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An Evaluation of Digital Menu Types and Their Advantages**

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Abstract

The menu is one of the most important communication, marketing and selling tools of a food and beverage business. Technological advances and increasing competitive environment are driving food and beverage businesses to innovate and service differentiation. One of the best examples of this is the introduction of digital menus. Although there are various studies on the importance of the menu, the number of information sources and studies on digital menus is limited. In this study, it is aimed to create a scope for digital menus by reviewing the current literature and to provide resources to researchers for future studies. As a result of the literature review, it is determined that digital menus can be divided into two as non-touchscreen and touchscreen menus and the details and advantages of these menu systems are mentioned.

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INTRODUCTION

Restaurant menus are an important communication tool that affects customer behavior (Bowen & Morris, 1995). Just like a business card, they introduce the restaurant to the customer. The design of the menu is complementary to the décor of the place, its service, food quality and price range (Pavesic, 2005). It is also one of the most significant strategic tools of a food and beverage business (McCall & Lynn, 2008; Mills & Thomas, 2008). It provides cost control with marketing and sales activities.

The physical features of the menu give the customer subliminal messages about the business. Many factors such as the appearance, design, cover, paper quality, color, material, weight, and the condition (as in clean or dirty) of the menu contribute to the customer's first impression of the restaurant (McCall& Lynn, 2008; Cichy & Wise, 1999). The internal design of the menu allows the customer to make the first evaluation of the business with other factors such as the internal design of the menu, product descriptions and their layouts, use of images, font, and price display. In this regard, it is critical to make the menu's both the external and the internal design in a way that can meet the customer's expectations and impress them (Kwong, 2005).

The increasingly competitive environment compels businesses to make innovations that can meet the customer demands and expectations while at the same time creating a competitive advantage. One of these innovations is the digital menus that set an example for experiential marketing. There is a range of different digital menu implementation that are used from fast-food restaurants to fine-dining restaurants.

The word "digital" is defined as "electronically displaying data on a screen" in the official dictionary of the Turkish language *Güncel Türkçe Sözlük* of the Turkish Language Institution [TDK] (TDK, 2019). In this respect, digital menus are not printed menus but all types of menus that display digitally. Tablets, kiosks, boards, smartphone applications are examples of digial menus that are widely used nowadays. It is seen that tablet-based digital menus are also used with other names such as electronic menu, e-menu, and tablet menu (Sürücü, Ülker & Hassan, 2018). These menus also set an example for Self Service Technologies. Self-Service Technologies (SST) is defined as a technological user interface[1] that enables customers to independently produce services without the involvement of employees (Meuter, Ostrom, Roundtree & Bitner, 2000).

It is seen that the number of studies on digital menus in the literature is considerably low compared with traditional menus. Although there are few studies that compare digital menus with traditional ones, analyze them in terms of microbial contamination, and measure the effect of digital menus on the intention of re-visiting the restaurant (Sürücü et al.,2018) or evaluating the use of tablet (Bekar, Gökgöz & Sürücü, 2017) or kiosk menus (Carlin,2007), there is no study that presents the types, uses and advantages of digital menus altogether, which is a relatively new subject. It is seen that each study is carried out by focusing on only one digital menu type (for example, only researching about tablet-based menus). However, more inclusive questions such as what the digital menu is, its types, advantages or disadvantages still remain unanswered.

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[1] Interface: The front page that contains various pictures, graphics and writings, which enables computer softwares to be operated by the user(TDK,2019).

In this study, it is aimed to make a classification by examining the researches about digital menus in the literature, to determine the advantages of digital menus, to create a scope on the subject and thus to contribute to the literature by filling in the mentioned gaps. It is also aimed to provide a basis for future research.

Conceptual Framework

The Concept of Menu and Its Importance

There is different information about the origin of the word "menu" in different sources. In some sources, it is stated that it derives from the Latin word "minutus" meaning "small" (Altınel, 2011). It also means "a detailed list" in French (Ninemeier & Hayes, 2005). Known to be in use since the ancient times (Lessel, Böhmer, Kröner & Krüger, 2012), menus back then, were in the form of informative cards with names of food and beverages prepared for the guests. The menu, in the form we use today, is a list that helps the customer to make a decision, with the names, prices and descriptions of the food and beverages offered for sale in a business, with or without images (Yılmaz, 2006; Özkaya & Cömert, 2010; Altınel, 2011; Bulduk, 2013).

The menu has an important role since the establishment of the business. The most efficient use of processed or semi-processed materials is achieved through a successful menu planning. In this regard, the menu is a significant planning and cost control factor. It is also one of the important tools that will enable the business to reach its profitability targets (Miller & Pavesic,1996). The menu is a promotional and sales tool for the business (Kincaid & Corsun, 2003). It should be able to promote the products of the business in an accurate, clear, understandable, and attractive manner. It should facilitate the customer's choice and be able to draw attention to the products the business wants to sell (Antun& Gustafson, 2005). The menu has the potential to influence the customer, whether with its external or internal design. Therefore, a successful menu design and planning is important in terms of both customer satisfaction and business objectives.

The Concept of Digital Menu and Its Types

Nowadays, businesses often turn to experiential marketing activities to be able to create competitive advantage and stand out. Pine and Gilmore (2001) describe experiential marketing as an event or chain of events that is made to carry out a life experience, that the consumer is in and is participating, acquiring, and consuming. Regardless of the way the experience is designed, the marketing activities are based on the senses of the people, considering the needs of consumers such as having fun, being warned, emotionally touched, and educated. With the advances in information technologies and the widespread use of technological practices, the food and beverage businesses have started to look for different ways to influence the consumer. One of the practice areas of experiential marketing has been restaurants. At this point, digital menu systems which have visual appeal but also involve the customer in the process are an example of experiential marketing.

Digital menu is the presentation of the business's menus that provide information about food and beverages through an electronic display (Şahin, 2019). As a result of the literature review and field observations, it is seen that different digital menu types are used by businesses. Commonly used digital menu types can be grouped as follows (Şahin, 2019):
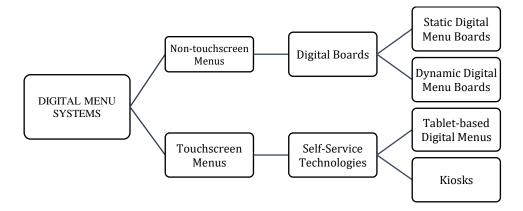
Figure 1: Digital menu types (Şahin, 2019)

Non-Touchscreen Digital Menu Systems

Non-touchscreen digital menu systems are digital boards that provide visual information about the products owned by the business and require an interpersonal staff for the customer to be able to place an order. They can be easily used both in indoor and outdoor areas. LCD, LED, OLED, or plasma displays are used in product promotion by connecting to a private network. It is seen that such digital menu boards are mostly used in fast-food restaurants. Non-touchscreen digital menu boards are divided into two as "static digital menu boards" and "dynamic digital menu boards".

Static digital menu boards (SDMB) are large screens that allow the products in the menu to be presented with attractive visuals and price information in a place where the customer can easily see and use them to decide (Şahin, 2019). The feature of these screens is that the images do not change constantly and remain still. Sometimes, two images are replaced periodically on the same panel. They are similar to the billboards.

Dynamic digital menu boards (DDMB) are plasma, LED or LCD screens which are also used as menu boards that combine static menu text with high quality images, videos, slide shows, animations, and live newscast (Peters, 2011). Unlike SDMB, one or more images on the screen are in constant motion. This motion is often provided through videos. It is stated that dynamic screens attract 400 times more attention than static screens (Kızıltan, 2017). In a study that measures the effects of serving a dish with a video, image, the expression of a waiter, and a traditional menu it is concluded that the most mental imagery and need for food are achieved with videos (Lee & Kim,2020).

There is limited study to understand the effect of non-touchscreen displays on customer behaviour. In his research with 129 students, Peters (2011) has investigated the effect of DDMB usage on decision-making process and healthy food choices of consumers. The research could not explain the effect of DDMB videos on customer decision making process. However, it has been concluded that these videos can affect the consumer in making a healthy food choice at a marginal level. In addition to the low number of samples, the participants tended to choose products that they were familiar with previously. It is thought that doing the research with more participants and applying it to different demographic groups will be beneficial for comparing the results.

Touchscreen Digital Menu Systems

Touchscreen digital menu systems offer the people the possibility of self-service. Self-service technologies enable the customer to complete any purchase without the need for service staff (Cho & Fiorito, 2010). The most commonly used SSTs are tablets (iPad or Samsung Galaxy), tabletop touchscreens, PDAs (Personal Digital Assistants), mobile

apps on smartphones and kiosks. PDAs are often used by service staff to deliver the order to the kitchen after it's received from the customer. Since mobile apps work on the same principle as tablet-based apps, they won't be mentioned in this study. The two most common methods used in restaurants that allow customers to place an order without the need of service staff are kiosks and tablet-based digital menus.

Tablet-based digital menus are digital menu systems allowing the menu of the business to be displayed and ordered via tablet computers (Şahin, 2019). It is known that mostly tableside mounted versions were used in the past. However, in these systems, sometimes it was necessary to wait in line to place an order and the customer could only select the products. It was not possible for the customer to customize the order or send a note directly to the kitchen staff (Wang & Wu, 2013). In a research conducted by Dixon, Kimes & Verna (2009), electronic menus on the tables were evaluated as the most valuable technology application by the participants. Chen, Lin and Yen (2011), placed interactive tabletop systems on 22 tables in a newly opened restaurant in Taiwan. Interactive surfaces allow information systems to be placed in everyday items such as furniture, etc. The research was carried out between October 2009 and June 2010. With this system, customers were able to see the menu, place an order, play games, fill out the assessment form and pay the bill by touching the tabletop. This innovative practice has been reported in blogs, newspapers and magazines and has created an advertising effect. Furthermore, it has contributed financially to the business by showing advertisements on the tabletop. People have started to come to the restaurant to experience this system rather than meals. A creative customer used this application to propose. And this has been inspiring in terms of the implementation of other themes and ideas. The system was found innovative and interesting in this restaurant which appeals to young and middle-class customers. Nevertheless, it is difficult to evaluate in terms of the approach and results of older people and different types of restaurants.

To come out of iPads in April 2010 and Samsung Galaxy tablets in September 2010 brought with it a much more convenient and easy method than the systems mentioned above. As they are thin, light, and portable, the use of tablet menus is becoming widespread. Tablet menus can offer the customer many options such as impressive graphics, photos, links, nutritional values, content, recipes, detailed wine lists and searching for the desired product with the filtering feature (Kasavana, 2011). These characteristic features of tablet menus contribute positively to improving the service quality by enabling the customer to participate in the order process effectively (Beldona, Buchanan & Miller, 2014). Based on the adapted Technology Acceptance Model, Sürücü et al. (2018) investigated the effects of tablet menus on the intention to revisit the restaurant with 369 people. As a result of the research, they found that the ease of use, usefulness and entertainment perception of the tablet menus had a positive effect on the intention to revisit the restaurant. In their research with 332 people, Wang and Wu (2013) measured the intention to go to the restaurants using tablet menus on the perceived value variable. Perceived value includes perceived usefulness, ease of use, control, enjoyment, and novelty variables. Research results indicate that the perceived value is not only related to functional evaluation (perceived usefulness, ease of use, and control) but also to emotional evaluation (perceived enjoyment and novelty). In fact, it appears that emotional factors (perceived enjoyment and novelty) have a greater impact on perceived value than functional factors (perceived usefulness, ease of use, and control). Similarly, studies by Işık, Işık and Işık (2006) and Bekar et al. (2017) propose that tablet menus are considered positive by customers.

Kiosks are another type of self-service menu technologies used in restaurants. Kiosks, which are in use for promotion, purchasing, and marketing activities in many places such as airports, banks, and shopping malls, are also

used in restaurants. They are free-standing devices with touchscreens that are usually found in restaurant entrances or inside areas. With the help of these devices, customers can select the products they want and place their orders directly and make their payments. They are widely used, especially in fast food businesses. McDonald's has kiosks in approximately 3000 restaurants, and this number is increasing day by day (Altan, 2018).

Kiosks are included in the concept of direct marketing and are a successful example of service differentiation (Bitner, Brown & Meuter, 2000; Fishman, 2004). Customers have easier access to more options in less time. Gülmez and Koçkaya (2008) conducted a research to determine the usage efficiency of consumers using kiosks. The research was conducted with 402 individuals of bank and shopping mall customers, and data was collected through face-to-face survey method. As a result of the research, it was concluded that the use of kiosks in our country is insufficient. It has been observed that young and educated people are more prone to use kiosks. Three main factors have been identified regarding the use of kiosks. These factors are getting easy and fast help without the need of a staff (unmanned access); 24/7 financial transactions (financial support) and detailed information about the company, products, and services (information support). With the use of kiosks, time is saved and service speed increases significantly (Eastwood, 2018). In a study conducted in the USA by Opinion Research Corp. in 2006 with more than 1000 people, the reasons people use kiosks were investigated. According to this research, 57% of the participants stated that they preferred kiosks due to faster service, 56% shorter waiting line, 48% more control, 46% privacy and 36% to not interact with the cashier (Carlin, 2007). They also have positive outputs in terms of increasing operational flexibility and revenues in the business (Minnick, 2007; Bettencourt & Gwinner, 1998; Bitner, Booms & Tetreault, 1990). Thanks to the database created with the use of the kiosk, future planning and analysis can be made more easily. Also, seeing customer feedback easily can help improve the service quality of the business.

Advantages of Using a Digital Menu

Rapid developments in restaurant technologies offer various opportunities to meet the changing expectations of customers on subjects such as preparing, presenting, and introducing products. When compared with printed menus, digital menu systems have the upper hand for their variety of features such as 3D images, videos, animations, and entertainment. The advantages they provide to both businesses and customers can be physically and emotionally. These advantages can be listed as follows:

Convenience: Businesses, whether they use non-touchscreen or touchscreen digital menu systems can make changes on the menu through their software, anytime they want, from anywhere in the world and without any help. They can reflect their changes to the screen without any additional costs. Non-touchscreen displays are often used in crowded areas such as shopping malls or food courts. Instant changes to the screens can simplify stock management. For example, when a product is out of stock, visual of the product with excess stock can be displayed on the screen and a successful sales management can be accomplished by drawing attention to that product. Customers can choose more easily by being affected from dynamic visuals and explanatory information. Especially touchscreen menus provide different conveniences for customers. The customer can reach the desired products in short time by narrowing the search options with the filtering feature in the menu. They can place an order, customize their order and pay without the need of an interpersonal staff. They can see alternative types of drinks especially like wine, compatible with the meals they choose. They can easily access detailed information about the products on the menu and choose products that are suitable for their health conditions with specific descriptors such as allergens, gluten intolerance

and dietary preferences. They can view the visuals of products. The language option in the tablet menu makes it easy for customers who speak different languages to choose without any extra effort. Many tablet menus also have an audio menu system for the visually impaired.

Cost Advantage: Despite being perceived as more expensive, digital menus can be advantageous when we go into details. Above all, the business has to choose the most convenient digital menu system for itself. When investing in a technology, businesses should not only focus on the potential benefits or cost of this technology. They should also take into consideration how customers will react to this technology and whether they can adapt to it (Dixon et al., 2009). Choosing the right technology will both contribute to the sustainability of the business and create competitive advantage. Digital menus, with their structure that allows changing the design at any time, are attractive for both customers and businesses. When the business wants to make any changes to the price or content of the menu, it can easily do this. However, making these changes in the printed menu will require extra cost each time. When businesses make these changes manually on the printed menu, a problem occurs with both the wear on the menu and the perceived quality of the business. In the event that they do not make changes in the printed menu, the level of customer satisfaction decreases due to reasons such as not being able to meet the expectations of the customer or the absence of the product in the menu. Digital menus can also allow a reduction in labour costs. The fact that ordering and payment transactions can be done by the customer in the form of self-service can decrease the labour cost by reducing the need for a waiter (Kimes, 2008). If the business reflects this cost advantage to its products, customers will be able to purchase products at a more affordable price.

Publicity and Promotion Contribution: Digital menus are among the spaces where businesses can display their campaigns most effectively. Non-touchscreen menu systems can be rather attention grabber in crowded areas such as shopping malls. The business can easily display its products, promotions, and campaigns on the screen. In addition, it can generate additional income by advertising other businesses and products through its dynamic advertising spaces. Tablet menus allow users and businesses to connect to social networks such as Facebook, Twitter, and Instagram. This way, it can be used as a successful promotion tool. From time to time, people who come to experience the system rather than food also contribute to business promotion (Chen et al., 2011). The feedback given by customers via tablet can ensure that other customers have an idea about the business and that the business can improve itself.

Information Advantage: Menu is critical to positively affect the dining experience of the customer. For this reason, it should contain images, explanations about the products and information on their nutritional values (Mills & Thomas, 2008). Digital menus should be able to offer richer information contexts than traditional paper-based menus (Beldona et al., 2014). Especially tablet-based menus offer customers an interactive experience and more information about the order to discover the nuances of the menu. In the research conducted by Hsu and Wu (2013) with iPad menus, it was stated that in restaurant menus, innovative approaches and an information provider menu have a positive effect on customer satisfaction. It is asserted that in tablet menus, the menu information is transferred better and more efficiently than in the printed menus, and the order experience is more advanced because they allow interaction (Beldona et al., 2014). The most important advantage of digital menus with self-service technology, such as tablet-based menus and kiosks, is that they have the foundation to provide the customer with any information they want. It is not possible to give all the information about the product in the traditional menus (origin, visuals, content,

preparation method, process, history of the food if any, nutritional values, calorie amount, notes regarding risks of allergies, gluten and seafood etc.) both due to the area it occupies and the clutter it will create in the design. Including too much information in the menu reveals what is called information overload or information anxiety (Gross, 1964; Toffler, 1970; Yang, Chen & Honga, 2003). Information overload can create confusion, difficulty in choosing and dissatisfaction with the customer. In order to prevent this situation, businesses add short notes about the product content or preparation method under the product name in printed menus. With the use of touchscreen menus, businesses have the ability to add a wide variety of information about the business and product to the menu, which is unlikely to happen in printed menus. Product's content, ingredients, stories if any, preparation and cooking stages, photos of the product presentation, videos or graphic animations can be added to digital menus. Much information such as nutritional values, allergens and content details, images from special occasions can be displayed without creating a clutter via the tabs on the touchscreen menus. The customer can easily access the information they want through tabs in line with their personal preferences. For business managers, when designing a menu, instead of adding a lot of information it can be considered as a better strategy to present the information systematically (DeLone & McLean, 1992). For technological menus, it is an important detail to make designs in the easiest way for the customer, to avoid information overload. By logging in with a personal account into the system on touchscreen menus, the choices of customers, diet records, special requests and personal preferences can be recorded (Wang, 2012). With this information, the business can further customize the digital menu experience by offering options such as personalized promotions, product suggestions or easy repetition of old orders. Orders placed through the digital system will provide a large data bank for the business to see customer preferences. With this information, the business can redraft its menu, add and remove products, organize campaigns and provide stock management. The touchscreen menus must have tabs that allow customers to give feedback. They can also be connected to social networks to share customer's experiences. In this way, a customer rating system can also be created (Wang, 2012).

Speed and Quality of Service: It is important to use time effectively for people in our age. Speed and convenience provide competitive advantage for businesses. Digital menus allow customers to choose their orders in a shorter time, enabling fast service delivery. In particular, touchscreen menus allow the customer to place an order easily, without the need for an agent. The customer's order can be directly sent to the kitchen and customized as pleased. They can share the ingredients they wish to add or remove, cooking temperature and if any, special notes directly with the kitchen staff. In this way, it is not necessary to wait for a waiter and the misunderstandings that may occur when the order is being taken can be minimized. During the preparation of the order, the customer can follow the process through the screen and also make use of its waiting time by using the entertainment tools on the tablet. This can shorten the perceived waiting time. The customer can also pay through the tablet, without the need for a waiter. Some businesses also allow the customers to call a taxi through the systems they integrate into their tablet menus. Positive experiences in ordering, waiting and payment processes can positively affect the customer satisfaction and intention to visit the business again (Thepbandansuk, 2012). Moreover, the customer spending good time during the restaurant experience can provide positive thinking about the service. Especially touchscreen menus can positively affect the service quality with applications that will help the customer to have a pleasant time before ordering and during the waiting time. Various games, connection to social networks and internet can be used for this purpose. In their research, Si and Wang (2014) concluded that emotional factors such as perceived enjoyment and novelty have a significant impact on perceived value. Sürücü et al. (2018) have also concluded similar results in their studies. This

may have a positive effect on the customer having a good impression of the restaurant and their intention to revisit (Sürücü et al., 2018).

Profitability Advantage: Digital menus contribute to the overall profitability of the business through factors such as increasing the buyer turnover, reducing product promotion costs and ensuring the use of products left in the stock (Peters, 2011), reducing labour costs (Kimes, 2008; Mullemwar, Virdanbe, Bannore, Awari & Shriwas, 2014) and increasing customer satisfaction (Chen et al., 2011). From time to time, this profitability can be reflected to promotions of the business and personalized offers, thus providing an advantage for customers.

Sense of Control: Business managers can intervene in digital menu systems from anywhere and anytime. This enables businesses to control their costs, sales and inventory. In addition, they can map out a route of the business with the data bank and customer feedback they obtain through the system. Meuter, Ostrom, Bitner and Roundtree (2003) emphasizes that using SST gives people a real sense of independence. It states that they are actively involved in the process, taking responsibility, and feeling more control in this way, without being dependent on anyone else. Managing the ordering process alone and enjoying it while doing so may create a desire to visit the business again.

Conclusion

Restaurant menus are one of the most important marketing and sales tools of businesses. With the developing technology, some restaurants have started to use digital menus with an innovative approach. Although there are various studies on the importance of restaurant menus, the number of studies on the effects of different types of digital menus on order experience and customer satisfaction is limited. In this study, it is aimed to create a general scope by evaluating the digital menu types and advantages of digital menus over printed menus in the light of literature data and to provide resources for researchers.

Digital menus are divided into two as non-touchscreen and touchscreen menus. Non-touchscreen menus are digital boards showing similar features to billboards. They are divided into two as static digital menu boards and dynamic digital menu boards. These types of digital menus only provide the promotion of the products offered by the business. Touchscreen menus are one of self-service technologies and are divided into two groups as tablet-based menus and kiosks. These types of digital menus enable direct participation in the order and payment process. Non-touchscreen menus require interpersonal staff to order, while touchscreen menus do not require interpersonal staff to order.

One of the most controversial issues regarding touchscreen menus is the lack of communication with service personnel. In a study conducted by Lessel et al. (2012) with 359 people, 81% of the participants stated that they were pleased to communicate directly with the staff. Chen et al. (2011) also stated in their research that restaurant owners do not want to replace their workforce with technology. Some people see it as an advantage to be able to order without the need to get into contact with anyone. In addition, people who argue that eating out is done for purposes of entertainment and social interaction consider being unable to communicate with the waiter as a negative feature. One of the suggestions made to continue the communication with the waiter is to use digital menus for product selection, but to place the order through the waiter (Lessel et al., 2012). Placing the order through a waiter is a preferred practice in our country as it prevents the mistakes that can be made (Bekar et al., 2017).

Aside from the concern that they can prevent the interaction both with the service personnel and interpersonal, digital menus have advantages for businesses and customers. These advantages create the perception that digital

menus are superior to printed menus. These advantages can be briefly classified as providing convenience, cost advantage, increasing service speed and service quality, publicity, and promotion contribution, providing information, profitability, and sense of control. It has features that are incomparable to printed menus, especially when it comes to providing information.

Digital menus have not yet been able to replace printed menus. Research shows that people find digital menus surprising and innovative. However, it is possible to say that they do not have any complaints from the printed menus (Moody, 2016). It is stated that especially young and educated people are more likely to use digital menus (Chen et al., 2011; Hartwell, Johns & Edwards, 2016; Lessel et al., 2012; Gülmez & Koçkaya,2008). It is thought that the younger generation, who is in a closer relationship with technology, will use digital menus more in time.

It is seen that more research is needed on the adoption and widespread of digital menus. Future research can be conducted on various topics such as:

- which individual features make it easier or difficult to adopt digital menus,
- what are the advantages and disadvantages of these menus compared with traditional ones,
- in which types of restaurants digital menus will be more easily adopted,
- whether digital menus can be used to affect the customer preference and encourage healthy food consumption.

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