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**THE EFFECT OF MENU DESIGN ON CUSTOMERS' CHOICES**

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**The Effect of Menu Design on Customers' Choices**

**Menü Dizaynının Müşterilerin Tercine Etkisi**

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## **ABSTRACT**

The food and beverage industry is growing rapidly worldwide. As in many sectors, marketing plays a big role in this sector and keeps the sector alive. When marketing and food and beverage sectors are considered together, the most basic marketing tool is the menu. The main purpose of this study is to compile menu design techniques that are claimed to be effective in customers' orders and observe the effects of picture, box and positioning techniques on customers' decision.

The dessert page of the menu in a kebab restaurant has been designed separately in three different ways; picture menu, box menu and positioning menu. Customers have ordered desserts through these menus and were asked to fill in the questionnaire prepared specifically for each menu. Besides the menu design techniques applied, service personnel, personal taste and previous experience, which are the external factors that play a role in customers' choices, were also evaluated.

With the results and findings of this thesis, it is aimed to contribute to the literature about picture, box and positioning, which are the common menu design techniques, and the service personnel, personal taste and the effects of previous experience on the customer, which are external factors in customers' choices. In addition to many different results and findings in the literature, this thesis can give insights about positive effect of using pictures and boxes in restaurant menus. However, an effect of positioning in the menu (as first item in this study) was not observed. In addition, it has been determined that personal taste plays an important role in the selection of customers, and the positive effect of the service personnel on unknown menu items, rather than all desserts in the menu, has been also observed.

## ÖZET

Yiyecek ve içecek endüstrisi dünya genelinde hızla büyümektedir. Birçok sektörde olduğu gibi pazarlama bu sektörde de büyük bir rol oynamakta ve sektörü canlı tutmaktadır. Pazarlama ve yeme-içme birlikte değerlendirildiğinde, en temel pazarlama aracının menü olduğu bilinmektedir. Bu çalışmanın temel amacı, müşterilerin siparişlerinde etkili olduğu iddia edilen menü tasarım tekniklerini derlemek ve bu tekniklerden olan resim, kutu ve konumlandırmanın müşterilerin siparişi üzerindeki etkisini gözlemlemektir.

Bir kebab restoranındaki menünün tatlı sayfası menüden ayrılarak üç farklı şekilde tasarlanmıştır; resimli menü, kutulu menü ve konumlandırılmalı menü. Müşterilerden bu menüler üzerinden tatlı siparişi vermeleri ve her menü için özel olarak hazırlanan anketi doldurmaları istenmiştir. Uygulanan menü tasarım tekniklerinin yanı sıra, müşteri tercihlerinde rol oynayan dış faktörler olan servis personeli, kişisel zevk ve önceki deneyim de değerlendirilmiştir.

Bu tezin sonuçları ve bulguları ile yaygın menü tekniklerinden olan resim, kutu ve konumlandırma ve dış faktörler olan hizmet personeli, kişisel zevk ve önceki deneyimin müşteri siparişindeki etkisi ile ilgili literatüre katkıda bulunmak amaçlanmıştır. Literatürdeki birçok farklı sonuç ve bulguya ek olarak, bu tez, restoran menülerinde resim ve kutu kullanımının olumlu etkisi hakkında fikir verebilir. Ancak, menüde konumlandırmanın etkisi (bu çalışmada ilk ürün olarak) gözlenmemiştir. Bunlara ek olarak, kişisel zevkin de müşteri seçimlerinde önemli bir rol oynadığı tespit edilmiş olup, servis personalinin menüdeki tüm tatlılardan ziyade tanınmayan menü öğeleri üzerinde pozitif etkisi gözlemlenmiştir.

## INTRODUCTION

Food service sector has a large share worldwide and continues to grow day by day. The food service industry, which can be grouped commercially (restaurant, catering, nightclubs, etc.) and non-commercially (hospitals, schools, military, etc.), which operate within an organization, can also be classified according to their operating systems (e.g. according to cooking and storage locations and shapes) (<https://www.prnewswire.com>, 2019). The global food service industry is growing worldwide every year and it is expected to raise from 3.4 trillion U.S. dollars in 2018 to 4.2 trillion U.S dollars in 2024 (<https://www.statista.com>, 2019).

Nowadays customer perception plays a very critical role in every sector as much as in food and beverage field. As so many brands use different communication tools such as billboards, brochures, Instagram, and other social media feeds etc., menu is the major marketing tool of a restaurant, which is 100% read by every customer and can be defined as a communication tool between the restaurant and customers. With a menu, customers can be informed about the offer of the restaurant, which is able to be provided or not (Mooney, 1994; (<https://www.trevellyan.biz>, 2012). As stated by Antun and Gustafson (2005), in the “Sell the Sizzle” (2005) titled study it is revealed that the focus should be on what the restaurant does well and work on its marketing.

With a menu, a restaurant directs the customer to what he/she wants to order, while also determining how much the customer will spend money. Herewith it can be said, that menu has a big impact on sales, helps to foresee possible preparations and purchases (such as ingredients). Hence, designing menu is described as playing chess with restaurant’s guests and it is called as the clearest expression of marketing. On this basis, in a restaurant it is important to have every part elaborately designed; dining room, kitchen, other areas and the menu. (Pavesic, 2005; Panitz, 2000)

Antun and Gustafson (2005) shares that the value and potential of the menu started to be understood by the restaurants and club managers after the Second World War and their awareness increased in the 70s. According to 2004 Restaurant Industry (2004), as stated by Antun and Gustafson (2005), full-service restaurants are defined as restaurants where the waitress/waiter takes the order of the customer sitting at the table and the customer pays after eating. As mentioned in the study which is titled as “On the Menu” (1998) and as stated in Antun and Gustafson (2005), attention should be paid to what is wanted to explain to the customer with the menu design; personality, image, style, price and professionalism of the restaurant. Customers want to be well treated by a well-trained waitress/waiter; so another important factor is the waitress/waiter that offers the menu to guests.

Antun and Gustafson (2005) report that every year National Restaurant Association organizes a menu design contest, which is known as the most prestigious contest of them. This contest measures the design, imagination and the ability to order items, the content of the menu is not considered as a criterion. Based on this point of view, as stated in Antun and Gustafson (2005), Mill (2001) argues that minimalism is important in menu design and that the name of the food, its main ingredients and how it is made should be included in the menu as description. As a contrast point of view for menu design contest, it is emphasized that the main and important thing is not to win a reward, but to gain customers (Panitz, 2000).

Finally, as a result of lunch choice simulation and interviews applied on adolescents in the study of Contento et. al. (2006), in menu item selections some determinant factors have been revealed. These are taste, habit/familiarity, healthy meal, food that will eliminate hunger and its compatibility with other selected items (Contento et. al., 2006). In addition to that, as stated by Antun and Gustafson (2005) in the “Sell the Sizzle” (2005), it is asserted that people enjoy eating the dishes they are familiar with, so they like to see something familiar on the menu.

In this thesis, while examining the most commonly used and effective menu design techniques as the main topic, other factors in customer food selection will

be also observed (e.g. service personnel and habit/familiarity). This research will give the answer to the question if the menus prepared according to the literature are generating order. Additionally, while the effects of the service personnel and habits encountered in the literature are observed, it will also be investigated whether there are any other factors besides variables.

## **LITERATURE REVIEW**

There are many different resources about menu and menu design to observe its effects and the number of these studies is increasing day by day. The researchers' opinions and findings on the subject were compiled in this study to gain a complete perspective about the topic and to guide this thesis.

While the menu reveals the range of products offered by a food service establishment; it is also described as a screen used to transmit this information to the customer. (Mooney, 1994) The purpose of the menu is to bring atmosphere and theme of the restaurant together with a strong and thought-out design; in this way to increase sales. The main intent in menu design is to attract the attention of the customer and keep them in a short time. The most general features of the design are examined in two groups; visual appeal and virtual image. Visual factors include what we can see and touch which are size, shape and color; virtual image is a sense and combination of those visual factors which are location, space, namely direction and weight of the menu. For creating an effective and successful menu design for restaurants, these virtual and visual factors should be combined meticulously (Choi et. al., 2010).

With a well-designed menu it is likely to make guests order the menu items with high profit and low cost, which is ideal for making money. Highlighting can be used also in food and beverage sector, just like retailers do for selling their goods. While there is the power to influence customers' decisions, it is not logical to leave their choices to chance. In that way, the company can have the control in a conscious and planned way in terms of cost calculation, marketing and

communication. Pasevic (2005) describes menu as a “silent salesperson”; with the help of menu design, influencing the perception of the customer is very similar to the effects of TV commercials or newspaper ads on people’s minds; to be remembered. Therefore, as stated by Jones and Mifli (2001) it can be said that the menu should not be under the control of only one department and should be created with the contribution of at least two departments; accounting or control department and catering development department. Other departments such as information technology, research and development, marketing and food development could also be a part of the menu.

Özdemir and Nebioğlu (2018) also support these thoughts by emphasizing the importance of the menu in parts of the restaurant such as marketing and planning. They also state that the menu provides direct information about the food to the customer, the way to eat it and how much to pay for it. In addition, the main purpose of using menu design techniques is identified as affecting the customers' ordering behavior and to show trends such as visiting the restaurant again or recommending it. The reason for this is that the menu design affects the customers in a positive way; allows them to look at the positive aspects of the menu items in terms of awareness, value, health and taste, while also having a good impression on the service quality of the restaurant. Özdemir and Nebioğlu (2018), who examined the menu design techniques of some restaurants in Mediterranean coast of Turkey, assert that the operators want to use some menu design techniques to send signals about the quality and uniqueness of the menu items of their restaurants. In order to achieve this, it is important to send the right and attentive signals about quality, healthfulness and taste of the dishes for affecting customers positively. Since there is no “right choice” in the menu, the menu is a tool where the customer is directed to what suits him/her. Dayan and Bar-Hillel (2011) assert that menus, which are prepared to nudge the customer, not only customers lead to healthy meals, as well as help the restaurants to make more profit and faster turnover for more perishable foods.

As mentioned above, using an effective menu design influences customers at their decision-making process and restaurants should more proactively influence the purchasing decisions by “nudging” the customer with the effect of the menu design (Filimonau and Krivcova, 2017). With the research and experimental survey made by Filimonau et. al. (2017), it was seen that it is possible to “nudge” customers and encourage them to environmentally and socially beneficial choices with re-designed menus.

In food and beverage industry, it is seen that menu design, menu creating, menu layout and menu configuration are used in the same sense. Menu layout helps customers to choose from the menu in an appropriate way. According to Rizaoglu and Hançer (2005), couple of principles should be followed while designing the menu, which are; (1) responsibility principle; decisions about menu layout and marketing decisions should be made based on the opinions of the observing employees, (2) creativity principle; when the menu is designed in a creative way, it will stay in minds more easily, (3) material principle; the material from which the menu is produced determines its durability and how long it can be used by the restaurant, (4) coloring principle; because colored menus mean extra cost to restaurants, it is ideal to have two colors-when menu is written in black, it makes reading the menu much easier-, (5) non-crowding principle; 50% of the menu should be empty, (6) sequence principle; popular menu items should be on top, (7) addressing and transport principle; communication information (address, phone number, etc.) of the restaurant should be written and portable menus, which can be taken home, should also exist, (8) separate menu principle; having separate menu for dishes, beverages and desserts is also possible, but mostly not practical, (9) scribble principle; scribbling existing prices and writing new ones cannot be welcomed by customers, (10) privacy protection principle; when there is a special event in a high quality restaurant or club, menus without price can be a good idea, because in that way guests move more comfortably and do not feel that the host will spend much, (11) promotion principle; the menu is a silent seller, information should be given about possible events and other issues (e.g. banquet, party, dance, special foods and beverages) (Olalı and Korzay, 1989, as stated in Rizaoglu and

Hançer, 2005), (12) changing principle; at least twice a year it is recommended to change the food and drinks in the menu prepared with seasonal ingredients, (13) general presentation principle; menu has to be attractive, clean, easy to read, complementary to the décor of the restaurant and good designed; it should also reflect the expectations of customers, tell the truth, be arranged in order of foods and be written with a good language that represents the restaurant well and creates a feeling of hunger for customers.

In addition to the basic menu principles listed and explained above, many menu researchers have similar or different views on the subject. Rızaoğlu and Hançer (2005) think that customers' choices can be different by time; consumption of food and drinks can increase and decrease, and they could be called even old-fashion. To avoid the negativity and create chances at the same time, menus must be flexible. Having "menu of the day" or menu board, which can be changed easily, could be evaluated as good solutions.

In the article of Antun and Gustafson (2005), as stated in Sheridan (2001) and Mill (2001), who are professional menu designers, suggest that the menu should not be crowded with items and descriptions; boldface type should be used for menu items to catch the eyes of the customers; the suitable font must be used for reading in any light; menus should be made suitable for the size of the table; practical menus are useful for any changes; water-soil resistant menus are good for long time using; concept integrity becomes easier if the menu is arranged with the architect and interior design of the place in the new restaurants; visual continuity must be provided for suggesting style of dining, ambiance and price; white empty spaces are good for eye resting, thus they bring a positive effect to the menus.

In addition, as a support to the idea that the menu should not be crowded, Pavesic (2005) argues that menu cannot be a useful tool between customers and the restaurant, when it is crowded. Besides, having separate menus for drinks, kids and desserts could be a good idea for avoiding that possible crowdedness in the menu. To have a separate dessert menu has a positive effect also; in that way restaurant

eliminates the situation of customer asking again to look at the main menu or asking waiter what do they have and how desserts are.

Antun and Gustafson (2005) also favor for separate menus and state that separate menus such as the dessert and wine menu comply with the general menu rules with one exception; the content of these menus should appeal specifically to the senses, since the items of these menus are not the reason that brings the customer into the restaurant, but an additional request. The authors define the menu as a tool that tells the story about the dining operation of the venue and informs the customers about the concept and image of the restaurant with its content and design. In addition, the services and products provided by the venue are reflected in the menu and the expectations of the customer are created in this way. When the menu design is considered in terms of competition, flexible menus are an effective solution. In this way, the restaurant can play on the menu for reasons such as adding a new or different product, using existing products cross selling and generating consumer traffic.

Bowen and Morris (1995) liken the menu as source, which gives professional speech and assert that menu can represent a type of selling situation. Just like the effect of correctly selected words in a conversation on the person (exciting and memorable), the menu creates the same effect on the customers with the same perspective and includes them in the menu design process.

McCall and Lynn (2008) assert that the menu of a restaurant is the outline of the business's strategic marketing plan and is the first impression delivered to the customer. In addition, the recommendations of the Food Services of America to the menu designers are as follow: (1) Must be meticulous about items to put on the menu, (2) a neutral decision must be made about items to be added or removed from the menu, (3) Menu items with high profits and frequently preferred items should be located in places that attract customers' attention, (4) it is important to use pictures without being too selective.

There are also studies where findings are negative and menu design techniques have found to have no effect. For instance; in the study of Bowen and Morris (1995), the salad that is desired to be highlighted is focused on, and for this, the menu item is positioned as suggested by the literature, enclosed in two striped boxes and an explanation is added. It can be said that they tried different menu design techniques at one time and as a result of this work done by Bowen and Morris (1995) in a full-service restaurant, it was observed that the menu design did not have a significant effect on the choice of the customer, while the service personnel was emphasized to have a positive effect on the decision process of customers. For this reason, the menu has been interpreted as a tool used for the service personnel to serve more effectively and it is stated that the menu design alone is not enough to increase sales in full-service restaurants. The authors report that apart from the original targeted product (salad bar), complementary menu items such as soup can provide additional sales as a result of effective menu design. Filimonau et. al (2017) also touched on this important topic in their study, which is the personnel, who have direct communication with the customer in the front line, have information about what the customer wants and how these requests should be shaped, and this is information that needs to be evaluated. Supporting the view on the impact of the front hall employees, Panitz (2000) shares that; while the menu draws customers in the right direction, the waitress/waiter that finalizes the order, and therefore the position of her/him in the purchase decision cannot be ignored.

As stated in Pavesic (2005) the results of Gallup (1987) research reveals that a client spends approximately 109 seconds to read the menu, which means the restaurant must to make a point shot to attract the customer's attention and guide him/her in such a limited time. In addition, as stated in Antun and Gustafson (2005), Main (1995) asserts that; on average, it takes less than three minutes for the customer to read the menu. Therefore, sometimes the time to judge the contents of the menu by clients is considerably shortened, as well as the menu being ignored at all. As it is seen in the clubs that require membership, since the customer visits the place quite often and is familiar with the menu, she/he may turn to order without reading the menu.

Menu is called as “the bill of fare” and it’s a part of restaurant’s brand identity. It shows also where a restaurant is in the marketplace and tells a lot about its dining operation. Customers can have an idea even about the kitchen; a dirty menu reveals that the kitchen is also not clean. According to findings of Panitz (2000)’s study, which was obtained as a result of the interviews with restaurant consultants by Restaurants USA, clever moves in menu redesign can provide an increase of sales an average of 2-10%, thus a menu is not a cost, but an investment.

As a different classification for menu design techniques; according to Doğdubay and Saatçı (2014), menu design is divided into two; managerial and physical menu design. While physical menu design consists of the cover of the menu, the size of the menu and eye movements in the menu; the menu design in the administrative aspect contains the order of the menu items, the menu information and the flexibility of the menu (making changes according to any situation, such as season).

Finally as stated by Antun and Gustafson (2005) in the “Sell the Sizzle” (2005) titled study it is revealed; it should not be forgotten that; while creating the menu, care should be taken not to promote dishes that can be prepared at home, because eating out is a special case for many customers. So customers would like to find these dishes in the menu, that can be eaten outside, and order them.

After mentioning the menu design techniques with a general overview and other factors that need attention, the most commonly used menu design techniques such as names, description, gaze motion, positioning, boxing and pictures are provided in the next part.

## **1. COMMON MENU DESIGN TECHNIQUES**

### **1.1 NAMES**

According to Rızaoğlu and Hançer (2005), what is written in the menu should help to sell the items, and these menu items should be familiar to the customers and have clear names. When the name of an item is not explanatory, an additional description must be written. Text should be simple, allow good

understanding and facilitate communication. While people do not like slang and exaggerated names, foreign and cute item names create a temporary enthusiasm for the customer and are soon forgotten. Sometimes ambiguous names can be acceptable in private clubs and similar places, but not in a public restaurants.

Ozgen (2015) asserts that menu items and texts should be written as easy to read and understandable by everyone, otherwise some customers can avoid ordering the food they really want, just because they think he/she may pronounce the name wrong and it is possible that these names are easily forgotten. These issues caused by difficult-to-pronounce menu items can be avoided with numbered menu items.

In the study of Wansink et. al. (2001), it is pointed out that the labels about healthy nutrition are generally emphasized in academic sources and they focused on the effect of descriptive labels on marketing. They investigated whether descriptive names increase sales, whether these labels create the perception that the taste of the food is better and whether it affects customers' thoughts about the restaurant - the desire to revisit. Labels can be geographic to use the effect of the integration of ingredients and geographic areas (e.g. Southwestern Tex-Mex Salad), affective labels to remind family, traditions and memories (e.g. Legendary Chocolate Mousse Pie), sensory labels for describing the feeling what they will get with the dish (e.g. Buttery Plump Pasta), brand labels to make the dish more attractive with cross-promotion, which can be can be costly for the restaurant in terms of payments such as licenses etc., and reveals the possibility, that if the customer likes this brand, he/she will have the impression that this menu item is just his/her taste as well (e.g. Jack Daniels® BBQ Ribs) or a mix of those label names. In their research, it was observed that these labels caused more than one-fourth increase in sales. With such labels, customers get more positive thoughts about the restaurant and get the idea that the restaurant follows current food trends. With descriptive labels it is possible for restaurant managers to help stimulate first-time consumption as well as encourage repeat sales. In the research conducted, although the descriptive label had a positive effect on sales, it was seen that there was no valid reason for the customer to pay more money. While descriptive menu

item names increase the expectation, this expectation and the product served must match; otherwise these kinds of names will have a negative effect. In addition, it will not have a positive effect on customers in the long term to write a known product without its name and just as a different dish with a descriptive label. Because once it is ordered, customers will find that this dish with an interesting name is actually the food they are familiar with. (Example: Goulash: Royal Hungarian Top Sirlion Blend) Unless the products served are of high quality, this type of name labels will not have a major impact on customers' ordering, respectively on sales.

Hou et. al (2017) examined whether the pictures of food items on the menu also contribute to the customer's preference or not. In that way the effects of the combination of pictures and names were measured. The possible choices of people according to their visual and verbal tendencies were also discussed, and how the effect of naming and pictures on the desire to choose and pay for the menu item was investigated. While ambiguous names activate customers' imagination and create a visual in their minds, the name customers are familiar with can easily create the image in the minds of the customers. In addition, according to the research, it has been observed that the customer has a positive approach to pay more for the menu item with ambiguous name. Unlike the common name, the combination of ambiguous name and image may cause hitch and negative results during the integration of the menu to the customer. The name of each menu item may not be ambiguous, and in this case, adding pictures to the menu, as another effective way, can increase sales.

According to Panitz (2000); in order to make the dishes more appealing while describing the dishes, giving the example of "hand-battered" instead of "fried" has emphasized the effect of naming on the customer. In addition, menu items must be spelled correctly; otherwise a misspelled name will give the customer a bad impression about the restaurant. For this reason, the menu should be checked many times before meeting the customer.

## 1.2 DESCRIPTION

Rizaoğlu and Hançer (2005) assert that descriptions could contain ingredients, preparation and cooking techniques, which are used in the dish and service method. In addition, information about side dishes, size and the quality of the food can be also added in description.

As mentioned above, (Ozgen, 2015) states that descriptions can include cooking method, ingredients (e.g., Chef Salad's ingredients can be written in detail under the menu item; *lettuce, dried tomato, grated white cheese, green olives, corn and tuna*); local features can be also written into the menu (e.g Edirne- sheep cheese). Besides, the service method, portion size, side dishes, calorie information and allergen content of the menu item can also be specified in the description. Trevellyan (2012) argues that it is of major importance to communicate with customers and tell them about the menu items in detail. To set an example, a customer who comes to the restaurant with the idea of eating pizza cannot know about the restaurant's other fresh and special flavors (e.g. homemade fries, fresh chicken, etc.). This problem can be eliminated with menu contents, which inform the customer of other available offers of the restaurant.

In addition to the positive effects of menu item descriptions (such as ingredients and cooking techniques of the dish), Jones and Mifli (2001) share that it is also possible to increase the popularity of the menu item with the help of the descriptions. Besides all these, although the main purpose of the Filimonau et. al. (2017)'s research is to make a beneficial choice for the environment and society from the restaurant menu, the importance of using information blocks that can be considered as an effective tool for each menu is emphasized, which supports the positive effect of the use of description in the menu.

Shoemaker et. al. (2005) observed the power of the menu descriptions and item description methods of attracting the attention of the customer without decreasing the menu prices. The results reveal that menu descriptions increase the perception of value. The menu with detailed description and higher prices has the

same value with the menu, which includes low pricing and little explanation. Additionally, if the high-priced menu has a detailed description, it is more valuable than the menu with modest description.

Çetinöz and Polat (2018) tested the effects of menu information on possible future behavioral intentions of consumers in restaurants were tested. In their study it was determined that the menu information (e.g. nutritional information, product properties, ingredients and preparation style) in the restaurants positively affected the behavioral intentions of the participants.

McCall and Lynn (2008) investigated the effect of complex and simple description on the perception of these factors on price, quality and willingness to buy is emphasized. Looking at the results, it is observed that the complex terms have a positive effect on quality, pricing expectations and likelihood of purchasing.

Finally, as stated by Antun and Gustafson (2005) in the “Sell the Sizzle” (2005) titled study it is revealed that; according to the advices from Restaurant Business Interviews with restaurateurs, interesting adjectives should be used in the descriptions of the menu items, so it is possible to inform the customer with the explanations, and to steer her/his mind towards buying. Besides, the language used in the menu should be simple, clean and interesting.

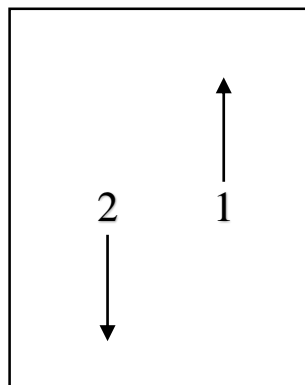
### **1.3 GAZE MOTION**

#### **Definition**

“To gaze” is defined as looking steadily and intently at something, and great curiosity, interest, pleasure, or wonder can be also included to this definition. (<https://www.dictionary.com>).

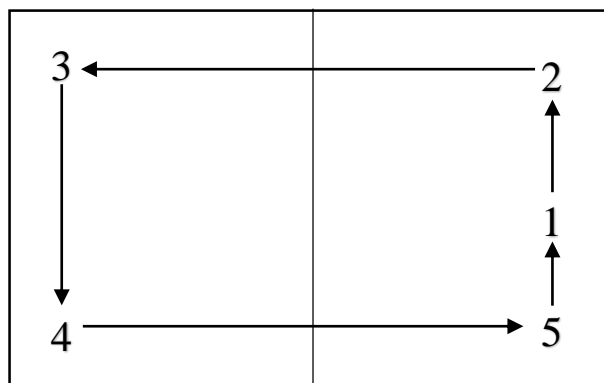
## The Approaches to the Gaze Motion

In the book of Rızaođlu and Haner (2005) called “Menu and Management”, the menu can be presented in terms of 3 gaze motion methods according to menu types. Gaze motions for one-page, 2-page and 3-page menus are as follows (Figure 1, Figure 2 and Figure 3):



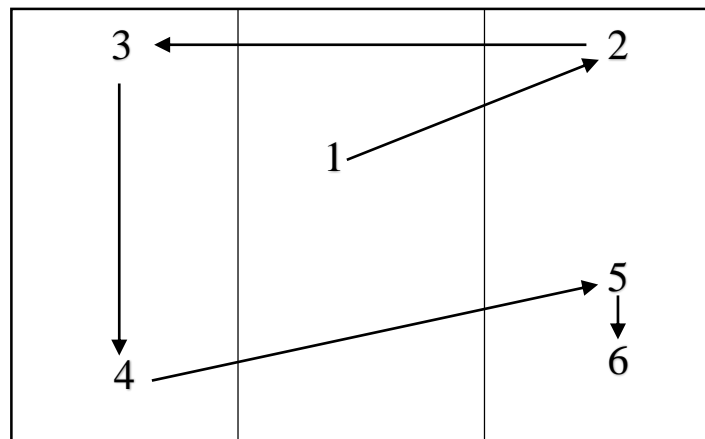
**Figure 1.** Gaze Motions in One-Paged Menu (a)

Rızaođlu and Haner (2005) argued that the looks in the single-page menu start from the right middle part first, go up and then downwards from the left side of the menu.



**Figure 2.** Gaze Motions in Two-Page Menu (a)

The authors stated that for the two page menu, the first focus of the eyes is the right middle part of the second page, followed by the upper right corner on the right page, the upper left corner on the left page, the lower left corner on the left page, and finally the lower right corner on the right page.



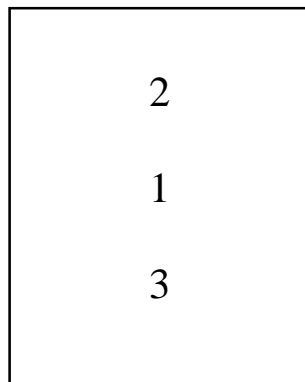
**Figure 3.** Gaze Motions in Three-Page Menu (a)

In the 3-page menu, the eye movements that start at slightly above than the middle part of the middle page move towards the upper middle part of the right page, then move to the middle upper part of the left page, after that they go to the middle lower part of the same page, after moving again to the right page and slightly below the middle part, it ends at the bottom of the same page.

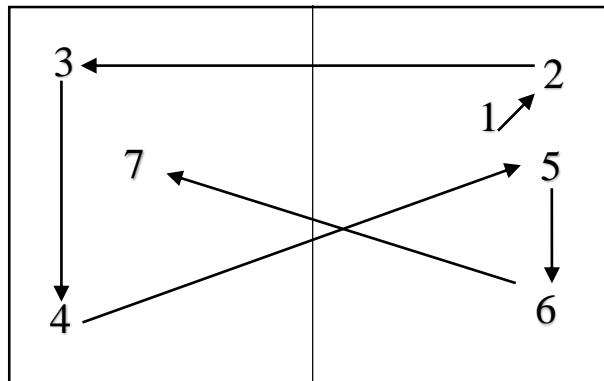
Pavesic (2005) states that, as customers often don't really read a menu and just “scan” it quickly, it would be an advantage for the restaurant to position the menu items with high profit, where customers see first. It is also shared that there are three types of menu formats; single page, 2-page (1-fold) and 3-panel (2-fold). In single page menu it is important to position the specific items, which provide higher returns to the restaurant, in the top half of the page. In addition restaurant managers who do not prefer to design a new menu from the beginning, by repositioning the current menu items could be the key for increasing sales, instead of making changes in pricing or removing/adding some menu elements. Pavesic (2005) defends also that the gaze motions models occur with the format, layout,

visuals, how many folds does the menu has. The author has the same opinions about 3-panel menu just like Rızaoğlu and Hançer (2005), with only one difference; the eyes come back to the starting point as the last move.

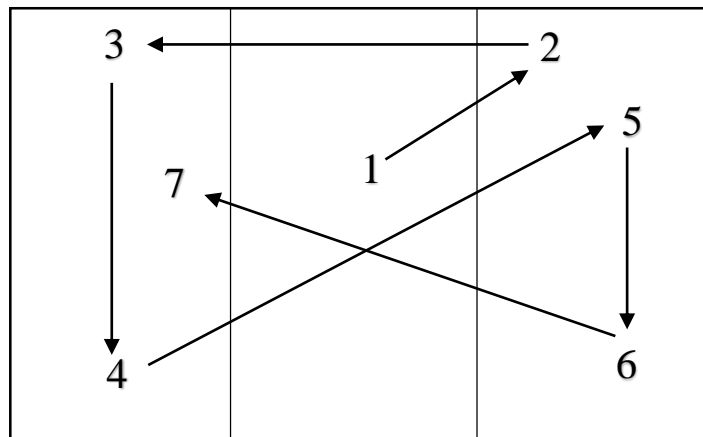
Another issue to be considered when placing the menu items is the focal point of the eye. As stated in Ozgen (2015) according to Brown (2004) menus mostly have 4 types according to the folding shapes number of pages; single-page, 2-pages, rectangular-can be folded left and right and multi-page menus. In single-page menus, the starting point of eye movements is the focal point on the imaginary line that divides the menu horizontally from the side (Figure 4). The most profitable menu items for the restaurant should be placed within the focal point. In the menus that are folded in the middle and rectangular when they are opened, the starting point of the eye movements is the section that lies above and to the right of the imaginary line (Figure 5). In menus that can be folded left and right, the left section is at one quarter of the menu, the middle section is at half the menu and the right section is at one quarter of the menu (Figure 6). In this menu folded from both sides, the eye concentrates on the center; therefore most profitable items should be placed here. Visually menus are as follows:



**Figure 4.** Gaze Motions in One-Paged Menu (b)



**Figure 5.** Gaze Motions in Two-Paged Menu (b)



**Figure 6.** Gaze Motions in Three-Paged Menu (b)

As stated in Reynolds et. al. (2005), Miller and Pasevic (1996) assert that considering the eye movements, the most-viewed area in the 2-page menu is the top-to-middle of the right page.

Many academicians have accepted the model, created by menu and graphic designer William Doerfler, based on his professional experience, for many years. Considering his model, different findings were obtained as a result of the studies carried out by Gallup (1987) in a laboratory environment. While Doerfler and Gallup's results overlap for the one page menu, it is stated that they differ in 2 and 3 page menus and the upper left corner is more important. The fact that the observation was carried out in a laboratory environment rather than with a real

customer group led Gallup's findings not to receive interest. A quantitative data was obtained from the recent experiment by Yang (2012), and revealed that customers read the menu as if reading a book. The findings proposed by Gallup for a 2-page menu in 1987 were supported 24 years after the work of the Gallup Organization.

In study of Choi et. al. (2010), service providers/restaurant managers are also evaluated whether the menu tricks are correct/efficient, which are applied in their restaurants (*approached from a bilateral perspective*). While the service providers/restaurant managers think that the eyes go from top to bottom in the single page menu, it is proved as a result of the experiment that the eyes focus in the middle point, then up and down to the bottom. In addition, in the two-page menu, the eye movements of the participants focused first in the middle, went up to the upper left corner, then down the page, after that to the upper right corner and then down to the bottom; service providers think that people look at the points respectively, as follows: upper left, bottom left, upper right and bottom right corners, which is incompatible with the experiment. In the 3-page menu, it is thought that starting from the upper left corner, after drawing a zigzag such as the middle part, the top of the middle part, the middle part of the left front, it continues with the bottom part of the middle page and the bottom part of the right page; In the study, it was observed that the eyes were focused on the middle point of the menu at first, then went to the upper left corner, proceeded downwards and then followed the upper and lower parts of the right page, respectively.

#### **1.4 POSITION IN THE MENU**

As stated in Ozgen (2015), Lewis and Brown (2003) defend that the customers generally remember the first and last products in categories of the menu. For this reason, placing the products, which are more profitable for the restaurant, at the beginning or at the end of the category may increase the salability. Studies about “gaze motion” put forward the importance of “sweet spots” in a menu, which draw customers’ attention. As stated in Reynolds et. al., (2005), von Kietz (1988)

asserts that, when these points are examined in terms of positioning, it can be reported that upper right-hand part of 2-page (1-fold) is the field, which is the first and last place seen by the customer.

As stated in Reynolds et. al. (2005), Gallup Organization (1987) also has the same idea that the first and last thing seen by the customer in the menu is memorable and thus it is likely to be chosen. In addition to this information, matching the priority-innovation rules with "sweet spots" indicates that a menu item placed on the right-hand page, with a description just above the center and first or last one in the menu, should sell better than otherwise placed items. (Reynolds et. al., 2005)

While Jones and Mifli (2001) underline the importance of repositioning menu items for increasing sales and share that a strategic positioning in this way leads to a 5% increase in the sale of the menu item, Dayan and Bar-Hillel (2011) report that 20% increase in popularity was observed when the products are placed at the beginning and the end of the menu. Contrary to these, findings of Bowen and Morris (1995) did not support that the menu points may increase sales.

As supporting studies the effect of positioning, as stated in Antun and Gustafson (2005), Main (1994) shares that the first product of each category should be the product with the highest return, and the menu item at the bottom of the list should be the second most profitable product, (back-to-basics common sense approach), while Panitz (2000) shares the information that the first two and the last menu item on the list are more likely to be remembered than others.

Choi et. al (2010) share that, for an effective sale, the most central part of the menu of any shape is the first seen, and products with high returns can be positioned there. In addition, it is suggested that the location of menu items and menu design can be the factors, which affect the choice of the customers, without considering personal taste.

## **1.5 BOXES**

Having the menu items in boxes also has an effect on customers and Pasevic (2005) thinks that using boxes can be effective to catch the eyes. Boxes are “eye magnets” just like colors, fonts, etc. on the menu. By supporting this opinion, as stated in Ozgen (2015), Alanzo (2007) suggests that for drawing attention to a particular menu item when placing the menu items, restaurants can either put the item in the box on the menu or add a remarkable sign to that item. Contrary to these studies, in the experimental study of Reynolds et. al. (2005), it was seen that there was no significant increase in the sales of the menu items which are placed in the boxes. The authors of the research did not encounter any unexpected results after the previous experiments and negative results were obtained. While mentioning that there is a sharp line between the studies that support the positive effect of boxing and the experimental studies that resulted negatively, it is mentioned that the conditions under which the experiment was carried out (such as the concept of the restaurant and the target audience) were not very suitable for such a study. Therefore, a flexible experimental field where larger changes can be made has been proposed.

## **1.6 PICTURES**

In addition to food names, pictures are also one of the most basic and necessary information provided to the customer in the food and beverage industry (Hou et. al., 2017). While Pasevic (2005) argues that pictures are also eye magnets and can have positive effect on customers too (just like colors, fonts, boxes etc.), according to Verma et. al., (1999), depending on cultures and countries, having pictures in the menu can have different effects. For instance, English speakers did not prefer to see pictures of products other than delicatessen products and likewise the positive effect of the pictures on Spanish-speaking customers has been observed only in delicatessen products. On the other hand Japanese speakers did expect to see the all menu items.

According to Hou et. al. (2017), using pictures in the menus takes up space in the menu and preferred by restaurant, although it is costly. Additionally, the picture formed in the mind with the common name, seeing a visual of the menu item affects the customer positively, because the image formed in his/her thoughts is confirmed with the presented picture on the menu. In that way and it is more effective than just having common name on menu card. As mentioned earlier, pictures of menu items may not always have a positive effect on customers' choices, and may even be minus, as they do not match expectations. In order to prevent this, people who are responsible for preparing the menu, should be very careful during the design, pay attention to the consistency of the pictures, names and the information provided to the customers.

The effect of using pictures or even using big pictures on menus, is also underlined by Panitz (2000), while it is shared by Guéguen et. al. (2012), who work with watermarks as a different visual form, in the experiment conducted in a real restaurant environment, menus with different contents were tried, and they advocated that customers could be visually.

## **2. METHODOLOGY**

### **2.1 RESEARCH OBJECTIVE**

This thesis aims to measure whether the commonly menu design techniques used have an effect on the preferences of the customers. To measure the effect of the menu design, three different menus were designed for this research and the choices of the guests to these menus were evaluated. The possible effects of other factors besides the menu design and the extra comments of the customers were also presented.

## 2.2 RESEARCH DESIGN

The research was carried out on 3 different dessert menus designed for a kebab restaurant in Istanbul, and these dessert menus were offered separately. In the previous menu of the restaurant, the desserts were positioned on a page in the main menu, they were all located in a box, there was a large picture of a traditional dessert at the bottom of the page and this dessert was ranked 5th in a list of 9 desserts. This traditional sherbet dessert can be found and consumed widely in kebab restaurants in Turkey. For this research, considering the suggestion of the manager of the restaurant the dessert menu was redesigned to highlight dessert 3 (semolina dessert with ice-cream), which is one of the most profitable desserts of the restaurant. There was no picture of this dessert in the original menu and it was ranked 3rd in a list of 9 desserts. In this research, 3 different menus have been designed to be used in the experimental survey in order to measure the effect of the picture, box and positioning (first place) in the menu, separately and the features of these newly designed menus are as follows:

Menu 1- Picture menu: The box in the current menu has been removed, the picture of dessert 3 has been replaced in the dessert 5 picture and the order of the desserts in the menu has not been changed. (Appendix I-A; dessert numbers: Table 5)

Menu 2- Box menu: All desserts written in a box in the current menu were removed from this form and dessert 3 was placed in a separate box at the bottom of the dessert list. Apart from this change, the ranking has not changed and there is no picture of any other dessert. (Appendix I-B; dessert numbers: Table 5)

Menu 3- Positioning Menu: Dessert 3 is positioned at the top of the dessert list. In addition, there are no pictures or boxes in the menu. In addition, dessert 5 is in the middle of the list. (Appendix I-C; dessert numbers: Table 5)

First of all, a pilot study has been conducted by 6 times from each menu to test whether the questionnaire was clear enough for respondents. All these menu designs are in Appendix I-A, Appendix I-B and Appendix 1-C. After the pre-test,

it was observed that the points requiring effective communication, such as communicating with customers and asking them to fill out the questionnaire, were positive. The data of the study is collected the next weekend through the experiment and the surveys.

## **2.3 SAMPLING**

Restaurant, where the experimental design is conducted, contains traditional appetizers, kebab, lahmacun and grill varieties. In addition to traditional Turkish desserts; the restaurant also has different dessert options that can appeal to its customers. The selected place is a respected restaurant that has existed since 1978 in the food and beverage industry. The main reason for choosing this restaurant is that the restaurant manager wants their desserts to be known by their customers as much as the main dishes and in addition there is a dessert that the restaurant manager wants to highlight. In this way, a bilateral enthusiastic survey environment has been created. This classic family restaurant appeals to all age groups. In this way, data can be collected from each age group and the effects of menus on different age groups can be also observed.

The survey contains questions regarding the demographic characteristics of the respondents including age, gender, education level and income level.

This experimental survey conducted in the study, which measuring the effects of menu design techniques and external factors, also aims to observe how these factors affect the customers. On this basis, 138 customers participated in the survey and data were obtained.

### **2.3.1 Data Collection Instruments**

A total of 138 customers were analyzed by distributing an equal amount from each menu (46 picture menu, 46 box menu and 46 positioning menu), the restaurant guests were requested to answer the survey prepared differently for each menu type after they made their dessert choice and the order was taken by the

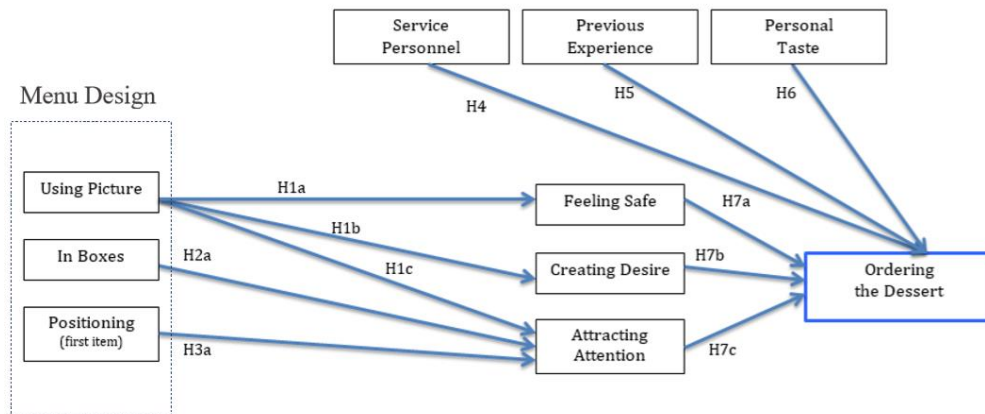
service personnel. In addition, demographic information (gender, age, education level, monthly income level) and different factors affecting his/her decision were asked to be collected. The questionnaire was created to understand the customers' dessert choices. While the effect of personal taste, previous experience and service personnel in the first part of the questions was measured; in the second part, it is aimed to observe relationship between the used menu design techniques on the menus and "feeling safe", "creating desire" and "attracting attention". The results were analyzed with SPSS program and 5-point Likert scale ("1" being "strongly disagree" and "5" being "strongly agree") was used for questions (except demographic questions and for the part where extra information is written). In this way, the final versions of the menus (Appendix I-A, I-B, I-C) and questionnaires (Appendix III-A, III-B, III-C) have been designed according to the literature.

### **2.3.2 Data Collection Methods**

The experimental survey was conducted between 17.00 and 21.00 (dinner time) on a weekend, which is the peak time of the restaurant. The customers, who finished their food, were asked if they would like to eat any dessert. If they responded positively, specially designed menus were given to them and service personnel took their orders. Afterwards, customers were asked to fill in the questionnaire, which is prepared differently for each menu. Data were obtained from customers who had time and were willing to complete the questionnaire. The choices of customers who ordered through the menu but did not want to answer the questionnaire were not taken into consideration. A total of 138 people both ordered dessert and completed the questionnaire.

### 2.3.3 The Theoretical Framework of the Study

In the light of the academic articles in the literature, the research model has been created (Figure 7). In the model, picture, box and positioning, which are among the most common menu design techniques and defined as cognitive components, located first. “Creating desire”, “attracting attention” and “feeling safe” are the affective components and located in the middle of the research model. The model continues with the “ordering the dessert”, which is the dependent variable (behavioral component). In addition, external factors “service personnel”, “personal taste” and “previous experience”, which are presented in the model as moderating variables, may have effect on ordering the dessert.



**Figure 7.** Research Model of the Study

The hypotheses related to the research model are listed below.

**H1a:** Using picture has an effect on feeling safe.

**H1b:** Using picture has an effect on creating desire.

**H1c:** Using picture has an effect on attracting attention.

**H2a:** Offer in a box has an effect on attracting attention.

**H3a:** Positioning in the menu has an effect on attracting attention.

**H4 :** Service personnel has an effect on ordering a dessert.

**H5** : Previous experience has an effect on orders.

**H6** : Personal taste has an effect on orders.

**H7a**: Feeling safe has an effect on ordering the dessert.

**H7b**: Creating desire has an effect on ordering the dessert.

**H7c**: Attracting attention has an effect on ordering the dessert.

Menu Type	Variables	Q	Questions
All Menu	Personal Taste	s1	I chose this because it's the dessert I love.
All Menu	Previous Experience	s2	I chose this dessert because I've liked it in this restaurant before.
All Menu	Service Personnel	s3	I chose this dessert as a result of the suggestion/information of the service personnel.
Menu 1 (Picture)	Attracting Attention	s4a	I was attracted by the dessert picture on the menu.
Menu 1 (Picture)	Attracting Attention	s5a	My eyes first went to the dessert, which has picture on the menu.
Menu 1 (Picture)	Creating Desire	s6a	The dessert with the picture on the menu made me want to eat it.
Menu 1 (Picture)	Feeling Safe	s7	I choose the pictured dessert on the menu; the visual formed in the mind matches the served dessert.
Menu 2 (Box)	Attracting Attention	s4b	I was attracted by the dessert in the box on the menu.
Menu 2 (Box)	Attracting Attention	s5b	My eyes first went to the dessert, which is in the box on the menu.
Menu 2 (Box)	Creating Desire	s6b	The dessert in the box made me want to eat it.
Menu 3 (Positioning)	Attracting Attention	s4c	I was attracted by the first dessert on the menu.
Menu 3 (Positioning)	Attracting Attention	s5c	My eyes first went to the first dessert on the menu.
Menu 3 (Positioning)	Creating Desire	s6c	The first dessert in the menu made me want to eat it.

**Table 1.** Variables of the Study

In the first part, while measuring the effect of personal taste of the customer with question 1 (s1), the previous experience with question 2 (s2), the service personnel with question 3 (s3) on ordering; in the following section, "attracting attention" with questions 4 (s4a, s4b and s4c) and 5 (s5a, s5b and s5c), "creating desire" with question 6 (s6a, s6b and s6c), and lastly "feeling safe" with question 7 (s7) were measured on a Likert Scale ("1" being "strongly disagree" and "5" being "strongly agree"). Question 7 (s7) was directed only to customers who have ordered dessert with the picture menu (menu 1) (Table 1). The demographic questions were also asked. Customers were asked to write their ages directly, without grouping. Gender (female/male), educational level (high school, university, Master's degree and doctorate) and monthly income (less than 1000 TL, between 1000-3000 TL,

between 3000-5000 TL and 5001 and above) were asked. Finally, customers were asked to declare the reason for choosing the dessert in writing. (Appendix III-A, III-B, III-C)

### **3. FINDINGS**

#### **3.1 SURVEY RESULTS**

In this thesis, the effect of using pictures, using boxes and positioning in the menu, which are among the menu design techniques and claimed to be effective in customer selection. Information was obtained from the questionnaires prepared for each menu. Besides, it is aimed to measure the effect of the service personnel, who may recommend a dessert or provide information about a dessert, and encountered in the suggestions of many researchers in the literature, with a question. In addition to the small emphasis in the literature, personal taste and previous experience questions are added as the first reasons that come to mind when considering that the menu design techniques have no effect.

#### **3.2 FREQUENCY ANALYSES**

##### **Descriptive Results**

##### **3.2.1 Age**

Based on the ages of 138 customers who participated in the survey, it was observed that the minimum value is 15 and the maximum value is 68, with 37,31 mean and 12,73 standard deviation.

##### **3.2.2 Gender**

138 respondents consist of both male and female customers. 72 (52,2%) of them are female and 66 (47,8%) of them are male participants.

Gender		
	n	%
Female	72	52,2
Male	66	47,8
<b>Total</b>	<b>138</b>	<b>100,0</b>

**Table 2.** Gender

### 3.2.3 Education Level

When the education levels of 138 participants were analyzed, the results are as follows: 23,2% high school, 59,4% university, 13,8% Master's degree and 3,6% doctorate.

Education Level		
	n	%
High School	32	23,2
University	82	59,4
Master Degree	19	13,8
Doctorate	5	3,6
<b>Total</b>	<b>138</b>	<b>100,0</b>

**Table 3.** Education

### 3.2.3 Monthly Income

The distribution of monthly income of 138 participants is as follows; less than 1000 TL with 8,7%, between 1000 and 3000 TL with 15,9%, between 3000-5000 TL with 23,2%, 5001 TL and above with 52,2%.

Monthly Income		
	n	%
Less than 1000 TL	12	8,7
1000-3000 TL	22	15,9
3000-5000 TL	32	23,2
5001 TL and above	72	52,2
<b>Total</b>	<b>138</b>	<b>100,0</b>

**Table 4.** Income

### 3.2.4 Dessert Choices

According to Table 5, dessert choices of the customers after the experimental survey are as follows; semolina dessert with ice-cream (dessert 3) 27,5%, baked rice pudding (dessert 4) 20,3%, Künefe (dessert 5) 14,5%, Baklava (dessert 1) 10,1%, Hatay style crispy pumpkin dessert (dessert 6) (6,5%), semolina dessert (dessert 2), walnut dessert (dessert 7) and tomato dessert (dessert 8) 5,8%, lastly eggplant dessert (dessert 9) 3,6%. Based on all three menus, the most sold dessert is the dessert 3.

Dessert Orders			
Dessert Number	Dessert Name	Frequency	Percent
1	Havuç Dilimli Baklava	14	10,1
2	Sade İrmik Tatlısı	8	5,8
3	Dondurmalı İrmik Tatlısı	38	27,5
4	Fırın Sütlaç	28	20,3
5	Künefe	20	14,5
6	Hatay Usulü Çıtır Kabak Tatlısı	9	6,5
7	Taze Ceviz Tatlısı	8	5,8
8	Domates Tatlısı	8	5,8
9	Patlıcan Tatlısı	5	3,6
	<b>Total</b>	<b>138</b>	<b>100</b>

**Table 5.** Desserts offered in the Menu

### 3.2.5 Mean Values of Questions

The mean values of the answers for 6 questions, which were asked for all menu types and question 7 that was asked only to customers who ordered their desserts with menu 1, are as follows (Table 6).

Question	Menu1	Menu2	Menu3
s1	4,13	4,22	4,04
s2	2,76	3,37	2,67
s3	2,46	3,11	2,54
s4	3,87	3,87	2,98
s5	3,91	3,67	2,87
s6	3,2	3,33	3,33
s7	4,41	-	-

**Table 6.** Mean Values of Questions

### 3.2.6 Mean Values of Answers based on the Menu Items

The tables regarding the evaluation of the answers based on the ordered desserts are as follows (Table 7). In addition, the mean of the answers given by 11 people who choose the dessert (dessert 3) with the picture in the menu to the question 7 is 4,45.

Dessert	s1	s2	s3	s4a,4b,4c	s5a,5b,5c	s6a,6b,s6c
1	4,79	3,57	2,86	3,86	3,57	3,00
2	4,63	3,13	1,63	4,00	3,50	3,25
3	3,95	3,03	2,84	4,08	4,16	4,18
4	4,46	2,82	2,18	3,04	2,86	2,25
5	4,85	3,75	2,25	2,95	2,90	2,05
6	4,22	2,22	2,44	2,78	3,22	2,89
7	2,75	2,25	3,88	3,13	3,00	2,25
8	2,63	1,63	4,13	4,50	3,88	2,88
9	2,60	2,00	4,00	4,40	4,60	2,80

**Table 7.** Mean Values of Answers (based on menu items)

### 3.3 ONE-WAY ANOVA ANALYSES

One-Way Anova was applied to measure the relationships of questions and menus. Question 7 (s7) is not included in this analysis because it is asked only in the picture menu (menu 1) (Table 8).

ANOVA	
Question	Sig.
s1	.809
s2	.118
s3	.101
s4a, s4b, s4c	<b>.003</b>
s5a, s5b, s5c	<b>.002</b>
s6a, s6b, s6c	<b>.010</b>

**Table 8.** One-Way Anova Results

Looking at the results of the One Way Anova Test, significant value in question 4 (s4), question 5 (s5), and question 6 (s6) is below 0.05 and the difference was observed compared to others. For this reason, Scheffe Test was applied to the questions for multiple comparisons and tabulated below.

When all 3 menus for question 4 (I was attracted by the dessert with the picture/ dessert in the box/ first dessert on the menu) are examined, it is observed that menu 1 and 2 are different from menu 3 (Table 9).

Multiple Comparisons				
Dependent Variable: s4 (s4a, s4b, s4c)				
Menu	Menu	Mean Difference	Std. Error	Sig.
1	2	.000	.299	1.000
	3	.891*	.299	.013
2	1	.000	.299	1.000
	3	.891*	.299	.013
3	1	-.891*	.299	<b>.013</b>
	2	-.891*	.299	<b>.013</b>

**Table 9.** Scheffe Results of Question 4

In question 5 (My eyes first went to the dessert with the picture/ dessert in the box/ first dessert on the menu), menu 1 and 2 are different from menu 3, and menu 1 has a higher mean (Table 10).

Multiple Comparisons				
Dependent Variable: s5 (s5a, s5b, s5c)				
Menu	Menu	Mean Difference	Std. Error	Sig.
1	2	.239	.308	.741
	3	1.043*	.308	.004
2	1	-.239	.308	.741
	3	.804*	.308	.036
3	1	-1.043*	.308	<b>.004</b>
	2	-.804*	.308	<b>.036</b>

**Table 10.** Scheffe Results of Question 5

In question 6 (Dessert with the picture/ dessert in the box/ first dessert on the menu made me want to eat it), menu 2 is different from menu 3 and menu 2 has a higher mean (Table 11).

Multiple Comparisons				
Dependent Variable: s6 (s6a, s6b, s6c)				
Menu	Menu	Mean Difference	Std. Error	Sig.
1	2	-.130	.311	.916
	3	.761	.311	.054
2	1	.130	.311	.916
	3	.891*	.311	.019
3	1	-.761	.311	.054
	2	-.891*	.311	<b>.019</b>

**Table 11.** Scheffe Results of Question 6

### 3.4 NONPARAMETRIC TESTS

#### 3.4.1 Mann-Whitney and Kruskal Wallis Tests

In order to measure the relationship between demographic factors and menu design (picture, box and positioning in the menu), Mann-Whitney Test for gender, and Kruskal Wallis Test for age, education level and income level were applied. No relationship was observed between any demographic factors and the effect of the menu design.

### 3.5 SUMMARY OF HYPOTHESES

According to significant values of questions (Table 8), and then two frequency analyses, which are mean values of questions (Table 6) and mean values of desserts (Table 7), summary of accepted and rejected hypotheses are as follows.

Hypotheses	Results
<b>H1<sub>a</sub></b> : Using picture has an effect on feeling safe.	Accepted
<b>H1<sub>b</sub></b> : Using picture has an effect on creating desire.	Accepted
<b>H1<sub>c</sub></b> : Using picture has an effect on attracting attention.	Accepted
<b>H2<sub>a</sub></b> : Offer in a box has an effect on attracting attention.	Accepted
<b>H3<sub>a</sub></b> : Positioning in the menu has an effect on attracting attention.	Rejected
<b>H4</b> : Service personnel has an effect on orders.	Rejected
<b>H5</b> : Previous experience has an effect on orders.	Rejected
<b>H6</b> : Personal taste has an effect on orders.	Accepted
<b>H7<sub>a</sub></b> : Feeling safe has an effect on ordering the dessert.	Accepted
<b>H7<sub>b</sub></b> : Creating desire has an effect on ordering the dessert.	Accepted
<b>H7<sub>c</sub></b> : Attracting attention has an effect on ordering the dessert.	Accepted

**Table 12.** Summary of Hypotheses

According to the Table 12, most of the hypotheses are accepted. H1<sub>a</sub>, H1<sub>b</sub> and H1<sub>c</sub> were accepted based on the mean values of the questions (Table 6). (H1<sub>a</sub>, question 7: 4,41; H1<sub>b</sub>, question 6 in menu 1: 3,2 and H1<sub>c</sub>, question 4 and question 5 in menu 1: 3,87; 3,91). For H2<sub>a</sub>, answers to questions 4 and 5 in menu 2 were examined and values are 3,87 and 3,67. H3<sub>a</sub> was measured according to question 4 and 5 in menu 3 and values are 2,98 and 2,87. For measuring H4, the mean values of the total answers given for question 3 in three menus were based on and the value was found as 2,70. H5 was measured with the same method as H4, and question 2 was examined in all menus. The mean value for H4 is 2,98. For H6 the answers of the first question in all the questionnaires were based on and the mean value is 4,13. For measuring H7<sub>a</sub>, the mean of the answers given by 11 people who choose the dessert (dessert 3) with the picture in the menu to the 7th question, for H7<sub>b</sub> and H7<sub>c</sub>, mean values of answers for dessert 3 (Table 7) were evaluated. Mean values are as follow; H7<sub>a</sub>, question 7: 4,45; H7<sub>b</sub>, question 6 (dessert 3): 4,18 and H7<sub>c</sub>, question 4 (dessert 3): 4,08 and question 5 (dessert 3): 4,16.

Based on the results, it was accepted that using picture on a menu has an effect on feeling safe, creating desire and attracting attention. In addition, it as also accepted that writing the menu item in a box attracts attention. Menu item positioning has no effect on attracting attention, so it was rejected. Service personnel and previous experience have no effect on orders and these hypotheses

were also rejected. Personal taste plays a critical role on customers' orders and the hypothesis was accepted. Finally, feeling safe, creating desire and attracting attention have effect on ordering the dessert.

## CONCLUSION

The main purpose of this study is to understand and measure the effects of commonly used menu design techniques, to observe other factors than menu design that affect the customers' order, and finally whether these variables have an effect on the product ordered. As a result of the literature review, the presence of the picture in the menu that attracts the attention of the customer, makes him/her want to eat the pictured product, and makes him/her feel safe by matching the presented picture and what he/she had in his/her mind, while reading the name of offer in the menu. In addition, the effect of the menu items presented in the box is also attracting the attention of the customer. Positioning, another widely used menu design technique, was examined in many ways in the literature. Studies on the first placed, middle placed and last placed menu items have been conducted and it has been asserted that these 3 types of positioning attract the attention of the customer, and remain in the mind of the customer, which plays a critical role in order. While reviewing the literature on menu design techniques, the importance of service personnel was also emphasized and suggestions were made about the effect of service personnel especially in the suggestions section for future studies (On the Menu, 1998 as stated in Antun and Gustafson, 2005; Bowen and Morris, 1995; Filimonau et. al, 2017; Panitz, 2000). Contento et. al. (2006) asserted that habit/familiarity, healthy meal and taste factors are effective in choices. Although there is lack of studies on this subject in the literature, personal taste is examined as an external factor in this research. In addition, as another factor that may have an effect on an order in a restaurant, previous experience was added to the study and measured.

The same question patterns were created and asked for each menu with the aim of observing the relationship between the three menus and the possibility of reaching different information, even if not to test the hypotheses. For instance, there is a question in menu 2 (box menu) in the context, although it is not argued that the box creates desire to eat. Since the question 7 could not be positioned in this way, it was asked only in menu 1 (picture menu). According to One-Way Anova results,

significant difference in question 4 (s4), question 5 (s5), and question 6 (s6) were found (Table 8). For this reason, Scheffe Test was applied to these questions for multiple comparisons. Question 4 is one of the “attracting attention” questions and with the Scheffe test it is observed that menu 1 and 2 are different from menu 3 (Table 9). Therefore, compared to the positioning menu, it can be interpreted that picture menu and box menu attract more attention. In question 5, which is the second "attracting attention" question, whether the eye went to the first desired location (picture, box or first place) was measured. According to results of question 5, menu 1 and 2 are different from menu 3, and menu 1 has a higher mean (Table 10). While the most effective menu in question 5 is the picture menu, the box menu follows it. The answers of question 5 were similar to question 4, and a consistent result has been obtained. Mostly picture menu, and secondly box menu has attracted the attention of customers. With question 6 “creating desire” is measured. Menu 2 is different from menu 3, and menu 2 has a higher mean (Table 11). Although it is accepted that using pictures in the menu creates desire on customers, it is observed that the most effective method among the three methods is using box in the menu for creating desire to eat on customers. Question 7, which could not be included in multiple comparisons, was analyzed by the frequency analysis. It is assumed that the dessert in the menu, which assures that the offer fits the image created in the customer’s eyes, supports “feeling safe”. Additionally, whether demographic features of customers have an effect on the order with the menu was measured with Nonparametric Tests. For gender Mann-Whitney and for age, education level and income level Kruskal Wallis Test were applied. No relation was observed between demographic features and ordering from the menu.

According to the results, using picture proved to be a factor that attracts the attention of the customers while selecting a dessert from the menu, and supports Pasevic (2005). In addition, using picture on menu was accepted to have an impact on feeling safe as was presented in Hou et. al. (2017)’s study. Finally, it was revealed that using pictures in the menu arouse the desire to eat the pictured offer on the customers.

As mentioned above, using the box in the menu attracts the attention of the customer and as stated by Pasevic (2005), and Alanzo (2007) (as stated in Ozgen, 2015), the findings of this study support this fact.

When positioning in the menu is examined (in this thesis first item in the menu) contrary to argument of Lewis and Brown (2003) (as stated in Ozgen, 2015), Jones and Mifli (2001), Main (1994) (as stated in Antun and Gustafson, 2005), Panitz (2000), this method is not a factor that attracts the attention of the customer and it is stated that it has no effect on the order of the customer. When external factors were analyzed, it was observed that the service personnel and previous experience have no effect on the order and these hypotheses were rejected. Contrary to these findings, personal taste has an effect on the order. In order to test the relationship between affective components (attracting attention, creating desire and feeling safe) and the behavioral component (ordering the dessert), the responses of those who ordered ice cream semolina dessert (dessert 3) using menu design techniques were examined. The mean values of the questions (Table 6) in which attracting attention and creating desire, and the mean of the answers given by 11 people who choose the dessert (dessert 3) with the picture in the menu to the question 7 feeling safe were measured, and it was accepted that these components have an effect on the order.

The answers to the questions were examined one by one according to the selected desserts. (Table 7; dessert numbers: Table 5) For external factors, assumptions have been made with detailed examination besides the general lines. In the question 1, most of the customers stated that they chose dessert 1, 2, 3, 4, 5 and 6 because it was the dessert they liked. These desserts are classic Turkish desserts and are known to the public. Customers who choose dessert 7, 8 and 9 created a low mean in question 1. The answers to the questions that draw attention and above average in these desserts were observed in the question 3. Since the desserts 7, 8 and 9 are not traditional and familiar desserts, it is stated that customers chose this dessert not because they like it, but with the information and advice of the service personnel. The repetitive answers written in the field left blank in the

last question also provided an extra idea about the orders of customers. It is remarkable that the ice cream semolina dessert (dessert 3) was chosen because it contains ice cream and customers, who ordered dessert 3, wanted to cool off due to the warm weather (on the weekend when the survey was conducted the weather was quite hot). In addition, the reasons why customers ordered dessert 4 are as follow: it is usually made by a family member such as mother / aunt and eaten in childhood. For this reason, habits and familiarity have been observed to be effective. In this way, it is supported that people enjoy eating the dishes they are familiar with, which was asserted by “Sell the Sizzle” (2005) as stated in Antun and Gustafson (2005). Another remarkable and repetitive answer for dessert 4 is that it is a light option. This factor is a feature that distinguishes dessert 4 from other heavy desserts in the menu. When the answers for dessert 5 are examined, it is noteworthy that this restaurant makes this dessert well. For desserts 7, 8 and 9 curiosity and desire to try another alternatives are observed.

## **Managerial Implications**

In this research, three of the commonly used menu design techniques were examined. Both the overall effect of the menus and their relative effects on customers' orders were observed. Restaurant managers can use this research while designing the menu and effectively affect their customers' ideas and perceptions. To summarize, in order to attract the attention of customers, it is recommended to use pictures first in the menus. Secondly, it is recommended to use boxes and in this way, menu design can be realized effectively.

It was observed that using a separate menu for dessert also affected sales. For this reason, it is recommended to the restaurant, where the experimental survey was conducted and similar establishments to give a separate dessert menu to the customers after the meal. In addition, the influence of the service personnel was observed in unfamiliar desserts. For this reason, if there are menu items in the menu that customers are not familiar with, the necessity of well-educated service personnel about the offers should not be ignored.

With this thesis, it is possible to get an idea not only of the visual of the menu but also of its content. For instance, customers have focused on a menu item with a distinctive feature (dessert 4: baked rice pudding is a light dessert) and this menu item became the second best-selling dessert in the survey. With this mindset, the product range can be expanded with distinctive desserts (e.g. light desserts).

## **Limitations and Recommendations for Further Research**

When the article of Bowen and Morris (1995) is examined, which is the one of the researches closest to this thesis, it is seen that three different menu design techniques are applied on one menu item in the one menu. As a result, it was observed that no menu design technique had any effect. In this thesis, menu design techniques are applied separately to observe their effects. For this reason, for future studies it is also recommended to use only one menu design technique for one menu item, as in this study, until the most precise data is available.

In addition, although there are many academic articles on this subject, there was a shortage of questions to create survey questions, and this was challenging. These survey questions can give insight into future studies.

Finding about the offer presented in the box in the menu and its creation of desire, was not analyzed in this research. However the box menu affected creating desire more than the menu with picture. It is recommended to conduct a research in this direction.

Since the prices of desserts are very close to each other, no research has been conducted on pricing in this study. In future researches, studies on the effects of prices of menu items on customers are suggested.

Researches on the effect of different elements on pictures are also proposed, and in this way, studies can be conducted on how to get more efficiency.

In the research, factors such as family and childhood memories came to the fore in choosing a dessert. For this reason, it is thought that if a dessert with such an emotional effect is given a name like "mom's rice pudding", may have a positive effect on sales and this topic can be studied in details.

As a result of the questionnaire applied on a hot weekend, some customers for its refreshing effect preferred dessert 3, because it contains ice-cream. Studies

are proposed to satisfy customers and to direct them to order products based on weather, so the creation seasonal menus is also recommended.

In the restaurant where the experimental survey was conducted, there were customers who were not motivated and said that they did not have time to fill the questionnaire. In order to motivate the customers to answer the questionnaire, it is recommended that an agreement with the restaurant can be made and if customers fill in the questionnaire, a treat can be given or a certain discount can be applied at the bill.

In future research, experimental questionnaires about other menu design techniques mentioned in the literature section can be applied. In order to contribute to the literature, more information can be obtained in case of different questions about menu design techniques. The effect of menu design techniques and external factors in the study varies according to the menu item, however according to this thesis it is asserted that using pictures and boxes are prominent methods, and no effect of the positioning (as first item in this study) in the menu has been observed.

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## APPENDIX I-A/ MENU 1- PICTURE MENU



### TATLILAR

Havuç Dilimi Fıstıklı Baklava	20 ₺
Sade İrmik Tatlısı	18 ₺
Dondurmalı İrmik Tatlısı	20 ₺
Fırın Sütlaç	16 ₺
Künefe	20 ₺
Hatay Usulü Çıtır Kabak Tatlısı	18 ₺
Taze Ceviz Tatlısı	22 ₺
Domates Tatlısı	20 ₺
Patlıcan Tatlısı	20 ₺
Kaymak (İsteğe Bağlı) +6₺	



## APPENDIX 1-B /MENU 2- BOX MENU



### TATLILAR

Havuç Dilimi Fıstıklı Baklava	  	20₺
Sade İrmik Tatlısı	  	18₺
Fırın Sütlaç	 	16₺
Künefe	  	20₺
Hatay Usulü Çıtır Kabak Tatlısı		18₺
Taze Ceviz Tatlısı		22₺
Domates Tatlısı		20₺
Patlıcan Tatlısı		20₺
<small>Kaymak (İsteğe Bağlı) +6₺</small>		

Dondurmalı İrmik Tatlısı



20₺

## APPENDIX 1-C / MENU 3- POSITIONING MENU



### TATLILAR

Dondurmalı İrmik Tatlısı	  	20 ₺
Havuç Dilimi Fıstıklı Baklava	  	20 ₺
Sade İrmik Tatlısı	  	18 ₺
Fırın Sütlaç	 	16 ₺
Künefe	  	20 ₺
Hatay Usulü Çıtır Kabak Tatlısı		18 ₺
Taze Ceviz Tatlısı		22 ₺
Domates Tatlısı		20 ₺
Patlıcan Tatlısı		20 ₺

Kaymak (Isteğe Bağlı) +6₺

## APPENDIX II-A

### MENU 1- PICTURE MENU QUESTIONS IN TURKISH

Lütfen seçtiğiniz tatlıyı yazınız: .....

#### Sorular (Resimli Menü)

Aşağıdaki soruları sunulan önermelere katılım derecenize göre 1'den 5'e kadar size en uygun olan seçenek ile yanıtlayınız.

- (1) Kesinlikle katılmıyorum
- (2) Katılmıyorum
- (3) Kararsızım
- (4) Çoğunlukla katılıyorum
- (5) Kesinlikle katılıyorum

1. Sevdiğim tatlı olduğu için bunu seçtim. 1 2 3 4 5
2. Önceden bu restoranda yediğim ve beğendiğim için bu tatlıyı seçtim. 1 2 3 4 5
3. Servis personelin önermesi/bilgilendirmesi sonucunda bu tatlıyı seçtim. 1 2 3 4 5
4. Menüde resmi olan tatlı ilgimi çekti. 1 2 3 4 5
5. Gözüm ilk olarak menüde resmi olan tatlıya gitti. 1 2 3 4 5
6. Menüde resmi olan tatlı bende yeme istediği uyandırdı. 1 2 3 4 5
7. Menüde resmi olan tatlıyı seçerim; bu şekilde aklımda oluşan görsel ile servis edilen tatlı örtüşür. 1 2 3 4 5
8. Yaşınız:
9. Cinsiyetiniz: Kadın  Erkek
10. Eğitim Durumunuz: Lise  / Üniversite  / Yüksek Lisans  / Doktora
11. Aylık Geliriniz:
  - 1000 TL'den az
  - 1000-3000 TL arası
  - 3001-5000 TL arası
  - 5001 TL üzeri
12. Bu tatlıyı seçmenizde sizi etkileyen sebepler nedir?

## APPENDIX II-B

### MENU 2- BOX MENU QUESTIONS IN TURKISH

Lütfen seçtiğiniz tatlıyı yazınız: .....

#### Sorular (Kutulu Menü)

Aşağıdaki soruları sunulan önermelere katılım derecenize göre 1'den 5'e kadar size en uygun olan seçenek ile yanıtlayınız.

- (1) Kesinlikle katılmıyorum
- (2) Katılmıyorum
- (3) Kararsızım
- (4) Çoğunlukla katılıyorum
- (5) Kesinlikle katılıyorum

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. Sevdiğim tatlı olduğu için bunu seçtim.                                 | 1 | 2 | 3 | 4 | 5 |
| 2. Önceden bu restoranda yediğim ve beğendiğim için bu tatlıyı seçtim.     | 1 | 2 | 3 | 4 | 5 |
| 3. Servis personelin önermesi/bilgilendirmesi sonucunda bu tatlıyı seçtim. | 1 | 2 | 3 | 4 | 5 |
| 4. Menüde kutu içinde olan tatlı ilgimi çekti.                             | 1 | 2 | 3 | 4 | 5 |
| 5. Gözüm ilk olarak menüde kutu içindeki tatlıya gitti.                    | 1 | 2 | 3 | 4 | 5 |
| 6. Menüde kutu içinde olan tatlı bende yeme istediği uyandırdı.            | 1 | 2 | 3 | 4 | 5 |

7. Yaşınız:

8. Cinsiyetiniz: Kadın  Erkek

9. Eğitim Durumunuz: Lise  / Üniversite  / Yüksek Lisans  / Doktora

10. Aylık Geliriniz:

- 1000 TL'den az
- 1000-3000 TL arası
- 3001-5000 TL arası
- 5001 TL üzeri

11. Bu tatlıyı seçmenizde sizi etkileyen sebepler nedir?

## APPENDIX II-C

### MENU 3- POSITIONING MENU QUESTIONS IN TURKISH

Lütfen seçtiğiniz tatlıyı yazınız: .....

#### Sorular (Sıralama Menü)

Aşağıdaki soruları sunulan önermelere katılım derecenize göre 1'den 5'e kadar size en uygun olan seçenek ile yanıtlayınız.

- (1) Kesinlikle katılmıyorum
- (2) Katılmıyorum
- (3) Kararsızım
- (4) Çoğunlukla katılıyorum
- (5) Kesinlikle katılıyorum

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. Sevdiğim tatlı olduğu için bunu seçtim.                                 | 1 | 2 | 3 | 4 | 5 |
| 2. Önceden bu restoranda yediğim ve beğendiğim için bu tatlıyı seçtim.     | 1 | 2 | 3 | 4 | 5 |
| 3. Servis personelin önermesi/bilgilendirmesi sonucunda bu tatlıyı seçtim. | 1 | 2 | 3 | 4 | 5 |
| 4. Menüde ilk sırada olan tatlı ilgimi çekti.                              | 1 | 2 | 3 | 4 | 5 |
| 5. Gözüm ilk olarak menüde ilk sırada olan tatlıya gitti.                  | 1 | 2 | 3 | 4 | 5 |
| 6. Menüde ilk sırada olan tatlı bende yeme istediğimi uyandırdı.           | 1 | 2 | 3 | 4 | 5 |

7. Yaşınız:

8. Cinsiyetiniz: Kadın  Erkek

9. Eğitim Durumunuz: Lise  / Üniversite  / Yüksek Lisans  / Doktora

10. Aylık Geliriniz:

- 1000 TL'den az
- 1000-3000 TL arası
- 3001-5000 TL arası
- 5001 TL üzeri

11. Bu tatlıyı seçmenizde sizi etkileyen sebepler nedir?

## APPENDIX III-A

### MENU 1- PICTURE MENU QUESTIONS IN ENGLISH

Please write the dessert of your choice:.....

#### Question (Picture Menu)

Answer the following questions with the option that suits you best from 1 to 5 depending on the accuracy of the proposals presented.

- (1) I strongly disagree
- (2) I disagree
- (3) I'm undecided
- (4) I mostly agree
- (5) I strongly agree

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1. I chose this because its is the dessert I love.  | 1 | 2 | 3 | 4 | 5 |
| 2. I chose this dessert because I ate and liked it in this restaurant before.                           | 1 | 2 | 3 | 4 | 5 |
| 3. I chose this dessert as a result of the suggestion /information of the service personnel.            | 1 | 2 | 3 | 4 | 5 |
| 4. I was attracted by the dessert picture on the menu.  | 1 | 2 | 3 | 4 | 5 |
| 5. My eyes first went to the dessert, which has picture on the menu.                                    | 1 | 2 | 3 | 4 | 5 |
| 6. The dessert with the picture on the menu made me want to eat it.                                     | 1 | 2 | 3 | 4 | 5 |
| 7. I choose the pictured dessert on the menu; the visual formed in the mind matches the served dessert. | 1 | 2 | 3 | 4 | 5 |

8. Your age:

9. Your gender: Female  / Male

10. Your education level: High school  / University  / Master's degree  / Doctorate

11. Your monthly income level:

- Less than 1000 TL
- Between 1000-3000 TL
- Between 3001-5000 TL
- 5001 TL and above

12. What are the reasons that affect you in choosing this dessert?

## APPENDIX III-B

### MENU 2- BOX MENU QUESTIONS IN ENGLISH

Please write the dessert of your choice:.....

#### Question (Box Menu)

Answer the following questions with the option that suits you best from 1 to 5 depending on the accuracy of the proposals presented.

- (1) I strongly disagree
- (2) I disagree
- (3) I'm undecided
- (4) I mostly agree
- (5) I strongly agree

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1. I chose this because its is the dessert I love.  | 1 | 2 | 3 | 4 | 5 |
| 2. I chose this dessert because I ate and liked it<br>in this restaurant before.  | 1 | 2 | 3 | 4 | 5 |
| 3. I chose this dessert as a result of the suggestion<br>/information of the service personnel.   | 1 | 2 | 3 | 4 | 5 |
| 4. I was attracted by the dessert in the box on the menu.   | 1 | 2 | 3 | 4 | 5 |
| 5. My eyes first went to the dessert, which is the box<br>on the menu.  | 1 | 2 | 3 | 4 | 5 |
| 6. The dessert in the box on the menu made<br>me want to eat it.  | 1 | 2 | 3 | 4 | 5 |
| 7. Your age:  |   |   |   |   |   |
| 8. Your gender: Female <input type="checkbox"/> / Male <input type="checkbox"/>   |   |   |   |   |   |
| 9. Your education level: High school <input type="checkbox"/> / University <input type="checkbox"/> / Master's degree <input type="checkbox"/> / Doctorate <input type="checkbox"/> |   |   |   |   |   |
| 10. Your monthly income level:  |   |   |   |   |   |
| <input type="checkbox"/> Less than 1000 TL  |   |   |   |   |   |
| <input type="checkbox"/> Between 1000-3000 TL   |   |   |   |   |   |
| <input type="checkbox"/> Between 3001-5000 TL   |   |   |   |   |   |
| <input type="checkbox"/> 5001 TL and above  |   |   |   |   |   |
| 11. What are the reasons that affect you in choosing this dessert?  |   |   |   |   |   |



**ETİK KURUL DEĞERLENDİRME SONUCU / RESULT OF EVALUATION BY THE ETHICS COMMITTEE**

Covid-19 salgını nedeniyle İstanbul Bilgi Üniversitesi İnsan Araştırmaları Etik Kurulu, 2019-2020 Bahar döneminde teslim edilecek lisansüstü tezlerin onay yetkisini ilgili etik kurul alt komitelerine devretmiştir. / Due to the Covid-19 outbreak, İstanbul Bilgi University Human Research Ethics Committee has transferred its approval authority to the Ethics Board Sub-Committees organized within each graduate program. Thus, the graduate theses to be submitted in the spring semester of 2019-2020 should/must get the approval of the Ethics Board Sub-Committee within their own graduate program.

**ETİK KURUL ALT KOMİTESİ DEĞERLENDİRME SONUCU / ETHICS BOARD SUB-COMMITTEE EVALUATION RESULT**

Bu bölüm lisansüstü tez araştırmaları için ilgili Etik Kurul alt komitesince doldurulacaktır. / This part to be completed by the Ethics Board sub-committee responsible for graduate dissertation studies.

Başvuru Sahibi / Applicant: Pelin OLGAY

Proje Başlığı / Project Title: The Effect of Menu Design on Customers' Choices

**Değerlendirme Sonucu/ Result of Evaluation**

1. Herhangi bir değişikliğe gerek yoktur. Veri toplama/uygulama başlatılabilir. / There is no need for revision. Data collection/application may commence : \_\_\_\_\_ ✓ \_\_\_\_\_

2. Ret / Application Rejected : \_\_\_\_\_

Reddin gerekçesi / Reason of Rejection : \_\_\_\_\_

Değerlendirme Tarihi / Date of Evaluation: 04.03.2020

Unvanı, Adı, Soyadı / Title, Name, Surname:

Dr. Öğr. Üyesi Neşenur Altınığne Ekici



Unvanı, Adı, Soyadı / Title, Name, Surname:

Dr. Öğr. Üyesi Esra Arkan

