers eat good food. As they like it, I get motivated and I can come up with something. My book is for them too.<br><br>Customers are very important because the gastronomy industry is shaped by their demands.<br><br>I go to every restaurant I visit with an expectation. This is a very natural process in my job. The chef himself, the restaurant, the country, the city, the Michelin star... all very decisive. |

Table 22 (Continued).

| | | |
|---|---|---|
| When I was preparing products for installations, I realized that our business is not just about taste, smell and visuality. I think part of art and design is cooking and it should be perceived by all our senses.<br><br>We are now in a holistic cooking and serving service. Customers are very curious about how their food is made. And we can satisfy their curiosity in a sensory sense. The leek chips I've been making for years have become famous, we're getting old. I wasn't putting them just for visuals, I was also preparing them to make a textural difference. | **Stimulates 5 senses** | Chefs, who went one step beyond taste, smell and presentation, became leaders today.<br><br>Especially the chefs who use the word experience should stimulate the senses, regardless of the segment of their restaurant. |

### *4.3.2. Perceptions of Chefs towards Creative Culinary Product*

#### 4.3.2.1. Exploratory Factor Analysis Results for the Creative Culinary Product

To explore the dimensions for creative culinary product attributes, according to creative product and design product literature, 13 items were identified. EFA with principal component analysis method was used following with an orthogonal rotation which was performed using varimax with Kaiser normalization. The sampling is adequate or sufficient if the value of Kaiser-Meyer-Olkin (KMO) is larger than 0.5 and also (Kaiser, 1974; Field, 2005). KMO value was 0.804 and, Bartlett's Test of Sphericity was found to be 614.010, with significances lower than 0.001. Thus, the sample was considered adequate and data were suitable for factor analysis (Hair, Black, Babin anderson and Tatham, 2006). Factor loadings were investigated. Comrey and Lee (1992) suggest that loadings with a cut-off point of 0.71 are considered excellent; 0.63 loadings are very good; 0.55 loadings are good; 0.45 loadings are fair and 0.32 loadings are poor. Hair et al. (2006) also indicated that the factor loadings between 0.30 – 0.40 are minimally accepted; however, loadings above 0.50 are significant. According to Jung and Lee (2011), in a small number of sample cases, factor loadings can be considered meaningful if above a threshold of 0.35. Items with a 0.50 threshold and above with the factor were thought to describe the factor and its related scale the best. Thus, those items would provide the best assessment for the particular case. Therefore, these items were dropped to improve the further analysis. As a result, from the orthogonal (varimax) rotated factor matrix, three factors with 13 variables were identified none of the items were deleted Table 23.

Table 23. Exploratory factor analysis results for the creative culinary product

| | Loadings | CR | Cronbach's Alpha |
|---|---|---|---|
| | | **0.805** | **0.764** |
| Authentic | .760 | | |
| Stimulates five senses | .714 | | |
| Evokes emotions | .657 | | |
| Pioneer | .643 | | |
| Surprising | .529 | | |
| Tells a story / has background | .509 | | |
| | | **0.799** | **0.739** |
| Healthy | .767 | | |
| Meets customer expectations | .703 | | |
| Filling | .695 | | |
| Understandable | .655 | | |
| | | **0.714** | **0.624** |
| Well-crafted | .762 | | |
| Tasteful | .667 | | |
| Unique | .588 | | |

### *4.3.3. Summary*

As a result of the thematic analysis of the interviews with experts and chefs, a total of 13 creative culinary product attributes were determined. As a result of the survey completed by a total of 156 chefs, the EFA revealed three factors.

Creative culinary product attributes were examined by combining and comparing three criteria for successful products of Brown (2009) and the creative product semantic scale of Besemer and O'Quinn (2000, 1996) (Table 24).

Table 24. Design product and creative product attributes of a dish or menu

| | **Three Criteria for Successful Products (Innovations) (Brown, 2009)** | **Creative Culinary Product Attributes** | **Creative Product Semantic Scale (CPSS) (Besemer and O'Quinn, 1996)** | |
|---|---|---|---|---|
| *Subjective factor that relates to taste and aesthetics. And attracting users to interact with the product and find its usefulness and usability features.* | **Desirability** | Authentic<br>Stimulates five senses<br>Evokes emotions<br>Pioneer<br>Surprising<br>Tells a story / has background | **Novelty** | *Newness in materials, processes, concepts, and methods of making the product* |
| *Operational capabilities* | **Feasibility** | Healthy<br>Meets customer expectations<br>Filling<br>Understandable | **Resolution** | *Resolution considers aspects of how well the product works or functions.* |
| *Sustainability and long-term success* | **Viability** | Well-crafted<br>Tasteful<br>Unique | **Elaboration & Synthesis** | *How the product presents itself to the customer* |

From the analysis results, the thesis accepted that the design product's desirability matches the creative product's novelty which is a subjective factor related to aesthetics and taste. And luring users to interact with the product and discover its utility and usability characteristics. These products are innovative materials, procedures, ideas and production techniques. According to the results if one wants to title a dish as a novel or desirable, that dish should be authentic, stimulate the five senses, pioneer, or surprising, or it should evoke emotions or tell a story.

The second component that the analysis revealed could be gathered under the design product's feasibility and creative product's resolution. These are the capacities of operation and the different facets of how well the product performs or functions. According to the results, if one wants to title a dish as feasible or resolute, that dish should be tasteful, healthy, filling and understandable.

The final component that the analysis revealed could be gathered under the design product's viability and the creative product's elaboration and synthesis. These attributes are about the manner in which the product introduces itself to the consumer. How well the different components of the product work together to form a whole along with the long-term viability and successful continuation. According to the results, if one wants to title a dish as viable or elaborated and synthesized, that dish should be well-crafted, meet customer expectations and unique.

# CHAPTER 5: CONCLUSION

The purpose of the study was to examine the macro-environmental factors that influence the culinary creativity of Turkish cuisine and impact its recognizability in the global restaurant industry and to identify Turkish chefs' creative processes in the framework of the design thinking approach and to define creative and design-related attributes of culinary products. Thus, three research questions and three hypotheses were constructed:

> **RQ1:** What are the macro-environmental factors that influence Turkish cuisine's culinary creativity?
>
> **RQ2:** What are the concerns and steps of chefs during the development of a new dish or menu in the framework of design thinking?
>
> > **$H_a$1:** The working (creative) processes of chefs could be defined utilizing a design thinking approach.
> >
> > **$H_a$2:** The emergent culinary design thinking model stages are positive and have direct effects on one another.
> >
> > **$H_a$3:** The emergent culinary design thinking model stages have positive indirect effects.
>
> **RQ3:** What are the creative and design-related attributes of culinary products that contribute to the promotion and recognition of Turkish cuisine?

The central argument of this thesis was that cuisine is a designed phenomenon. To support this claim, it was necessary to distinguish between Turkish food culture, which encompasses a wide range of products and techniques and Turkish cuisine, which serves as the representation of this culture in the global culinary realm. To establish this distinction, a culinary system comprising both culinary and cultural processes was required.

The culinary system consists of various sectors that contribute to the creation, production, diffusion and consumption of cuisine. These sectors include chefs who are responsible for the creative aspect, kitchens, restaurants and even home settings for production, cookbooks, guidebooks, awards, education and competitions for diffusion and diners and readers as consumers (see Figure 10).

In this study, particular attention was given to the sectors of creation, production, diffusion and consumption to understand and define the concept of "cuisine" within the context of Turkish food culture, which is an extensive subject encompassing "Turkish cuisine." By focusing on these sectors, the study aimed to highlight the distinct nature of cuisine as separate from the broader Turkish food culture.

To explore the relationship between Turkish cuisine and creativity, this thesis adopted Csikszentmihalyi's (2004) Systems model of creativity. Within this framework, the Turkish cuisine domain and its symbolic elements were considered as ingredients and recipes; its procedures were considered as cooking techniques, tools and equipments. Chefs were recognized as the individuals who produce novel creations, while experts were seen as those who select and evaluate the novel creations within the gastronomic field and culinary industry (refer to Figure 14).

For Study 1, conducted to address RQ1 of this thesis, the selection of participants followed the systems model approach. Both experts and chefs were chosen to provide insights into the external factors that influence the creativity of Turkish cuisine, aligning with the principles of the systems model.

In Study 1, interviews were conducted with an Expert group consisting of chefs, writers, researchers and academics. The purpose of these interviews was to explore the current state of Turkish cuisine on the international culinary platform and to identify the environmental factors that influence the creativity of the cuisine.

Following the interviews, a survey was administered to professionals in the field of Turkish cuisine. The survey findings revealed that six macro-environmental factors impact the creativity of Turkish cuisine. These factors include (1) culture, (2) politics and economics, (3) education, (4) social media and globalization, (5) science, technology and design and (6) tourism.

Additionally, these factors are considered within the sectors of creation, production, diffusion and consumption, which collectively form the culinary system. It is through the consideration of these factors that the distinction between Turkish cuisine and Turkish food culture is enabled. Furthermore, these identified factors are crucial for

the development and improvement of Turkish cuisine as it seeks to establish itself in the international culinary industry.

Within the framework of this thesis, it was assumed that chefs would introduce novelty into Turkish cuisine through the creation of new dishes. Accordingly, the process of food production by chefs was aligned with the generic design process model (refer to Figure 15). Subsequently, a model called "from chef to diner" (Figure 16) was developed to gain a more detailed understanding of the entire process. This allowed for the application of Richard Buchanan's "four orders of design" theory to the culinary domain.

Through these stages, a connection between the design thinking approach and the creative processes of chefs was established. In essence, the tangible products created by chefs in the kitchen ultimately transform into abstract experiences for diners in the dining room. This process highlights the iterative nature of design and the dynamic relationship between chefs and diners in the creation and consumption of culinary experiences.

Chefs play a vital role in representing a cuisine and showcasing their dishes in the competitive culinary industry. By applying their creative approaches to their kitchens, they have the ability to enhance and transform the common perception of a particular cuisine. In the case of Turkish cuisine, one of the significant challenges is that it is often limitedly recognized as kebab cuisine. However, through the efforts of chefs who represent Turkish cuisine on the international stage and aim to demonstrate its distinctiveness, the cuisine can achieve international success and overcome this stereotype. To address Research Question 2, Study 2 conducted interviews with these chefs to examine their processes of developing new dishes or menus within the framework of design thinking. Bruce Archer's design process model was employed as a guiding framework for this analysis. By understanding and analyzing these chefs' creative approaches, it becomes possible to explore how they contribute to the evolution and innovation of Turkish cuisine, moving beyond the narrow perception associated with kebabs.

In line with the principles of design thinking, various models are created to facilitate the problem-solving process. The initial phase involves defining the problem area

through empathic approaches to understand the needs and perspectives of the users. Subsequently, alternative solutions are generated and prototyped during a creative phase, addressing the identified problems. Finally, the selected solutions are tested and implemented.

Through interviews with chefs, it was discovered that the application of design thinking in the culinary context differs from generic design thinking models. As a result, a specific framework called culinary design thinking was formulated to capture the unique aspects of the design thinking approach within the culinary domain. The culinary design thinking framework encompasses the specific considerations and adaptations necessary for applying design thinking to the culinary industry, recognizing the distinctive challenges and opportunities faced by chefs in their creative processes.

In the culinary design thinking model, the first stage aligns with the empathy stage of traditional design thinking. Chefs in this stage pay attention to restaurant reviews and gather insights from customer opinions and expectations. However, the second stage in culinary design thinking, named "eating-out," differs from the definition stage in design thinking. Chefs engage in firsthand experiences by dining out, allowing them to observe and define current developments, trends and potential challenges. This experiential knowledge acquired through dining experiences informs their decision-making and implementation within their own restaurants.

The stages of idea generation and prototyping in culinary design thinking remain similar to design thinking models. However, after the prototyping phase, a unique stage called "menu development" is introduced in the culinary design thinking model. During this phase, chefs define their menus and concepts, refining and finalizing their culinary offerings.

The testing phase in culinary design thinking has a slight variation compared to traditional design thinking. In addition to testing, there is an emphasis on tasting the resulting new dish or menu. This stage is appropriately labeled as "testing/tasting" to highlight the sensory aspect of evaluating the culinary creations.

Finally, the implementation process in culinary design thinking is akin to that of design thinking models, but with the distinction that chefs actually cook and serve their dishes during this phase, ensuring that their culinary creations are brought to life and experienced by diners.

In traditional design thinking approaches, once a product or service resulting from the application of design thinking is presented to customers, the organization's relationship with that particular product or service typically ends. However, in the culinary design thinking model, the product is not just a standalone item but rather new dishes or menus that form part of an ongoing dining experience. This dining experience is continually reproduced every 24 hours, with each day providing valuable data and inspiration that informs the creation of future menus.

Unlike traditional design thinking, the culinary design thinking model maintains a continuous connection with the products or services it has previously produced. These previous creations serve as a foundation and support for the development of future dishes and menus. The iterative nature of the culinary design thinking model, similar to design thinking, ensures that the process of creating new culinary experiences is always informed by the insights gained from past creations. This ongoing relationship with previous products or services distinguishes the culinary design thinking model, as it continually builds upon and evolves its offerings based on the data and inspiration obtained from the daily dining experience.

At the conclusion of Study 2, a survey was conducted with chefs to validate the hypotheses, resulting in the identification of seven stages in the chefs' culinary design thinking model. These stages are as follows: empathize, define, idea generation, dish/menu development, prototyping, testing/tasting and cooking/serving.

The culinary design thinking model operates in a manner where each stage has an impact on the subsequent stage and a stage can also influence not only the next stage but also the stages that follow it. This interplay between stages creates a nonlinear and dynamic relationship within the culinary design thinking model.

The culinary design thinking model is characterized as being linear, as it progresses through the defined stages in a sequential manner. However, it is also circular, as the

insights and experiences gained in later stages can feed back into earlier stages, influencing the process. Additionally, the culinary design thinking model is cumulative, meaning that knowledge, skills and insights accumulated in previous stages contribute to the development of subsequent stages. Lastly, the culinary design thinking model is holistic, as it considers the interconnectedness and interdependencies of the stages, recognizing that each stage is influenced by and impacts the entire process.

To address RQ3, Study 3 focused on identifying creative culinary product attributes through interviews with chefs and experts within the framework of creative product development. The resulting attributes were then combined with the characteristics of successful design thinking products.

The study found that a desirable culinary product is a subjective factor influenced by taste and aesthetics, capable of attracting users and encouraging interaction. Desirability in culinary products is reflected in attributes such as authenticity, the ability to stimulate the five senses, evoke emotions and tell a story. Furthermore, being innovative and surprising are also important aspects of desirability. The feasibility of a design product, in the context of culinary products, relates to its operational capacity. This includes attributes such as being healthy, fulfilling, meeting customers' expectations and being understandable to the consumers. Lastly, the viability of a design product, which refers to its sustainability and long-term success, depends on factors such as how well-crafted the product is, its tastefulness and its uniqueness. These attributes contribute to the overall appeal and longevity of the culinary product in the market.

By considering these three dimensions (desirability, feasibility and viability), the study provides insights into the characteristics and criteria that contribute to the success and quality of culinary products developed through a design thinking approach.

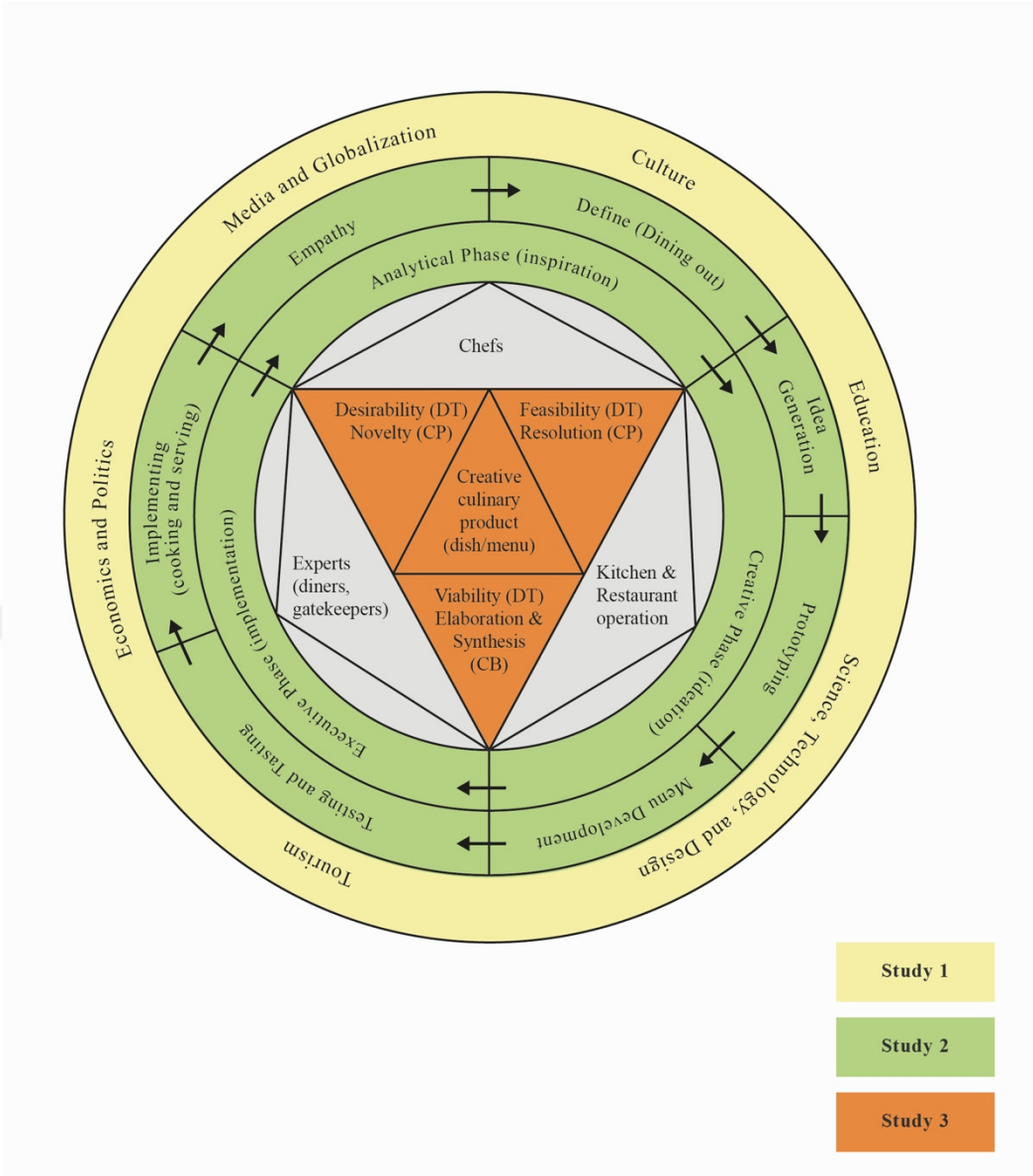


Figure 21. Proposed model for creative and innovative design approach to a traditional cuisine

The thesis conducted three studies that were tested and validated and based on the findings, a model (Figure 21) was developed by integrating the results. At the core of this model is the dish/menu, which represents the culinary products created by chefs.

According to the model, for a dish/menu to be considered a successful outcome, it needs to meet certain criteria within the framework of design thinking (DT). These criteria include being desirable, feasible and viable. In other words, the dish/menu should be appealing and attractive to consumers (desirable), it should be achievable

and practical to produce (feasible) and it should have the potential for long-term success and sustainability (viable) in the culinary industry.

Furthermore, within the scope of creative product (CP), the dish/menu should exhibit specific characteristics. It should be novel, meaning it offers a new and innovative experience or concept. It should also be resolved, indicating that any potential problems or challenges have been addressed and resolved during the design process. Additionally, the dish/menu should demonstrate elaboration and synthesis, implying that it has been carefully crafted and incorporates various elements or ingredients in a harmonious and cohesive manner.

By considering both the design thinking criteria (desirable, feasible and viable) and the creative product attributes (novel, resolved and elaborated and synthesized), the model provides a comprehensive framework for evaluating the success and quality of dishes/menus created through the integration of design thinking and creative product development approaches.

According to the model, chefs play a central role in determining the desirable attributes of a culinary product, including its authenticity, sensory appeal, emotional impact, pioneering nature, surprise factor and storytelling potential. These attributes directly influence the overall desirability of the dish/menu.

On the other hand, the stakeholders involved in the operation of the kitchen and restaurant may not directly contribute to the desirable attributes, but they are crucial in ensuring the feasibility and viability of the culinary product. They are responsible for factors such as maintaining the product's quality, ensuring it meets customer expectations, providing a satisfying and filling experience and ensuring the product is understandable in terms of presentation and preparation.

However, it is important to note that all stakeholders in the creative culinary product system, including chefs, kitchen and restaurant operation stakeholders and culinary product experts (such as diners and gatekeepers), have an interest in all three attributes: desirability, feasibility and viability. Each stakeholder group may prioritize different aspects based on their roles and responsibilities, but the success of the culinary product relies on a balanced consideration of all three attributes.

In conclusion, while chefs have a direct influence on the desirable attributes, the entire system of stakeholders recognizes the importance of both feasibility and viability in achieving a successful culinary product. The collaboration and coordination among all stakeholders are crucial to creating and delivering culinary products that are both desirable and sustainable within the industry.

Indeed, in the culinary design thinking model, the process of creating a creative culinary product involves the application of a 7-stage framework. These stages help guide chefs through the design and development process, allowing them to approach their culinary creations with creativity and innovation.

The first two stages, empathy and define, belong to the analytical phase of the model, which is the inspiration phase. The next stages, idea generation, prototyping and the menu development form the creative phase of the model, known as ideation. Finally, the testing/tasting and the implementing stage represents the executive phase of the model. By following this 7-stage culinary design thinking model, chefs can systematically approach the creation of their culinary products, infusing them with creativity, innovation and a diner-centric perspective.

To apply the culinary design thinking model and bring creative and innovative approaches to traditional Turkish cuisine, it is important to have supportive environmental factors. These factors include the development of science, technology and design, which provide tools and possibilities for chefs to experiment in the kitchen. Additionally, the growth and support of culinary training programs play a significant role in chefs' ability to design new dishes. These factors contribute to the overall process of creating innovative culinary products in the context of traditional Turkish cuisine.

### *5.1. Implications*

At the beginning of this study, it has been stated that Turkish food culture and Turkish cuisine are different fields of study. According to Ferguson (2004), food is a "private good," cuisine is a "public good," while the recipe is an abstract product and the meal is a tangible product. The production of a cuisine requires a culinary system which of culinary process and cultural process and include creation (cooks and chefs),

production (kitchen, restaurant, home), diffusion (cookbooks, guidebooks, prizes, novels, essays) and consumption (diner-consumer and reader-consumer) (ibid.). Based on this, this study argues that cuisine is a designed phenomenon because cuisine includes the unique ingredients of geography, specific cooking skills and techniques and the flavor perceptions created by societies. However, the mere existence of cuisine does not necessarily mean that it will be successful in the competitive culinary industry. A cuisine can only differ from its counterparts when it offers creative products, inspires other kitchens or chefs and attracts the attention of its customers (diners, experts). Therefore, the strengths and weaknesses of cuisine should be determined and designed. The structure of the design discipline for finding and defining problems and produce alternative solutions may be suitable for this.

The environmental factors emphasized in this study are ill-structured, complex problems that need to be solved by awareness of Turkish cuisine. First, integrating food design into gastronomy and culinary arts education can guide students in identifying and solving problems on a product, process basis, or environmental (press) factors that they will encounter with an innovative education model.

The issue of politics and economy in environmental factors seems to be a compelling agenda faced by Turkish cuisine because the impact of these factors on other environmental factors is dominant. With the right policy and a sufficient budget, education can be developed, tourism and technology can be supported, media and globalization processes can be strengthened and culture can be preserved. Therefore, when the political and economic factors are handled with the food design approach for the creativity of Turkish cuisine, food-related problems can be solved collaboratively through design processes because different stakeholders who have different views and aim to serve the same goal can meet at a common point thanks to the connection provided by food design. A clear example of this is the formation of New Nordic cuisine because, in this movement, chefs, producers and the government operated collaboratively (Byrkjeflot, Pedersen and Svejenova, 2013).

The design discipline, which aims to meet customer expectations and needs, can also be integrated into gastronomy tourism. Standardized, mundane existing gastronomic

tourism food products can be determined with the food design approach and new and creative ones can be produced by utilizing culinary design thinking model.

The products, techniques and flavor principles of Turkish cuisine or any cuisine can be turned into a rational system within the framework of food design and determine both an emotional and a logical map for combining ingredients and cooking techniques to generate creative culinary products. Moreover, it can be a guide for new creations.

Design has a vital position in the advancement of technology and science and technology and science have an important place in the formation of the design discipline. Looking at the scientific methods in the kitchen from the design framework can produce surprising products that appeal to customers without reaching the extremes of creativity. Guixer (2019) examines fermentation with the design thinking approach in his study, bringing together chefs and scientists. Likewise, the limits and processes of cooking skills and techniques that require technological equipment can be developed with a food-oriented design approach. An example of this is the development process of Gastrovac vacuum cooking technology (Albors-Garrigós, Monzo and Garcia-Segovia, 2017), which also brings together chefs and scientists.

### *5.2. Limitations and Suggestions for future research*

The thesis presents certain limitations that can potentially open areas for further research. Firstly, this mixed-method study exclusively focused on Turkish chefs and academicians within the domain of Turkish cuisine. Consequently, future investigations should extend their scope to include other culinary contexts, as environmental factors vary significantly across different countries and cultures. By doing so, a more comprehensive understanding of the impact of environmental factors on culinary creativity can be obtained.

The second limitation pertains to the availability of comprehensive culinary creativity and food design literature specifically focused on Turkish cuisine and the accessibility of reliable and formal data regarding the current situation. Consequently, the interpretation of the study's results heavily relies on the author's expertise, judgments and experiences. To address this limitation, future research could undertake a more in-depth investigation of each factor identified in Study 1, utilizing both qualitative and

quantitative approaches. Such an approach would provide additional insights into the defined environmental factors and contribute to a deeper understanding of their impact on culinary creativity.

The third limitation concerns the reliance on self-reported data. While the study utilized published studies' results and scales, with some modifications, it is essential to acknowledge that the data collected relied on participants' subjective responses. However, measures were taken to address this limitation. Reliability was assessed and construct validity was confirmed through principal component factor analysis. As a result, it was concluded that sufficient precautions were taken to mitigate common method bias (Conway and Lance, 2010). Future research can consider conducting scale development studies specifically focusing on the environmental factors affecting culinary creativity, chefs' creative design processes and creative product attributes. These studies may involve iterative and comprehensive qualitative and quantitative methods to ensure robust measurement tools.

Despite the limitations, this study can expand the study area of the food and design discipline as it accepts environmental factors as ill-structured culinary problems. For culinary professionals who want to utilize food and design together, which is an emergent union, this study argues that food design is not the only product or process-oriented. However, possible environmental factors that will occur in generating products or accomplishing processes should be considered.

The three studies presented in this thesis have significantly contributed to introducing creative and innovative design approaches within Turkish cuisine. By conducting these studies, conceptual models (refer to Figure 14, 15, 16, 17) were developed, guided by theoretical frameworks, to address the research questions. These models have not only provided answers to the initial research inquiries but have also generated new avenues for future culinary-related research. The emergence of these conceptual models has led to the formulation of novel research questions and opened up new directions for further exploration within the field.

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# APPENDIX

***Information Sheet for the Interviews and Surveys***

The questionnaire was created to be used in the thesis study/research carried out under the Design Studies Ph.D. program of the Graduate School of the Izmir University of Economics. The target audience of our survey is culinary experts, academics and professional chefs. The data to be obtained will only be used for scientific purposes and will not be shared with third parties. It is important to us that you answer the guidelines in the questionnaire with all sincerity. Thank you for your support of our work.

## CURRICULUM VITAE

Born in 1988 in Izmir, Sedef Özgönül graduated from Izmir Turkish College Science High School and completed her undergraduate degree in 2010 at Yeditepe University, Department of Gastronomy and Culinary Arts. She started to work as a research assistant at the Izmir University of Economics in 2013 and completed her M.B.A. Program in the same year. While continuing her education in Graduate School in the Design Studies Ph.D. program at the Izmir University of Economics, her dissertation was the first study from the gastronomy major and field accepted to the Design Research Society, Ph.D. The pit-Stop event in 2019. Sedef was awarded as an emerging scholar for the Ninth International Conference on Food Studies in 2019. She participated in the mastering design thinking program of M.I.T. Sloan School of Management with a scholarship. Her project subject in M.I.T., "Shopping list identification App. for the brand-new innovative grocery store which offers pre-prepared ingredients for selected menus or recipes," was one of the five projects out of 32 considered worthy of presentation. Sedef's article "Environmental Factors that Influence Culinary Creativity from the Perspectives of Turkish Cuisine Professionals," whose field of study is food, design and creativity, was published in an international journal scanned in a Web of Science in 2022. In the same year, EFood2022 (Re)Designing the Food Systems, F.O.R.K. – the Food Design for Opportunities, Research and Knowledge Conference, she presented two articles about environmental factors affecting culinary creativity and service design as a holistic experience in fine dining. Sedef is currently working as a part-time lecturer at the Izmir University of Economics, Department of Gastronomy and Culinary Arts.