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ÜRETİM YÖNETİMİ VE PAZARLAMA (İNGİLİZCE) BİLİM DALI

EXTENDING THE TECHNOLOGY ACCEPTANCE MODEL IN UNDERSTANDING THE OUTCOMES OF FOOD ORDERING MOBILE APPLICATION USAGE

Yüksek Lisans Tezi

ECE CANKAT

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Danışman: Doç. Dr. Taşkın DİRSEHAN

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ABSTRACT

In today's world, the technology has been indispensable part of people's lives. Mobile applications that were developed in pursuit of improvement of the technology have become essential for both the academical and business world. Most of the industry try to integrate their businesses with mobile applications in some way. While some of them can be successful, others cannot handle mobile apps for their businesses. Therefore, earlier research was conducted about an understanding of mobile application usage. The Technology Acceptance Model has been one of the common studies to grasp the usage acceptance behaviors. This study was researched to understand the role of mobile food applications in food marketing. Based on this aim, hypotheses were developed and a conceptual model was built. The survey was conducted with 405 participants. Then, partial least squares path modeling was used to test the model. The results of the research indicated that the Technology Acceptance Model ends in application satisfaction. Then, application satisfaction leads to food brand satisfaction, which results in brand loyalty. However, if the users are not satisfied with the application and do not have brand loyalty, they will show a negative reaction towards mobile food applications.

YEMEK SİPARİŞİ MOBİL UYGULAMA KULLANIMI SONUÇLARININ ANLAŞILMASINDA TEKNOLOJİ KABUL MODELİNİN GENİŞLETİLMESİ

ÖZET

Günümüz dünyasında teknoloji, insanların yaşamlarının vazgeçilmez bir parçası olmuştur. Teknolojinin gelişmesi ile ortaya çıkan mobil uygulamalar hem akademik hem de iş dünyasında önemli olmaya başladı. Sektörlerin çoğu, iş modellerine mobil uygulamaları entegre etmeye çalışıyor. Bazı şirketler bu entegrasyonu başarılı olarak gerçekleştirebilirken bazıları başarısız olabiliyorlar. Bu nedenle, mobil uygulama kullanımı hakkında araştırmalar yapılmıştır. Teknoloji Kabul Modeli, kullanım kabul davranışlarını kavramaya yönelik yaygın çalışmalardan biridir. Bu çalışma da mobil gıda uygulamalarının gıda pazarlamasındaki rolünü anlamak için gerçekleştirilmiştir. Bu amaç doğrultusunda hipotezler geliştirilmiş ve kavramsal bir model oluşturulmuştur. 405 katılımcı ile bir anket çalışması gerçekleştirilmiştir. Daha sonrasında, modeli test etmek için kısmi en küçük kareler yol modellemesi kullanılmıştır. Araştırmanın sonuçları Teknoloji Kabul Modelinin uygulama memnuniyetine sebep olduğunu göstermiştir. Uygulama memnuniyeti sonucunda ortaya çıkan marka memnuniyeti de marka sadakati ile sonuçlanır. Ancak, kullanıcılar uygulamadan memnun kalmazlar ve marka sadakatleri yoksa, mobil gıda uygulamalarına karşı olumsuz bir tepki gösterecektir.

ANAHTAR KELİMELER

Gıda Pazarlaması, Mobil Gıda Uygulamaları, Teknoloji Kabul Modeli, Mobil Uygulama Memnuniyeti, Gıda Marka Sadakati

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INTRODUCTION

The internet enables people to connect with others, share information, and organize the flow of work all around the world. While the number of internet users continues to increase, the impacts of technology on people's lives are rapidly growing. Indeed, statistical data demonstrates, on average, a person spent 161 minutes with the Internet for one day in 2018 (Clement, 2019a). The fact remains that the population of internet users may vary from one country to another. For instance, China has the highest number of internet users, with 829 million internet users across the world in March 2019. India and the United States are the other countries that have a high number of users. Besides, the results indicate Turkey placed in the top 15 with 69,11 million internet users around the world (Clement, 2019b) (Shown in Appendix 1).

Mobile applications have been one of the commonly used technological and software developments in recent years. People use mobile apps on wireless mobile devices, including smartphones and tablets. Since the number of mobile phone users has gradually increased, the number of application downloads has risen proportionally. Globally, the number of mobile app downloads was about 178 billion in 2017. It is expected to rise to 258 billion in 2022 (Clement, 2019c).

Even though new technological systems provide benefits for users, they tend to reject to use them. Hence, first, practitioners should understand the reason why people reject using new developments in order to predict users' responses and take actions accordingly (Davis et al., 1989).

In today's world, these technological changes should not be denied, and they have presented both threats and opportunities for the business world. The critical fact is using technology to gain an advantage. Within this scope, consumer behavior with regard to technological development ought to be taken into account since different factors affect consumer's acceptance of new technologies (Lai, 2017). It is predicted that four billion people will have been online by 2020 (IDC, 2015; Fedorko et al., 2018). Thus the understanding needs of customers have been more critical than ever. In other words, why people need to use online stores and mobile applications for their activities such as shopping and education are notable concerns for companies (Fedorko et al., 2018).

Before commencing any business, understanding what individuals need, want, and accept is critical in order to find out the way of improvement for the long-term. Therefore, the factors playing a role in the user's acceptance of technologies have been researched. Several studies indicate different frameworks that define user acceptance of new technologies; furthermore, these frameworks present several factors that have impacts on users during the adoption of new technologies. The reason why studies have focused on acceptance is that it signifies the positive attitude of a person towards using innovation or a particular system. Before developing a new system, decision-makers, who enhance new technologies, should answer why people use and accept the innovations, and then understand which factors affect the usage of a particular system. Therefore, various technology acceptance models have been studied to figure out users' behavior (Taherdoost, 2018).

This study aims to understand the role of the mobile applications in the food service industry in terms of marketing. Research with regard to food is increasing for recent decades. Food research has been conducted in different subjects, including food trends, healthy eating, vegetarianism, food service, management, operations, food, and gastronomy tourism (Okumus et al., 2018). Nonetheless, the effects of mobile applications in food marketing have not been investigated. In fact, why people prefer to use mobile food applications and what mobile apps provide companies are not defined. In order to fill the gap, this research will present the role of mobile applications in the food service industry to show the relationship between the technology acceptance model and food marketing.

This study starts with detailed literature review to understand the idea of Technology Acceptance Model and Food Marketing. Then, it continues with research part including type of research type, survey, research sample and hypotheses of the study. Then, survey findings are interpreted in depth and hypotheses analysis are conducted. Therefore, partial least squares path modeling is used. Consequently, the results are discussed and future research suggestions are provided.

1. LITERATURE REVIEW

1.1. TECHNOLOGY ACCEPTANCE MODEL (TAM)

Davis developed Technology Acceptance Model (TAM) in 1986 in order to understand the determinants which play roles in the acceptance of technologies by users (Alzubi et al., 2018). Indeed, Davis introduced Technology Acceptance Model as an adaption of Theory of Reasoned Action (TRA) to imply computer usage behaviors. He used TRA as a theoretical basis to point out the casual linkages between determinants (Davis et al., 1989).

1.2. THEORY OF REASONED ACTION (TRA)

Interestingly enough, TRA was developed in 1975 by Fishbein and Azjen for their sociological and psychological studies, yet the theory has been used to grasp people's IT usage behaviors (Taherdoost, 2018). Essentially, the study aimed to understand and predict individuals' actions in a particular situation (Legris et al., 2003).

Fishbein and Azjen introduced a model demonstrating that the actual behavior of an individual is affected by the attitude, belief, and intentions (please see Figure 1). According to TRA, the most significant determinant is the intention for actual behavior. The studies reveal that TRA has been used and modified for different fields, including health, education, consumer behavior, and brand choice (Haque et al., 2014). Information Technology is one of these fields as Technology Acceptance Model is an adaption of TRA.
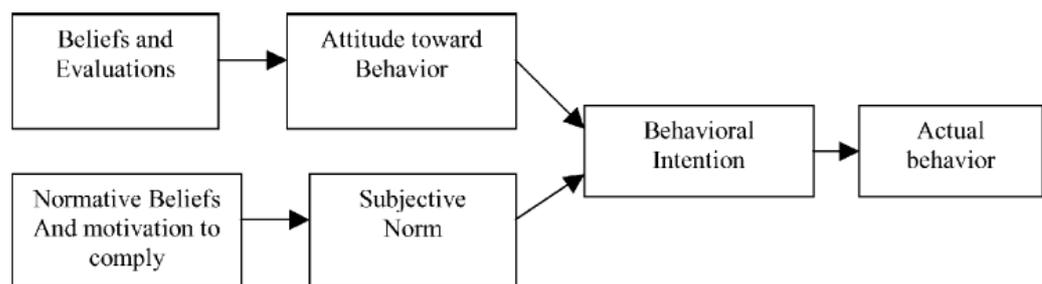
Figure 1. Theory of Reasoned Action (TRA)

Source: Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behaviour: An Introduction.* Addison-Wesley ; Legris, P., Ingham, J., & Collerette, P. (2003). Why do people use information technology? A critical review of the technology acceptance model. *Information & Management, 40*, 191-204: 192

1.3. HISTORY OF TAM

Fred D. Davis presented the original Technology Acceptance Model in 1986 for his doctorate proposal to indicate the user's acceptance for both information systems and technologies. He identified three determinants as user motivation to use the actual system, which is perceived usefulness, perceived ease of use, and attitude toward using. In addition, the model has three factors that are independent of each other, and they have effects on determinants (as shown in Figure 2). Three years later, Davis developed TAM to indicate computer usage behavior. While the model established in 1986 has been explaining usage behaviors for technologies, Davis has modified the model and focused on broader usage behaviors for computers in 1989 (Lai, 2017).
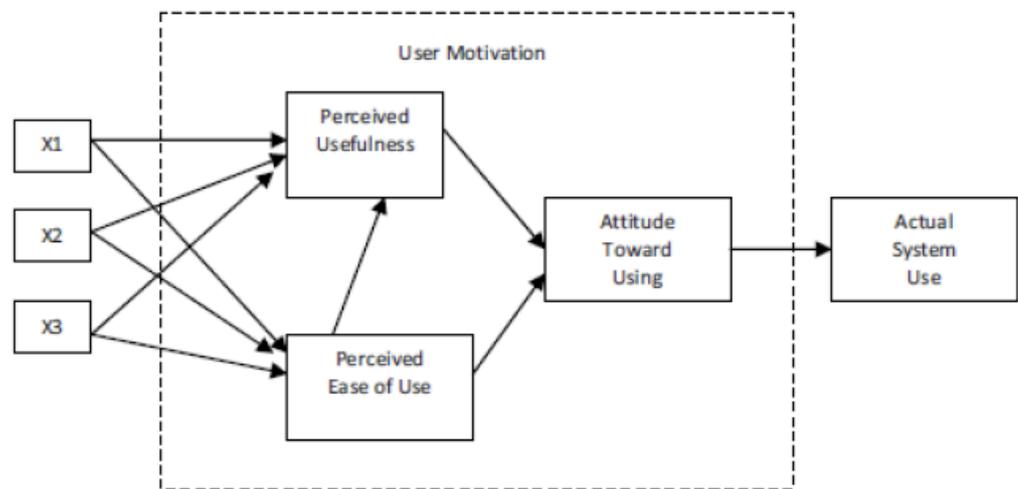
Figure 2. Original Technology Acceptance Model

Source: Davis, F. D. (1986). A technology acceptance model for empirically testing new end-user information systems : theory and results. *Ph.D Thesis*. Massachusetts, United States: Massachusetts Institute of Technology, Sloan School of Management; Lai, P. (2017). The Literature Review of Technology Adoption Models and Theories for The Novelty Technology. *Journal of Information Systems and Technology Management, 14*(1), 21-38: 26

The differences between original TAM and the first modified version of TAM are that three independent factors (X1, X2, X3) in Figure 2 were collocated as external variables and also one more determinant, which is "intention to use" was added to the modified version of TAM (see Figure 3).

Venkatesh and Davis designated the final version of Technology Acceptance Model in 1996. As distinct from previous versions, main elements that are perceived usefulness and perceived ease of use have a direct impact on behavioral intention, and also final version eliminates dimensions about attitude (as shown in Figure 4) (Lai, 2017).
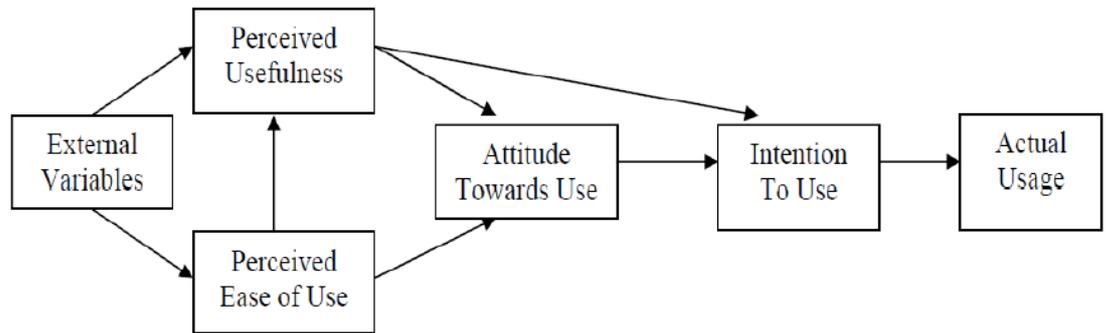
Figure 3. First Modified Version of Technology Acceptance Model

Source: Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989, 08). User Acceptance Of Computer Technology: A Comparison Of Two Theoretical Models. *Management Science, 35*(8), 982-1003.; Lai, P. (2017). The Literature Review of Technology Adoption Models and Theories for The Novelty Technology. *Journal of Information Systems and Technology Management, 14*(1), 21-38: 27
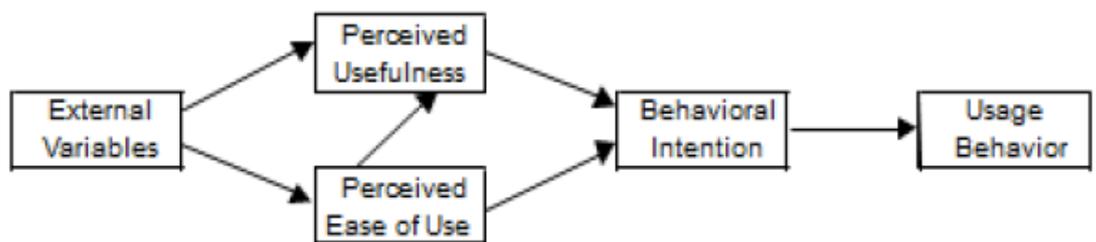
Figure 4. Final Version of Technology Acceptance Model

Source: Venkatesh, V., & Davis, F. D. (1996). A Model of the Antecedents of Perceived Ease of Use: Development and Test. Decision Sciences, 27(3), 451-481.; Lai, P. (2017). The Literature Review of Technology Adoption Models and Theories for The Novelty Technology. Journal of Information Systems and Technology Management, 14(1), 21-38: 27

1.3.1 Variables of the Original TAM Model

Previous studies have stated that perceived usefulness and perceived ease of use have an important role in user's adoption of new technologies (Ashraf et al., 2014). However, First Modified Version of TAM (Figure 3) summarizes the user's technology acceptance process with four stages. First, external variables affect individual beliefs, which are perceived usefulness and ease of use. Perceived ease of use influences perceived usefulness. Secondly, individual beliefs have an impact on an individual's attitude about using the technological system. Then, individual attitudes affect intention to use the system. Finally, individual behavioral intention determines actual usage behavior for the technological system (Burton-Jones & Hubona, 2006).

Hence, the statements below are proposed:

P3. External variables have impacts on perceived usefulness.

P4. External variables have impacts on perceived ease of use.

P5. Perceived ease of use influences perceived usefulness.

P6. Perceived ease of use influences behavior intention.

P7. Perceived usefulness influences behavior intention.

P8. Behavior intention influences mobile application usage.

1.3.2. Perceived Usefulness

Studies conducted with regard to Technology Acceptance Model indicate that perceived usefulness is one of the essential antecedents for technology adoption (Ashraf et al., 2014). Previous research stated that perceived usefulness is related to the influence of job performance. Indeed, the perception of the prospective user that using the technological system or application will enhance his/her job performance has been defined as perceived usefulness (Davis et al., 1989; McKechnie et al., 2006).

1.3.3. Perceived Ease of Use

Perceived ease of use is about how the system/application is easy to use. Indeed, the prospective user considers that using the app is free of effort (Venkatesh & Davis, 2000). As Davis (1989) and Chen et al. (2002) stated, perceived ease of use regards both a physical and mental concentration effort. When a user is able to apply the new application without any psychological and physical energy, the user can perceive the

application as easy to use. Furthermore, Selamat et al. (2009) implied the effects of the complexity of technology on the acceptance rate of technology. In other terms, if the use of technology is perceived as effortless by a prospective user, the likelihood of a user's acceptance is higher (Sevim et al., 2017).

1.3.4. External Variables

As it is shown in Figure 3, external variables are one of the factors affecting system usage at the end. According to Technology Acceptance Model, external variables influence the user's belief, attitude, and intention to use the system. Nevertheless, external variables have a mediator role in the model. In fact, external variables have an impact on a user's intention and usage of the system by affecting perceived usefulness and perceived ease of use (Alzubi et al., 2018).

1.3.5. Attitude Towards Using

Attitude towards using is the physical tendency of people to using a system. People exhibit a positive or negative approach to use the system by evaluating it (Davis 1989; Kanchanatanee et al., 2014).

1.3.6. Behavioral Intention to Use

Behavioral intention is a person's intention to make the decision to use the system (Davis 1989; Kanchanatanee et al., 2014).

1.4. DIFFERENT TECHNOLOGY ACCEPTANCE MODELS

In addition to TAM models previously mentioned, studied have been conducted regarding user acceptance for technology. Therefore, different Technology Acceptance Models are available in the literature.

1.4.1. Technology Acceptance Model 2 (TAM 2)

After Final Version of Technology Acceptance Model, Venkatesh and Davis continued to research user's acceptance by extending Technology Acceptance Model and creating a new model referred to as Technology Acceptance Model 2 (TAM 2) shown in Figure 5. TAM 2 includes additional key determinants affecting on perceived usefulness

and usage intention. These key determinants are separated into two theoretical constructs, which are social influence and cognitive instrumental forces. Subjective norm, voluntariness, and image are classified as social influence forces. On the other hand, job relevance, output quality; result demonstrability; and perceived ease of use are cognitive instrumental forces. Moreover, TAM 2 has tried to understand the impact of these determinants on user experience over time. Notably, the results of the study have demonstrated that the influences of social influence and cognitive instrumental processes are consistent with Technology Acceptance Model 2 (Venkatesh & Davis, 2000).

Among all the variables figuring in TAM 2, some of them are determinants of perceived usefulness: Subjective Norm, Image, Job Relevance, Output Quality, and Result Demonstrability. As Fishbein & Ajzen (1975) and Venkatesh & Davis (2000) said that subjective norm is the degree to which perception of the potential user that majority of people who are critical for him/her thinks s/he ought to use the system. Moore & Benbasat (1991) made explicit that image is the degree to which perception of the potential user that using the new system will positively affect his/her status in his/her social life. Additionally, result demonstrability is remarked as the degree to which perception of the potential user that results are tangible, observable, and communicable when s/he uses the system. Furthermore, Venkatesh & Davis (2000) stated job relevance is the degree to which perception of the potential user that the system is related to his or her job. They also clarified that result demonstrability is the degree to which perception of the potential user that the system enhances his or her job performance (Venkatesh & Bala, 2008).

When Final Version of TAM (Figure 4) and TAM 2 (Figure 5) are compared, it is seen that external variables taken place in Figure 4 were elaborated in Figure 5. In fact, variables affecting perceived usefulness were specified, especially in TAM 2. Nevertheless, external variables founded in Final Version of Technology Acceptance Model influence both perceived usefulness and perceived ease of use while variables in TAM 2 have an impact on merely perceived usefulness.
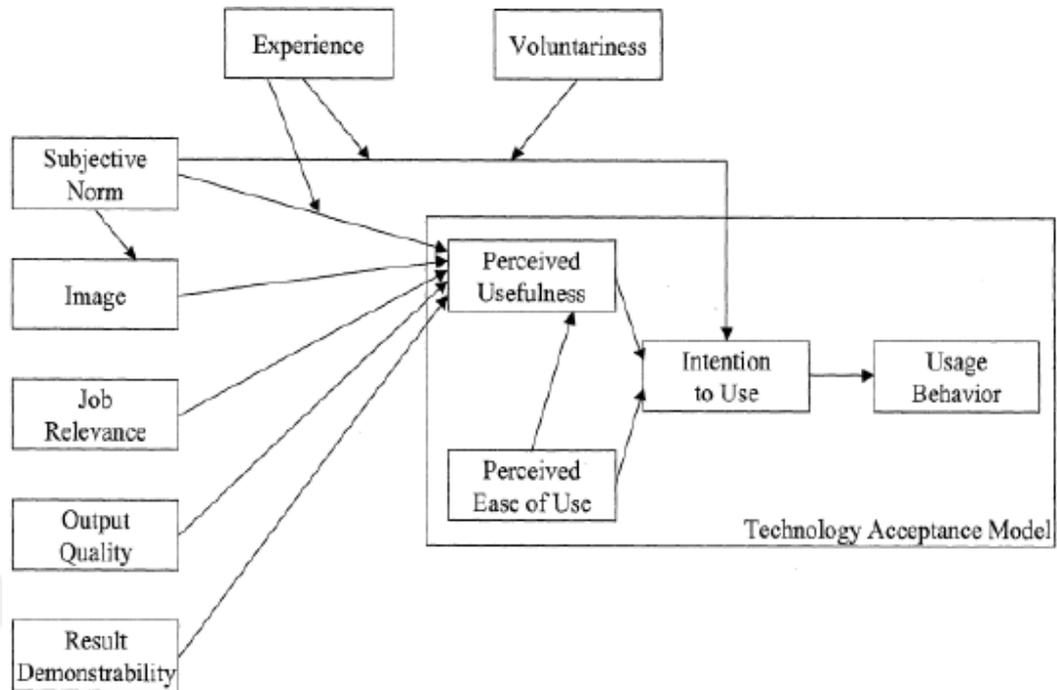
Figure 5. Technology Acceptance Model 2

1.4.2. Unified Theory of Acceptance and Use of Technology (UTAUT)

The fact that a study was conducted about acceptance and use of technology presents the unified model. The model is called Unified Theory of Acceptance and Use of Technology (UTAUT). In a similar manner with other models, the model is used to understand individual acceptance for new technological systems. Particularly, this unified model is a useful tool to analyze the success of systems and understand usage acceptance. As distinct from other technology acceptance models, Unified Theory of Acceptance and Use of Technology has four main determinants of intention and usage. In addition to the main variables, the model includes four moderators. As Figure 6 indicates, four determinants are affecting usage behaviour and acceptance: Performance Expectancy,

Effort Expectancy, Social Influence, and Facilitating Conditions. The main determinants are explained briefly below (Venkatesh et al., 2003).

- Performance Expectancy is defined as the belief of an individual that using the technological system will assist him or her in performance.

- Effort Expectancy is defined as a belief of an individual that is using the system is free of effort.

- Social Influence is defined as the perception of an individual that others think he or she ought to use the system.

- Facilitation Condition is defined as an individual's belief that organizational and technical infrastructure is in existence to advocate the usage of the system.

One previous study proved that age and experience have positive relationships with Internet usage. Especially, consumers, who have been provided service before, tend to use Internet for the commerce (Bigne et al., 2207). Figure 6 shows that model has moderators, including Gender, Age, Experience, and Voluntariness of Use. Each variable can influence usage behavior by affecting the main determinants. This study has also included the effect of age, gender, and experience on usage behaviors in the model as propositions. Hence, the statements listed below are proposed:

P3. 1. Gender influences perceived usefulness.

P3. 2. Age influences perceived usefulness.

P3. 4. Experience influences perceived usefulness.

P4. 1. Gender influences perceived ease of use.

P4. 2. Age influences perceived ease of use.

P4. 4. Experience influences perceived ease of use.
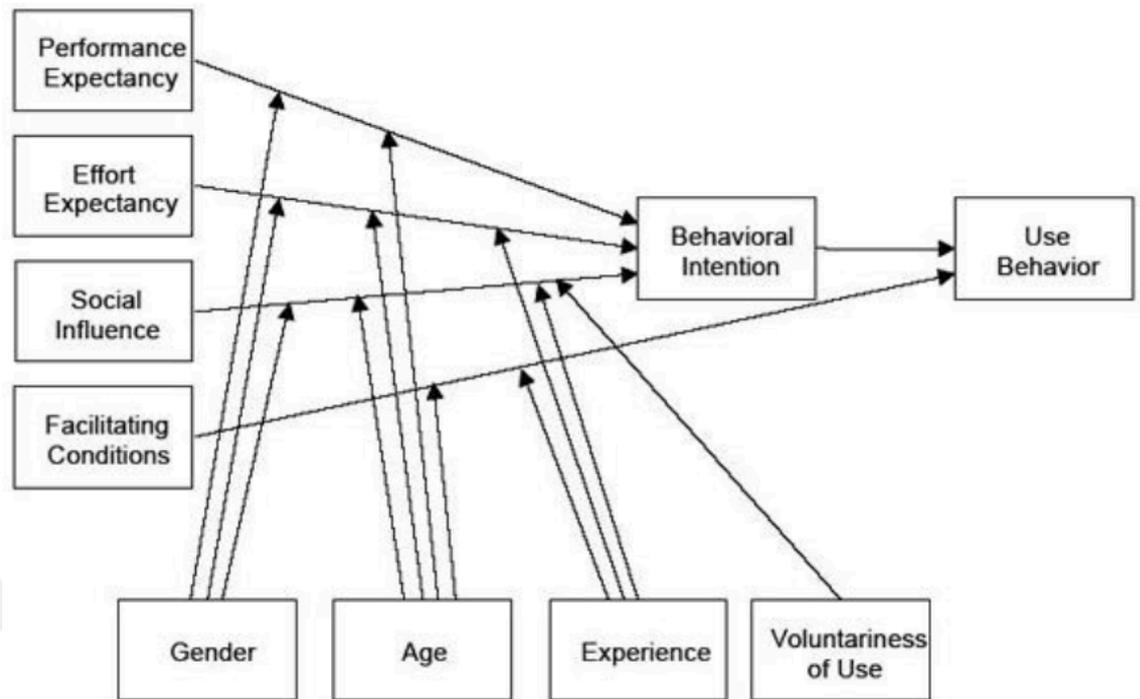
Figure 6. Unified Theory of Acceptance and Use of Technology

Source: Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quartely, 27*(3), 425-478.; Lai, P. (2017). The Literature Review of Technology Adoption Models and Theories for The Novelty Technology. *Journal of Information Systems and Technology Management, 14*(1), 21-38: 30

1.4.3. Technology Acceptance Model 3 (TAM 3)

Venkatesh & Bala (2008) developed a new technology acceptance model, which has been approved as TAM 3. Particularly, TAM 3 is the combination of different models, which are TAM 2 and the model of determinants of perceived ease of use (Figure 7).

Venkatesh & Bala (2008) remarked the determinants of perceived ease of use: Computer Self-Efficacy, Perception of External Control, Computer Anxiety, Computer Playfulness, Perceived Enjoyment, and Objective Usability. In addition to variables figuring in TAM 2, these determinants of perceived ease of use also appear in TAM 3. As Compeau & Higgins (1995a, 1995b) stated that computer self-efficacy is the degree

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to which perception of the potential user that s/he is able to perform the task by using a computer. Venkatesh et al. (2003) explained the perception of external control as the degree to which perception of the potential user that the availability of organizational and technical resources is to facilitate the use of the system. Venkatesh (2000) implied computer anxiety is the degree to which perception of potential user's concern or even fear about the possibility of using computer systems. Computer playfulness is the degree to which perception of potential user's intrinsic motivations towards using the new system. These determinants have been categorized under anchoring. According to Venkatesh (2000), perceptions of perceived ease of use are formed based on firstly anchoring variables about potential users' computer usage beliefs.

Moreover, perceived enjoyment and objective usability are related to adjustments. As Venkatesh (2000) expressed, perceived enjoyment is the degree to which perception of an individual that using the system is enjoyable. Objective usability is the degree to which the comparison of the actual systems is required for completing the whole task. After users have experience with the system, perceived enjoyment and objective usability have an essential role in determining perceived ease of use. Broadly, Technology Acceptance Model 3 provides academic insight by adding these determinants to the model (Venkatesh & Bala, 2008).

TAM 3 indicates a comprehensive model by taking determinants of perceived ease of use into account. Indeed, determinants of perceived usefulness have been presented in Technology Acceptance Model 2. These determinants have also been used for Technology Acceptance Model 3 by integrating them into the new model.
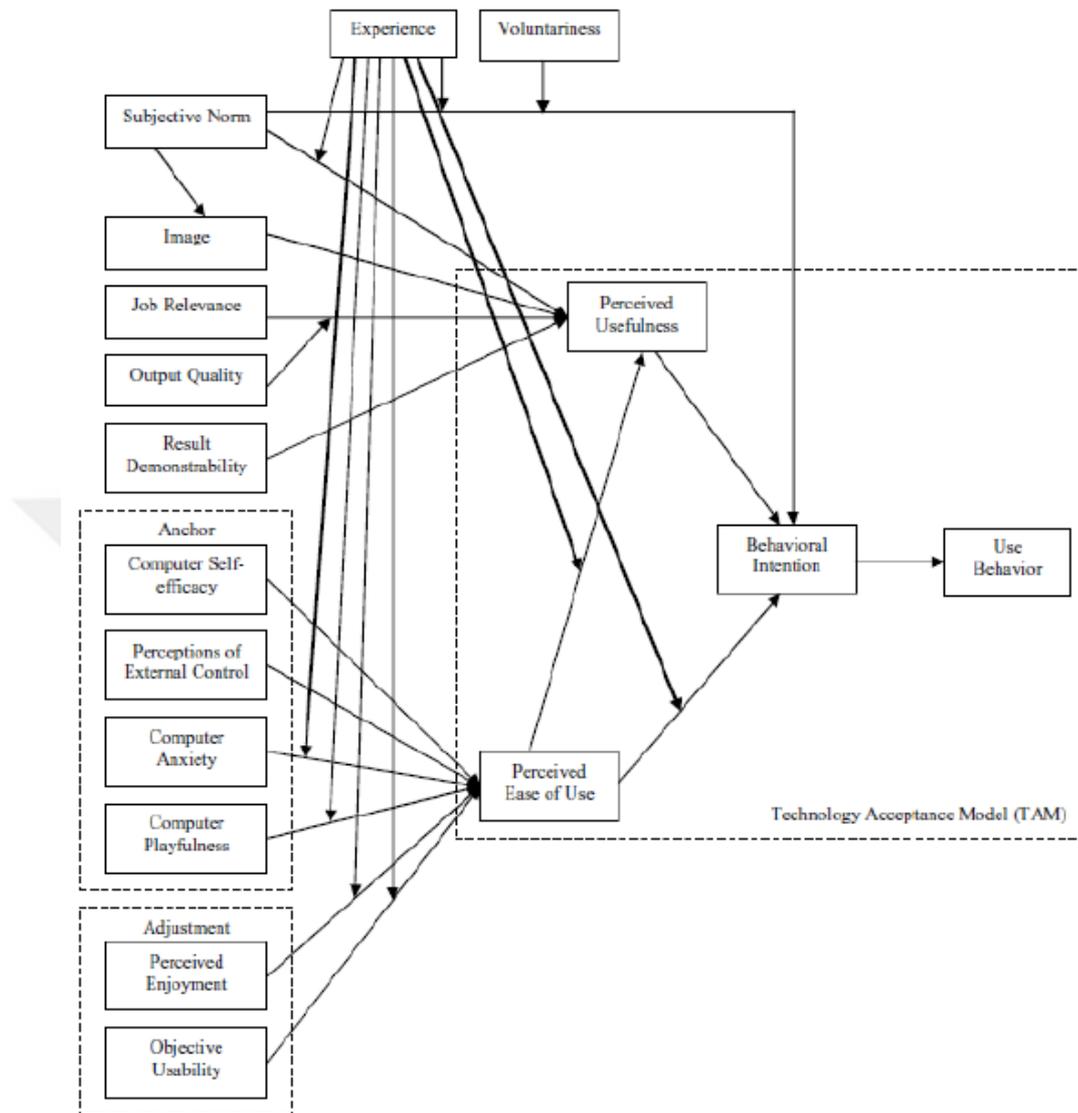
Figure 7. Technology Acceptance Model 3

Source: Venkatesh, V., & Bala, H. (2008, May). Technology Acceptance Model 3 and a Research Agenda on Interventions. *Decision Sciences Institute, 39*(2), 273-315.; Lai, P. (2017). The Literature Review of Technology Adoption Models and Theories for The Novelty Technology. *Journal of Information Systems and* Technology *Management, 14*(1), 21-38: 29

1.5. DIVERSE APPLICATIONS OF TECHNOLOGY ACCEPTANCE

Technology Acceptance has been studied by a variety of researchers around the world. As the main idea of the original Technology Acceptance Model is to understand the users' acceptance of information systems, many researchers have tried to grasp the details of technology and information systems acceptance in different areas. In other terms, various research has been conducted by using the theory of Technology Acceptance Model to explain user behavior in different technological and information systems.

Studies completed by using TAM have principally focused on particular areas, including e-learning, online shopping, e-commerce, and banking (Surendren, 2012). In addition to them, researchers have worked on distinctive areas (e.g., construction, transportation, sports consumption, and restaurant industry), as shown in Table 1.

Table 1 indicates authors who developed the model, TAM version used, variables belonging to relevant TAM, variables added to the model, and areas where the model is used. Authors have adapted Technology Acceptance Model for the study field by using original model variables and also adding new variables. As enjoyment is seen in TAM 3, other studies also included enjoyment shown in Table 1 as Adscititious Variables.

Therefore, the following statements are proposed:

P3. 6. Enjoyment influences perceived usefulness.

P4. 6. Enjoyment influences perceived ease of use.

Besides, some of the models include Trust factor as "Adscititious Variables." Likewise, this study is proposed Trust:

P3. 7. Trust influences perceived usefulness.

P4. 7. Trust influences perceived ease of use.

Table 1
Technology Acceptance Models in Different Areas

Author	Original TAM Variables	Additional Variables	TAM Version	Area TAM used in
Fayad & Paper, 2015	Perceived usefulness, perceived ease of use, intentions, and usage behaviour	Process satisfaction, outcome satisfaction, and expectation	Final version of TAM 1	E-commerce
Farahat, 2012	Perceived usefulness, perceived ease of use, attitude towards using, and usage behaviour	Social influence	Final version of TAM 1	Online Learning
Ibrahim, 2014	Perceived ease of use, and actual usage	Technology complexity, cognitive attitude towards adoption of fantasy sport website, and affective attitude toward adoption of fantasy sport website	Final version of TAM 1	Sport Consumption
Alzubi et al., 2018	Perceived usefulness, perceived ease	Trust Factor	First modified version of	M-Marketing

			TAM 1	
Jokar, Noorhosseini et al., 2017	Perceived usefulness, perceived ease of use, attitude towards use, and usage behaviour	Benefits of use and importance of use	Final version of TAM 1	Medicinal Herbs Consumption
McKechnie et al., 2006	Perceived usefulness, perceived ease of use, attitude towards using, and actual usage	Product category involvement, experience with technology and consumer demographics	First modified version of TAM 1	The Online Retailing of Financial Services
Sepasgozaar et al., 2017	Performance expectancy, effort expectancy, implementation facilitating support, age, user intention, and use behaviour	User efficacy, maintenance support, scanner type, and organization intention	Unified Theory of Acceptance and Use of Technology	Construction
Hutchins & Hook, 2017	Perceived usefulness, perceived ease	Trust, reliability, benevolence, benefits,	TAM 2	Safety Critical Autonomous

				Transportation Systems
Schmidthuber et al., 2018	Perceived usefulness, perceived ease of use, perceived social influence, and intention to use mobile payment	Perceived ubiquity, perceived compatibility, perceived risk, perceived personal innovativeness, and perceived cost	Unified Theory of Acceptance and Use of Technology	Mobile Payment Technology in the Service Sector
Sathitwiriyawong & Phuttaraksa, 2018	Perceived usefulness, perceived ease of use, behavioural intention, and actual system use	Trust, self-efficacy, system quality, compatibility, subjective norm, and structural assurance	Final version of TAM 1	Mobile Banking
Dutot et al., 2019	Perceived usefulness, perceived ease of use, attitude,	Perceived affective quality, mobility, availability, and trust	TAM 2	Smartwatch Adoption

	and usage behaviour			
Manis & Choi, 2018	Perceived usefulness, perceived ease of use, attitude toward using, and actual usage	Attitude toward purchasing, age, past use, price willing to pay, curiosity, and perceived enjoyment	First modified version of TAM 1	Virtual Reality Hardware
Park et al., 2018	Perceived usefulness, perceived ease of use, and intranet use	Organization support and information quality	Original Technology Acceptance Model	Intranet Acceptance in Restaurant Industry

Source: Developed by the researcher based on the extant literature

1.6. THE ROLE OF TAM IN MARKETING

The effects of technology have been seen in marketing practice. Notably, technology is applied as Information Technology (IT) for marketing. IT acceptance is one of the common practices in marketing because marketing is now closely associated with technological issues. Even though IT has more than one point of view, the main focus is internet technology in marketing. The role of IT is of significance for marketing as it is used for different marketing aspects, including database marketing, marketing channel, communication, and promotional mediator, interactive mediator, and relationship marketing. Indeed, software, sales, internet, and telecommunications products used at marketing are based on IT applications. Information Technology has been integrated into marketing in the contemporary world. The areas which integrated IT into modern marketing practice are demonstrated in Table 2 (Brady et al., 2002).

Table 2
Integrating IT into Contemporary Marketing Practice

Databases	Sales Related
Centralised customer database	Customer relationship management
-Integrated with sales	Sales force automation packages
-Integrated with call centre	Mobile phones
-Integrated with internet	Laptops
Data consolidation and display	Networked computers
	Telemarketing
Data mining	Customised sales force systems
Data warehousing	Point of sale information systems
Communications	Customer Applications
Internet	**Research**
Website design packages	Internet
-Website security	Marketing Information System
-Interactive website applications	Data Analysis Packages
	Geographic Information Systems
-Ecommerce applications	Demographic online systems
Intranets	Internet Survey – design and application
Extranets	Online mailing lists
Electronic data interchange (EDI)	Internet Tracking Software
	Monitoring and Tracking Software
Email	**Analysis and Planning**
Video conferencing	Marketing planning systems
Call Centre	Marketing modelling
Computer telephony integration	Executive support systems
	Decision support systems
Helplines	ERP (Enterprise Resource Planning)
Voice Mail	Knowledge Management Systems
Voice activated software	

Mobile communication devices	Pricing software
	Project Management Software
Computer links with suppliers	Promotion Tracking software
	Media Spend analysis packages
Computer links with customers	Logistics Systems
Customer Relationship Management	
CRM Software	
Front office and back office systems	**Office Packages**
Marketing Evaluation Software	Word Processing
	Spreadsheets
Contact Management Software	Presentation software
Hardware	
Personal Computers	**Self Service Technologies (see Communications)**
Networked Computers	
Main Frame	Integrated TV and Internet
Laptops	Internet Technology
Personal Palm Computer	ATM,
CD ROM/DVD	Vending machines
Others	
Training and Educational Software	

Source: Brady, M., Saren, M., & Tzokas, N. (2002). Intergrating Information Technology into Marketing Practice - The IT Reality of Contemporary Marketing Practice. *Journal of Marketing Management, 18*(5-6), 555-577.

Companies try to reach their customers via electronic services due to customers' tendency to Information Technology. Therefore, companies require to develop systems

for different purposes (e.g., communication, mobile commerce, and marketing). In addition, they can easily communicate with their customers and do marketing by developing these systems for mobile devices (Özer et al., 2013). The mobile application is one of the common systems. The mobile app is the abbreviation for mobile applications, and it is a software development used on smartphones, tablets, and other mobile devices. Mobile applications are downloaded from app stores. The prevalent reasons to offer mobile apps are informational and productivity. Therefore, the main applications have been based on e-mail, calendar, weather, and fort. However, categories are increasing day by day. Companies realized that there had been an undeniable extension in technology, especially for mobile applications. Thus, mobile applications have been started to be used in different areas, including games, banking, e-commerce, social media, and medical (Inukollu et al., 2014). The studies indicate that games are the most popular categories on Apple Store with round about 25%. Other most downloaded app categories are respectively business (9.76%); education (8.52%); lifestyle (8.33%); entertainment (5.99%); utilities (5.18%); travel (3.89); healthy & fitness (3.04%); food & drink (2.92); book (2.87%) (Clement, 2019c). They are the top 10 categories downloaded from App store in 2019 (see Appendix 3).

Even though mobile applications are widely downloaded and used, they may not be sustainable. Studies reveal that users have a tendency to remove mobile apps from their mobile devices unless it performs as excepted. Particularly, application stores include both successful and fruitless mobile applications. When prospects have a negative experience in the mobile app, they can exhibit different behaviors. First, they may not install the application. The second option is that they may download it, but then delete it. Thirdly, they uninstall or delete it and also write a negative review about the application. On account of social media and word of mouth, people's comments rapidly spread, which have impacts on the reputation of applications (Inukollu et al., 2014).

Below statements are proposed as these points are taken into account:

P3. 3. Word of mouth influences perceived usefulness.

P3. 5. Social influence affects perceived usefulness.

P4. 3. Word of mouth influences perceived ease of use

P4. 5. Social influence affects perceived ease of use.

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Mobile devices are essential for commerce, and companies provide mobile service via them. However, mobile service quality is critical for businesses. Unless the user is satisfied with mobile service, they tend to disuse it. In order to control the quality of mobile service, researchers develop mobile quality scales, including different dimensions (Özer et al., 2013). Therefore, the following statements are proposed:

P1. Mobile Quality Dimensions have an impact on perceived usefulness.

P2. Mobile Quality Dimensions have an impact on perceived ease of use.

Three main dimensions play an essential role in mobile quality, which are interaction quality, environmental quality, and outcome quality. Moreover, these dimensions include attitude, expertise, problem-solving, information about interaction quality, equipment, design, the situation for quality of the environment, punctuality, tangibles, and value for the quality of outcome (Lu et al., 2009; Özer et al., 2013). Indeed, as long as mobile applications do not have a certain quality, they can be perceived as low-quality apps. Besides, these apps always have a risk of losing existing users. Provided that mobile applications do not have a good design; not satisfy users' needs and expectations in terms of content and functionality; have risks about security; have a chance to fail, they will be perceived as bad quality applications (Inukollu et al., 2014). Since the quality level of applications affects mobile application usage, the following statements are proposed:

P1. 1. Functionality influences perceived usefulness.

P1. 2. Value-added influences perceived usefulness.

P1. 3. Design influences perceived usefulness.

P1. 4. Perceived risk influences perceived usefulness.

P1. 5. Free of error influences perceived usefulness.

P1. 6 Comprehensive influences perceived usefulness.

P2. 1. Functionality influences perceived ease of use.

P2. 2. Value-added influences perceived ease of use.

P2. 3. Design influences perceived ease of use.

P2. 4. Perceived risk influences perceived ease of use.

P2. 5. Free of error influences perceived ease of use.

P2. 6. Comprehensive influences perceived ease of use.

The quality of mobile applications is of importance since users evaluate the service based on their satisfaction after they use the app. Furthermore, users may react positively upon their satisfaction levels (Zhao et al., 2012; Özer et al., 2013). Satisfaction was explained as a person's either pleasure or disappointment when s/he compares the derived service with his or her expectation (Kotler, 2000; Chang et al., 2009). In fact, customers have different levels of satisfaction or dissatisfaction, and they respond based on their satisfaction level. According to Jones & Sasser (1995), six levels of satisfaction are observed:

1. The apostle who is extremely satisfied, suggest it to others.

2. The loyalist who is satisfied, but does not suggest it to others.

3. The defector who is dissatisfied, do not talk about brand negatively.

4. The terrorist who is extremely dissatisfied, and tell it to others.

5. The mercenary who is mostly satisfied, yet do not make any effort to obtain better service.

6. The hostage is neutral in satisfaction.

Therefore, bellow statements are hypothesized:

H1. Mobile application usage ends up with application satisfaction.

H2. Application satisfaction leads to brand satisfaction.

Moreover, a high level of satisfaction leads to customer loyalty. When customers become loyal, they will be willing to re-purchase products or services (Lambin et al., 2007). In other terms, loyalty is a person's commitment to a certain product or service, which resulting in repeat purchasing and positive world of mouth (WOM) in the future (Chang et al., 2009). In this manner, satisfaction is a key for loyalty (Picon et al., 2014). It is also acceptable for mobile applications because users tend to use applications as long as they are satisfied with app (Xu et al., 2015). Thus, the following statements are hypothesized:

H3. Application satisfaction leads to brand loyalty.

H4. Brand satisfaction leads to brand loyalty.

Even though Inukollu et al. (2014) stated that users can react negatively if they have negative perceived value for applications, they can sustain their usage behaviours. The previous studies proved that customers may continue to purchase the products or

services without having positive feelings (Bendapudi & Berry, 1997; Picon et al., 2014). As a result of this approach, statements represented below are hypothesized:

H5. There is a relationship between application satisfaction and negative reaction.

H6. Brand loyalty is related to negative reactions.

1.7. BRIEF INFORMATION ABOUT FOOD MARKETING

Capaldi (1996) clarified that eating is counted as one of the vital human activities. As a result, Counihan & Esterik (2012) indicate that researchers have given importance to food on their studies over the past years. Particularly, the number of food-related studies has increased over 40 years. Even though food studies consist of different subjects, including culinary, nutrition, and food safety; DiPietro (2017) mentioned that the popular food studies are related to food management, marketing and operation (Okumus et al., 2018). Literature provides different perspectives on food marketing. Broadly, food marketing is whole activities occurring within the food system from the farm to consumer, which includes processing, wholesaling, retailing, and serving the food (Office of Technology Assessment, 2005). On the other hand, food is a part of service marketing. In fact, customers have value expectations from service providers in return for time, money, and performance, yet the value expectations do not include the transfer of ownership (Zeithaml et al., 2017). Particularly, services are based on performances in general. Intangibility and perishability are critical service characteristics that goods do not have. Nevertheless, services can include tangible products, such as restaurant meals and hotel beds. Within this framework, food can be one of the service elements. Customers are provided by service when they want to buy a restaurant meal (Lovelock & Wirtz, 2011).

Customer satisfaction plays a vital role in companies in every industry, including the food industry in order to do a successful business. Indeed, higher customer satisfaction results in profit growth since customers tend to repeat purchases (Gupta et al., 2007). Restaurant patrons can pay a price premium if they are pleased with service quality and restaurant operations (Han & Jeong, 2013; Hwang & Hyun, 2013; Kiatkawsin & Han, 2019). As service quality brings companies benefits, they need to gauge the quality and

understand customers' behaviors. Thus, there have been widely used methods to measure service quality in the hospitality industry for two decades (Hansen, 2014).

One of the crucial instruments for service marketing is Service Quality (SERVQUAL) developed by Parasuraman et al. SERVQUAL has been used to service quality with five service dimensions which are reliability, responsiveness, assurance, empathy, and tangibles. Service quality is measured based on these dimensions by comparing the consumers' expectations to the perception of service performance (Parasuraman et al., 1986; Johns & Pine, 2002). Furthermore, food service marketing is seen as a part of hospitality and tourism (Wearne & Morrison, 1996; Kotler & Bowen, 1996; Johns & Pine, 2002). While SERVQUAL has been used to calculate service quality, DINESERV has been developed to measure service quality in the restaurant industry. Indeed, SERVQUAL was adapted to food marketing. DINESERV has 29 items to understand customers' perception of quality for the restaurant. The survey (see Appendix 4) contains ten statements for tangibles, five statements for reliability, three statements for responsiveness, five statements for assurance, and five statements for empathy (Steven et al., 1995). Needless to say, quality plays the utmost role in food experiences. As long as the customer service satisfaction level is high, they are willing to re-purchase (Gupta et al., 2007; Heskett et al., 2004; Wu & Liang, 2009). Previous food studies also showed the positive relationships between satisfaction and repurchase loyalty (Tuu & Olsen, 2009). Furthermore, satisfied customers in the hospitality industry make positive comments and recommend the service to others. Therefore, understanding which factors affect customer satisfaction is of importance for the food industry (Gibson, 2005; Wu & Liang, 2009).

In addition to service marketing, food and beverage companies have significant roles in digital marketing. As Chester & Montgomery (2007) stated that they develop advertising campaigns by using different digital marketing activities, including social networks, videogames, mobile services, online videos, instant-message, and virtual worlds. Generally speaking, adolescents and youth become the target for these types of marketing practices. Coca-Cola, McDonald's, Burger King, KFC are some of the companies which apply these practices. The report (Institute of Medicine, 2005) has indicated Internet and new marketing practices are of significance to introduce food and beverage products to children. However, the problem is that these marketing practices

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may pose a danger for adolescents and youth because they are under severe risk for obesity (Montgomery & Chester, 2009).

1.8. MOBILE FOOD APPLICATIONS IN TURKEY

As Buhalis & O'Connor (2005) stated that people are exposed to technological development in all fields, including work, leisure, tourism, etc. The profit-oriented companies try to increase their revenues, promote their products while reducing costs with these technological innovations. Mobile applications have been one of the significant technological developments in recent decades. The technology of mobile app enables companies to fulfill users' needs by using location-based service and making customizations (Chhabra, 2015). Moreover, the studies prove that food plays an important role in mobile applications as food and beverage are one of the most popular categories. Mainly, food and beverage applications rank 9th on the list of the most popular app store applications (Clement, 2019c).

Food applications are available to download and use in Turkey. The examples of them are explained in detail below.

1.8.1. Brief Information about Getir

Getir was founded in 2015 as an on-demand delivery mobile application. Getir provides its users with an ordering platform, including a variety of food products such as water, chocolate, and ice-cream (Stokel-Walker, 2018). The users can buy food products from Getir. First, they make an order 24/7 from the mobile application. The payment is completed through the mobile app. Notably, the users give their credit/debit card information for their account. When they give an order, payment is made automatically. The employees of Getir deliver the order to the address which the user has already defined. Getir is available to use in İstanbul, İzmir, Ankara, Bursa, and Kocaeli (Why Getir?, n.d.).

In pursuit of Getir, the company has provided its users with a new opportunity, Getir Yemek in 2019. The users can deliver meal order from the restaurants with which Getir Yemek works. Then the restaurant prepares the order. When it is ready, a courier of Getir Yemek takes the order and delivers it to the user. The delivery duration is 20 minutes on average (Pehlivan, 2019).

1.8.2. Brief Information about Glovo

Glovo is a mobile application that enables the users to get a near product in their city rapidly, on average 30 minutes. In other words, the users give a product order, Glovo delivers it via its couriers. The company has started to work in 2015, in Barcelona. Glovo business is spread over 20 countries within three years, including Turkey. Even though Glovo provides its various products to its users, the main focus is online food delivery. Depending on different markets and cities, the food business varies from 60 to 90 percent of the whole business (Pierre, 2018).

In the case of food, the users make food orders from either a restaurant or food market, which are the partners of Glovo. They can see the details about food, including the price on the app. In addition to food prices, Glovo charges delivery costs. The delivery cost is calculated based on distance. When the user confirms the order, a courier accepts the order, and deliver it in minutes (Help & Support, 2020).

1.8.3. Brief Information about Yemeksepeti

Yemeksepeti was founded in late 2000, an online food ordering platform. Yemeksepeti provides its users with easy to use and real-time food ordering system. The business model is based on the idea of intermediary between users looking for a favorable delivery for food orders and members striving to find a convenient way to market their menus. The users have two alternatives, which are Yemeksepeti.com or the Yemeksepeti Mobile Application, to give their food orders. They select a restaurant from the list where restaurant members take place and then choose foods from the selected restaurant's menu. When the users submit their food order, Yemeksepeti informs the restaurant about a new food order. Foods are prepared within 15-45 minutes, then an employee of the restaurant delivers the food order to the stated address. The payment is completed at the door when the food order is delivered to the user. Afterward, the restaurant pays a commission to Yemeksepeti. The users are given a chance to evaluate restaurants' performances by rating and writing comments on Yemeksepeti (see the detailed business process in Figure 8). Today, the company is one of the most successful online service companies in Turkey (Ercu, 2015).

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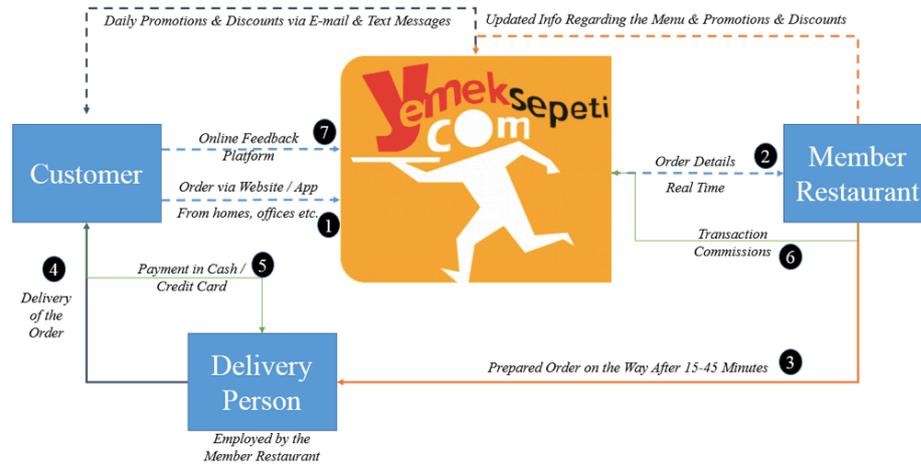
Figure 8- YemekSepeti Operating Process

Source: Ercu. (2015, December 7). *Yemeksepeti: Operational Excellence in Online Food Ordering.* Retrieved from Digital Initiative: https://digital.hbs.edu/platform-rctom/submission/yemeksepeti-operational-excellence-in-online-food-ordering/

The company's new project is Banabi that provides users with online food product ordering. In fact, users do not have to go to the market to buy food products. They can easily make their orders via BanaBi. The company has not developed a new application for BanaBi. The users can have access to BanaBi platform from Yemeksepeti mobile application (Can, 2019).

1.8.4. Brief Information about Foursquare

Foursquare was founded in 2009 as a location-based mobile application. First, the company has developed check-in. The users make the check-in at the place where they go via Foursquare and share those check-ins with their followers (About Foursquare, n.d.). The company provides users with two applications in order to share their experiences. Foursquare Swarm is a mobile application that users can save the places where they have been. On the other hand, Foursquare City Guide is another mobile application that has recommendations for the places to eat, see, and near the users (Foursquare Welcome Page, n.d.). The users can find the best place to eat and drink based on recommendations and ratings. In other terms, the users evaluate the places where they have been by giving points out of 10 and making comments (Food Suggestions, n.d.).

1.8.5. Brief Information about Zomato

Zomato is another mobile application in the food service industry. It has started to be used in India 11 years ago. First, the business model was based on digital access to restaurant menus. Three foodies wanted to develop a platform that presents different restaurants' menus. Hence, they have collected menus, scan and put them into the online platform. Today, Zomato is one of the largest food platforms in the world by providing service in 24 countries and more than 10,000 cities with the vision of better food for more people (About Zomato, n.d.).

The business made by Zomato is based on the idea of eating better food. In order to achieve this, users are provided with a mobile application involving information about thousands of restaurants. Zomato users can make their comments about restaurants and share photos. Then, other users can review them and benefit from the information to make restaurant selection. In addition to users, the teams of Zomato gather information about restaurants, and they are responsible for keeping data updated. Restaurants are given a chance to introduce them, present their menus, working hours, and the average cost per person. Also, they have an opportunity to get a reservation and online ordering via Zomato (About: Zomato TR, n.d.).

Zomato has created a new "Gold Membership" for its users. The users can be gold members by paying a certain amount of money. Then, they can get advantages of special offers. When gold members get one dish, the second dish will be complimentary. Also, they can get two complimentary drinks when they order two drinks. However, special offers are available at Dining Gold partner restaurants (Zomato Gold, n.d.).

1.8.6. Brief Information about CarrefourSa

Carrefour is one of the largest retailer chains in Europe. The first store was opened in France in 1963. Today, Carrefour has 12,300 stores in 30 different counties (CarrefourSa Homepage, n.d.). The company provides an online ordering system for its customers. CarrefourSa Online Market is the mobile application used in Turkey. First, customers can give orders via the app, then CarrefourSa delivers the orders to them. Online, cash on delivery, or paying at the door are the available payment methods for online delivery (CarrefourSa Online Market, n.d.).

1.8.7. Brief Information about Migros Sanal Market

Migros is a well-known retailing chain in Turkey. The company has a wide variety of products in its shops. Migros prefers to apply information technology systems in its business (Genel Bakış: Migros, n.d.). Indeed, the company has become a pioneer in virtual retailing by providing its customers with an online platform, which is Migros Sanal Market in 1997. Customers have been able to make product orders that are found in Migros shops via Migros Sanal Market web site. As long as they make orders from the online web site, Migros delivers orders to their specified addresses. In addition to the online ordering website, Migros has developed a mobile application, which is "Mobile Shop" in 2010. Thus, customers have been able to make their shopping from their mobile phones easily vi mobile app (Hakkımızda: Migros Sanal Market, n.d.).

1.8.8. Brief Information about Caffè Nero

Caffe Nero is a coffee house brand that operates its business with more than 800 coffee houses across Europe (About Us: Our Storys, n.d.). The company has developed its mobile application for its customers. After they download the application, they can pay their order easily through the app. Moreover, they can use the mobile app as their loyalty card. In fact, customers can gain one stamp when they get one coffee. The mobile application users enable collect their stamps via the application. When they collect 9 stamps, they are given a chance to have their 10th coffee as complimentary. Besides, they can send and receive digital gift cars by using the mobile application (The Caffe Nero App, n.d.).

1.8.9. Brief Information about Starbucks

Starbucks was found in Seattle in 1971 as a coffee shop (Company Information, n.d.). The company has also developed a mobile application for customers. By using the mobile app, customers can make online orders and pay, get rewards, send a gift, review past purchases, find near stores, and see what song is playing at the store (App Store Preview: Starbucks, n.d.).

1.8.10. Categorization of Mobile Food Ordering Applications

Mobile food applications that are mentioned above can be categorized based on their business models. Even though all of them are food applications, they do different businesses and provide various services. However, some of them have a common structure. Hence, they can be separated into four groups based on their businesses.

First of all, the businesses of Getir, Glova, and Yemeksepeti are based on food delivery. Indeed, their businesses more focus on food ordering and delivery. Moreover, they are merely intermediaries. That is to say, consumers make food orders from them. Then, they deliver orders to consumers. They do not produce anything; they provide a delivery service. As a result, they are categorized as delivery oriented third parties.

The second category is delivery oriented, and firm owned businesses. As explained above, CarrefourSa and Migros are grocery store chains. Actually, consumers go to their grocery stores and make a purchase when they need food and other products. Nonetheless, Carrefoursa and Migros developed their own applications to provide online delivery service for their customers. As long as customers use the app to buy products, they do not have to go to the stores. Therefore, CarrefourSa and Migros Sanal Market are delivery oriented and firm owned applications.

On the other hand, Foursquare and Zomato are information oriented mobile applications since restaurants are introduced at these two applications. In detail, Foursquare and Zomato promote food and beverage companies as third parties. Thus, they are categorized as information oriented third parties.

The last category is information oriented, and firm owned businesses, which are Caffe Nero and Starbucks. The main business which Caffe Nero and Starbucks do is providing coffee for their customers. In addition to their primary service, they developed their own mobile applications for their customers. By using apps, Caffe Nero and Starbucks make promotion and supply complementary products. Consequently, they are firm owned and information-oriented applications.

Mobile Food Application Matrix has developed by taking into four categories explained above. The first part of the matrix is the category that is defined first "Delivery Oriented Third Parties." The second part of the matrix is "Information Oriented Third Parties." The third part is "Delivery Oriented Firm Owned," whereas the last part of the matrix is "Information Oriented Firm-Owned" (see Figure 9). In addition to four

categories, the left and right sides of the matrix are different due to the logistics of food products. In other terms, the left side of the matrix includes businesses that provide food products logistics as they are delivery oriented. Consumers can own food products at the place where they have already been by making the order from these apps. However, when the users use applications placed on the right side of the matrix, they need to go to food products since the applications are based on introducing the products only.
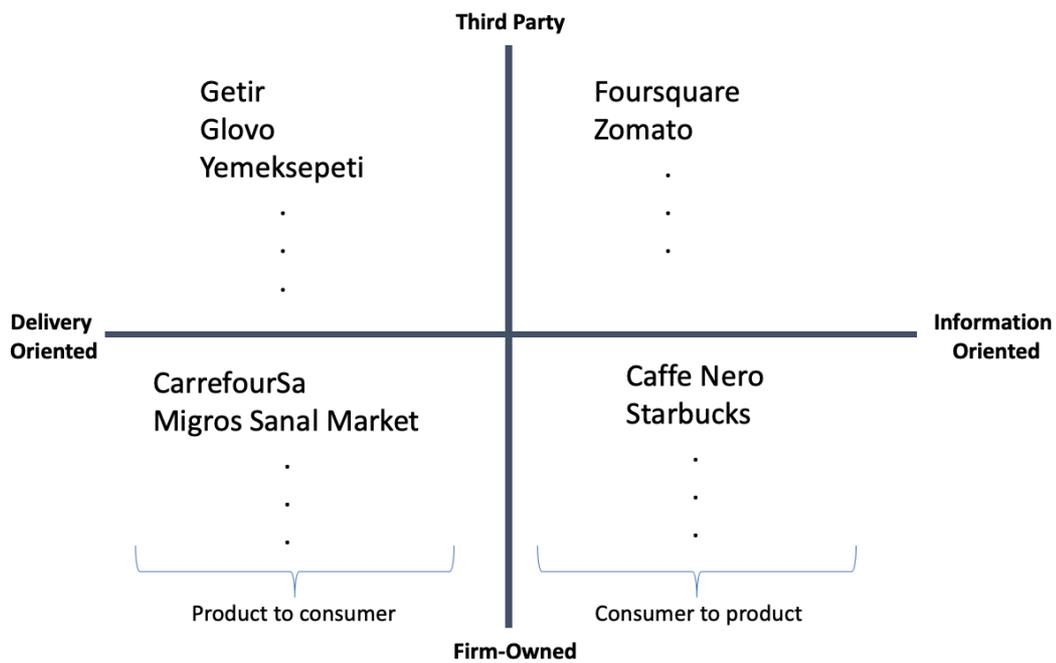
Figure 9. Mobile Food Applications Matrix

Source: Developed by the researcher

This study is focusing on the first part of the matrix, which is "Delivery Oriented Third Parties". The effect of TAM in Food Marketing is analyzed by using delivery oriented third parties' applications in the study. In other words, they are mobile food ordering applications (MFOApp).

2. RESEARCH METHODOLOGY

Broadly, research is a process, including studying and analyzing the findings of a specific problem in order to solve the problem. In particular, business research is defined as a data-based and objective scientific study regarding a certain problem (Sekaran, Research Methods For Business, 2003). This research is about the application of the Technology Acceptance Model in food marketing. It has been conducted to prove that the Technology Acceptance Model is of importance in food marketing. In fact, it begins with secondary data about the Technology Acceptance Model; the application of TAM in different areas, the concept of food marketing. The essential variables and factors of the study are mentioned in the literature review. After that, conclusive research has been done. Data has been collected by quantitative research methods, which are summarized below.

2.1. RESEARCH PURPOSE AND OBJECTIVES

This research elaborates on the concept of the Technology Acceptance Model, including where the idea came from, history, the various areas where the model has been used, the role of TAM in life, and why it is important in today's world. Furthermore, the literature review provides information about the concept of food marketing and examples of food applications, which are based on the Technology Acceptance Model. In fact, there is a gap in the literature regarding the relationship between the Technology Acceptance Model and food marketing. Even though different food applications are available to use, the correlation between food marketing and TAM is not clarified. Therefore, this research is to understand the effects of food applications based on the Technology Acceptance Model on food marketing.

As seen in Food Application Matrix (Figure 9), food applications provide different services to their users. This study focuses on applications placed in the first part of the matrix. These applications are the third party in the industry, and they provide a delivery service. Quantitative data has been conducted with participants who have used these applications.

The purpose of the study is to grasp whether MFOApps contribute to food brands in terms of marketing including satisfaction and loyalty. Hence, Technology Acceptance Model was extended in accordance with food service industry.

2.2. RESEARCH METHOD

In order to solve a research problem, research ought to be designed. Principally, a research design includes specific components. First of all, the necessary information is given. Secondly, the research design is selected as exploratory or descriptive. Thirdly, research, and data analysis techniques are decided. Besides, data collection and questionnaires are designed. Then, the sampling process and sample size are specified. Finally, data analysis is made. The objective of conclusive research is to measure hypotheses and analyze relationships between variables. Since the objective of this research is to test specific hypotheses, it is conclusive research. Furthermore, conclusive research has two types, which are descriptive and causal, as seen in Figure 10. A descriptive study is conducted to describe the problem by testing hypotheses with a large number of samples and it has two types including Cross-sectional and Longitudinal design. The cross-sectional design is commonly used as a research design type requiring to collect information from any given sample only once. It has also two types which are single and multiple. The information is taken from only one sample and only once in a single cross-sectional design whereas two or more samples are used only once to obtain information in multiple cross-sectional. A longitudinal design is another type and used to collect information from a fixed sample repeatedly. On the other hand, causal research is based on cause and effect relationships (Malhotra & Birks, 2007).

As this study has tried to describe the problem that is the role of TAM in food marketing by testing specific hypotheses, it is descriptive research. The sample design is a single cross-sectional because one sample is used to get information only once.
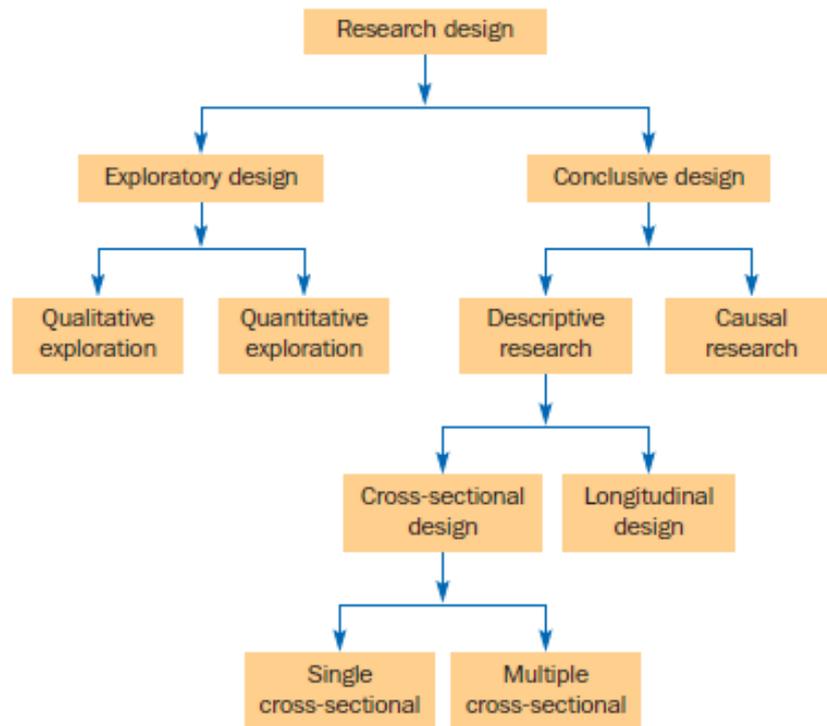
Figure 10. The Classification of Marketing Research Designs

Source: Malhotra, N. K., & Birks, D. F. (2007). *Marketing Research An Applied Approach* (3rd ed.). England: Pearson Education. P. 70

2.3. RESEARCH MODEL DEVELOPMENT

The research model has been presented as a graphical model. The conceptual model indicates the relationships between variables. The model has been developed based on previous studies. Particularly, the literature review demonstrates that researchers found out significant variables about the Technology Acceptance Model after their research. The model seen in Figure 11 is designed by these essential variables.

As it is seen in the conceptual model, Mobile Quality Dimensions and External Variables have a relationship with Perceived Usefulness and Perceived Ease of Use. As their relations have already been proved with previous studies, they are not tested again ward (shown in Table 3).

Table 3
Propositions of the Study

Item No	Propositions	Sources	Variables Involved
1	Mobile Quality Dimensions have impacts on perceived usefulness.	Özer and et al., 2013	Mobile Quality Dimensions, Perceived Usefulness
1.1.	Functionality influences perceived usefulness.		Functionality, Perceived usefulness
1.2.	Value-added influences perceived usefulness.		Value-Added, Perceived usefulness
1.3.	Design influences perceived usefulness.		Design, Perceived usefulness
1.4.	Perceived risk influences perceived usefulness.	Inukollu and et al., 2014	Perceived Risk, Perceived usefulness
1.5.	Free of error influences perceived usefulness.		Free of Error, Perceived usefulness
1.6.	Comprehensive influences perceived usefulness.		Comprehensive, Perceived usefulness
2	Mobile Quality Dimensions have impacts on perceived ease of use.	Özer and et al., 2013	Mobile Quality Dimensions, Perceived Ease of Use

2.1.	Functionality influences perceived ease of use.		Functionality, Perceived Ease of Use
2.2.	Value-added influences perceived ease of use.		Value-Added, Perceived Ease of Use
2.3.	Design influences perceived ease of use.	Inukollu and et al., 2014	Design, Perceived Ease of Use
2.4.	Perceived risk influences perceived ease of use.		Perceived Risk, Perceived Ease of Use
2.5.	Free of error influences perceived ease of use.		Free of Error, Perceived Ease of Use
2.6.	Comprehensive influences perceived ease of use.		Comprehensive, Perceived Ease of Use
3.	External variables have impacts on perceived usefulness.	Davis, Bogozzi and Warshaw, 1989; Venkatesh and Davis,1996	External Variables, Perceived Usefulness
3.1.	Gender influences perceived usefulness.	Venkatesh and et al., 2003	Gender, Perceived Usefulness
3.2.	Age influences perceived usefulness.		Age, Perceived Usefulness
3.3.	Word of mouth influences perceived usefulness.	Inukollu and et al., 2014	WOM, Perceived Usefulness
3.4.	Experience influences perceived usefulness.	Venkatesh and et al., 2003	Experience, Perceived Usefulness

3.5.	Social influence affects perceived usefulness.	Inukollu and et al., 2014	Social Influence, Perceived Usefulness
3.6.	Enjoyment influences perceived usefulness.	Venkatesh & Bala, 2008)	Enjoyment, Perceived Usefulness
3.7.	Trust influences perceived usefulness.	Alzubi and et al., 2018; Hutchins & Hook, 2017; Sathitwiriyawong & Phuttaraksa, 2018; Dutot and et al., 2019	Trust, Perceived Usefulness
4	External variables have impacts on perceived ease of use.	Davis, Bogozzi and Warshaw, 1989; Venkatesh and Davis,1996	External Variables, Perceived Ease of Use
4.1.	Gender influences perceived ease of use.	Venkatesh and et al., 2003	Gender, Perceived Ease of Use
4.2.	Age influences perceived ease of use.		Age, Perceived Ease of Use
4.3.	Word of mouth influences perceived ease of use.	Inukollu and et al., 2014	WOM, Perceived Ease of Use
4.4.	Experience influences perceived ease of use.	Venkatesh and et al., 2003	Experience, Perceived Ease of Use
4.5.	Social influence influences perceived ease of use.	Inukollu and et al., 2014	Social Influence, Perceive Ease of Use
4.6.	Enjoyment influences perceived ease of use.	Venkatesh & Bala, 2008)	Enjoyment, Perceived Ease of Use

4.7.	Trust influences perceived ease of use.	Alzubi and et al., 2018; Hutchins & Hook, 2017; Sathitwiriyawong & Phuttaraksa, 2018; Dutot and et al., 2019	Trust, Perceived Ease of Use
5.	Perceived ease of use influences perceived usefulness.	Davis, 1986; Davis, Bogozzi and Warshaw, 1989; Venkatesh and Davis,1996f); Venkatesh & Davis, 2000; Venkatesh & Bala, 2008);	Perceived Ease of Use, Perceived Usefulness
6.	Perceived ease of use influences behavior intention.	Venkatesh and Davis,1996; Venkatesh & Davis, 2000; Venkatesh & Bala, 2008	Perceived Ease of Use, Behavior Intention
7.	Perceived usefulness influences behavior intention.	Davis, Bogozzi and Warshaw, 1989; Venkatesh and Davis,1996; Venkatesh & Davis, 2000; Venkatesh & Bala, 2008	Perceived Usefulness, Behavior Intention
8.	Behavior intention influences mobile application usage.	Davis, Bogozzi and Warshaw, 1989; Venkatesh and Davis,1996; Venkatesh & Davis, 2000; Venkatesh and et al., 2003; Venkatesh & Bala, 2008	Behavior Intention, Mobile Application Usage

Source: Developed by the researcher

Nonetheless, relationships between other variables have been analyzed in this study. In order to understand readily, the relationships between variables are presented with arrows in the model (seen in Figure 11). Perceived Usefulness, Perceived Ease of Use, Behavioral Intention, and Mobile Application Usage are the variables of the Technology Acceptance Model, as shown in Figure 4. Nevertheless, this research has analyzed the relationships of these variables in terms of the food marketing aspect. Besides, the role of mobile application usage in the satisfaction of application and brand has been tested. Then, whether there is a relation between variables which are repurchase and word of mouth and satisfaction has been examined.

Figure 11. Conceptual Model of the Study
Source: Developed by the researcher
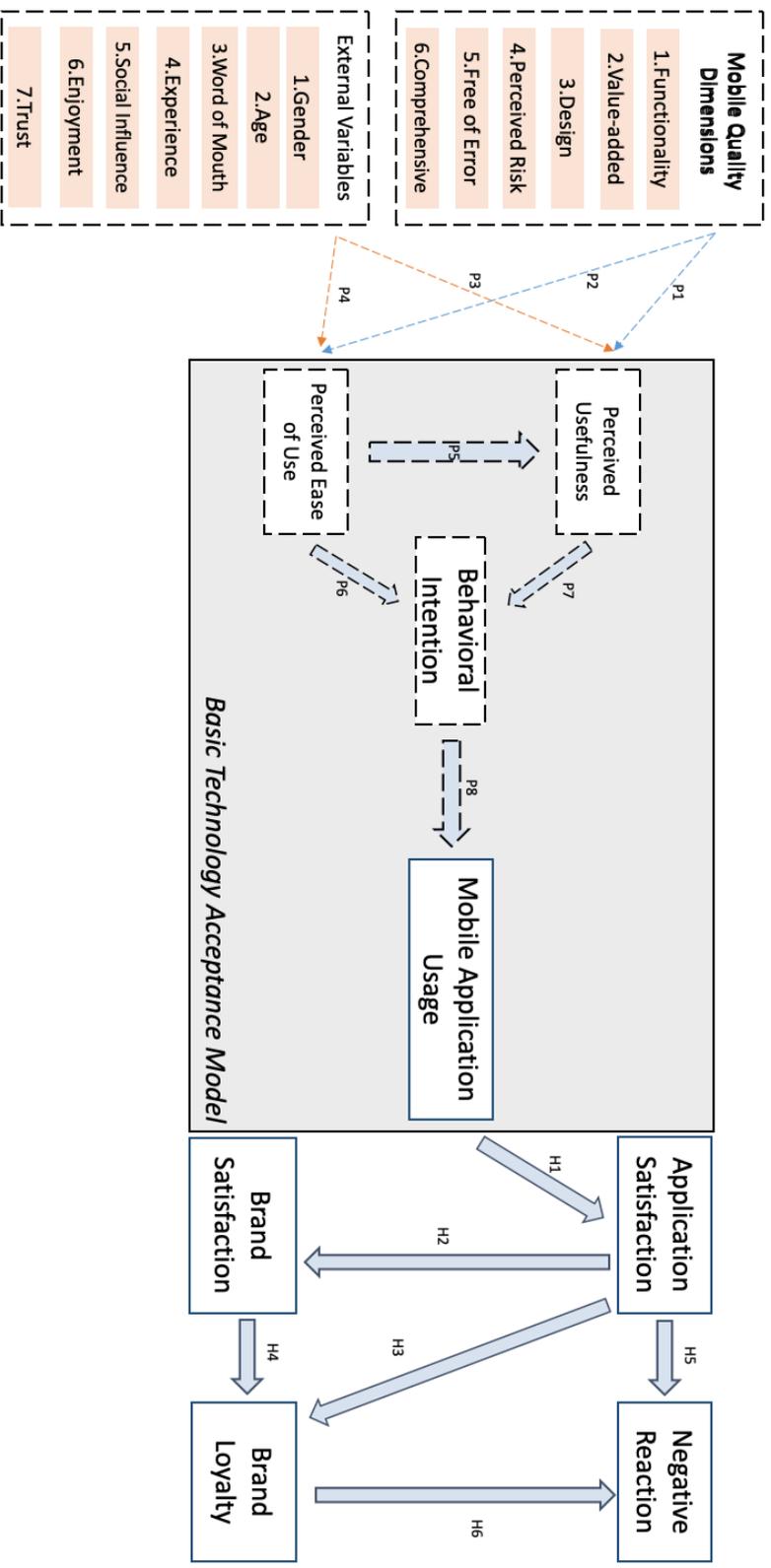
*dashed lines represent the constructs and the propositions which are not included in model testing.

2.4. HYPOTHESES OF THE STUDY

As it is explained, the study aims to understand the effects of mobile food applications in food marketing. In order to analyze the influence, the model has developed based on the Technology Acceptance Model. According to the conceptual model, hypotheses have developed. Hypotheses have both dependent and independent variables. The dependent variable is the main focus because the goal of the study is to understand and explain the variability of the dependent variable. That is to say, analyzing the dependent variable is the critical point to answer the research question. On the other hand, the independent variable either positively or negatively affects the dependent variable (Sekaran & Bougie, 2016). Thus, hypotheses are developed to measure the influence of independent variables on dependent variables. In order to analyze the relationships, regression analysis will be conducted. The following Table 4 demonstrates the hypotheses of the study.

Table 4
Hypotheses of the Study

Item No	Hypothesis	Sources	Variables Involved
1	Mobile application usage ends up with application satisfaction.	Zhao et al., 2012; Özer and et al., 2013	Mobile Application Usage, Application Satisfaction
2	Application satisfaction leads to brand satisfaction.		Application Satisfaction, Brand Satisfaction
3	Application satisfaction leads to brand loyalty.	Lambin et al., 2007; Picon et al., 2014	Application Satisfaction, Brand Loyalty
4	Brand satisfaction leads to brand loyalty.		Brand Satisfaction, Brand Loyalty

			Application Satisfaction, Negative Reaction
5	There is a relationship between application satisfaction and negative reaction.	Inukollu et al., 2014; Bendapudi & Berry, 1997; Picon et al., 2014	
6	Brand loyalty is related with negative reaction.		Brand Loyalty, Negative Reaction

Source: Developed by the researcher

2.5. VARIABLES OF THE STUDY

Hypotheses will be tested through convenient quantitative research methods. Therefore, the survey has developed in order to conduct the research. The variables have been determined to use in the survey (as shown in Table 5).

Table 5
Variables of the Study

Variable Number	Variables	Question Number	Question / Item	Answer Options	Source
V1	Smartphone Ownership	Q1	Do you have a smartphone?	No (Respondents of this option are excluded from the study)	Developed by the researcher
				Yes	
V2	Being A Mobile Application User	Q2	Do you use mobile applications about food?	Yes	Developed by the researcher
				No (Respondents of this option are excluded from the study)	
V3	Respondent's Food Application Preference	Q3	Why do you prefer to use food applications? You can select more than one.	Food Delivery Service (If respondents do not select this option, they will be excluded from the study)	Developed by the researcher
				Looking for Special Offer	
				Searching Information	
				Sharing your experience	
				Purchasing Food Products	
				Other	
V4	Frequency of Food Order	Q4	How often do you make food order?	Almost Always	Developed by the researcher
				To a Considerable Degree	
				Occasionally	
				Seldom	
V5	Respondent's Preferences for Food Order	Q5	Which one do you use more in order to make food order?	Phone Call	Developed by the researcher
				Website	
				Mobile Application	
				Other	
V6	Food Order Place	Q6	Where do you make food order for? You can select more than one.	My Home	Developed by the researcher
				Workplace	
				Friend's Home	
				Campus	
				Other	
V7	Respondent's Mobile Food Application Choices	Q7	Which mobile application do you use most to make food order? (Remember your answer for next questions)	Getiryemek	Developed by the researcher
				Glovo	
				Yemeksepeti	

Source: Developed by the researcher

Table 5 (cont')
Variables of the Study

				Other	
V8	Mobile Application Usage	Q10	I typically use food ordering application.	Strongly Agree	Davis, Bogozzi and Warshaw (1989); Vankatesh and Davis (1996); Burton-James & Hubona (2006);Venkatesh & Davis (2000); Venkatesh et al. (2003);Venkatesh & Bala (2008)
				Agree	
		Q8	I prefer to make my food orders from mobile application.	Neutral	
				Disagree	
				Strongly Disagree	
V9	Application Satisfaction	Q18	I use mobile application for my food orders.	Strongly Agree	Özer et al. (2013); Kuo et al., 2009
		Q13	Mobile food ordering application fulfills my needs.	Strongly Agree	
		Q16	Food ordering application fulfills my expectations.	Agree	
		Q15	Food ordering application that I have used has high value.	Neutral	
		Q17	I like using food ordering application.	Disagree	
		Q18	Generally, I satisfy from food ordering application.	Strongly Disagree	
V10	Brand Satisfaction	Q14	Food brands found at the application fulfill my needs.	Strongly Agree	Özer et al. (2013); Kuo et al., 2010
		Q20	Food brands found at the application fulfill my expectations.	Agree	
		Q21	Food brands found at the application have high value.	Neutral	
		Q19	I like food brands found at the application.	Disagree	
		Q22	Generally, I satisfy from food brands I have made order from.	Strongly Disagree	
V11	Brand Loyalty	Q23	I intend to continue to make order from food brand that I made order from.	Strongly Agree	Chang et al. (2009); Özer et al. (2013) .; Jones and Sasser (1995)
		Q26	I expect I will make food order from food brand in the future.	Agree	
				Neutral	
		Q24	I strongly suggest food brands found at the application others.	Disagree	
				Strongly Disagree	
V12	Negative Reaction	Q11	I delete mobile food application unless I am satisfied from the application.	Strongly Agree	Inukollu et al. (2014)
				Agree	
		Q25	Given that mobile application did not satisfy my need, I predict that I would not use them.	Neutral	
				Disagree	
		Q9	Given that mobile application did not satisfy my expectations, I predict that I would not use them.	Strongly Disagree	
				Easy to use	
				Provide Benefit	
				Functional	
				Faster	

Table 5 (cont')
Variables of the Study

V13	Benefit	Q27	Why do you prefer to use mobile food ordering application? You can select more than one.	Reliable Free of Risk Friend's Suggestion High Customer Satisfaction Positive Customer Comments Providing Special Offers Other	Developed by the researcher
V14	Age	Q28	Please state year of birth	….	Developed by the researcher
V15	Gender	Q29	Please state your gender	Female Male Not stated	Developed by the researcher
V16	Place of Residence	Q30	Please state your city	İstanbul İzmir Ankara Other	Developed by the researcher
V17	Occupation	Q31	Please state your occupation (Example: Student, Employee, Manager, Business vs)	Other Academician Manager Employee Student	Developed by the researcher
V12	Education	Q32	Please mention your level of education	School High School University (Continue) Bachelor Master - PhD (Continue) Master - PhD	Developed by the researcher
V19	Living	Q33	Who do you live with?	Alone Parents Spouse Friends Other	Developed by the researcher
V20	Expense	Q34	Please state your average expense amount in a month	0-1500 1501-3000 3001-5000 5001-8000 8001-10000 10000+	Developed by the researcher

2.6. SAMPLING DESIGN

Before the survey was conducted, the target population has been defined; sampling techniques have been selected, and the sample size has been determined. The details are explained below.

2.6.1. TARGET POPULATION

The target population is the particular group of people which researcher determine to collect data (Malhotra & Birks, 2007). The target population of the study is identified as people who have smartphones, use mobile food applications, live in dominantly İstanbul, and over 18 years of age.

2.6.2. SAMPLING TECHNIQUE

The survey is sent to respondents who take place in the target population. Thus, convenience sampling, which is one of the non-probability sampling techniques is used to conduct the survey. Indeed, non-probability sampling is a sampling technique that relies on the researcher's decision to select the sample instead of using chance. Convenience sampling is a non-probability sampling technique that the selection of sampling relies on primary interviewer. Broadly speaking, respondents are chosen because they are in the right place at the right time. Moreover, convenience sampling is widely used for Internet-based surveys (Malhotra & Birks, 2007).

2.6.3. SAMPLE SIZE

In order to determine the sample size for large populations, Cochran (1963) developed the following equation (Israel, 2009).

$$n = \frac{z^2 pq}{e^2} = \frac{(1.96)^2 (0.5)(0.5)}{(0.05)^2} \approx 385$$

The equation presents approximately 385 people for the study. Another point of view to reduce the error risk in sampling is that sample size should be a couple times higher than the numbers of variables used for the research. (Altunışık et al., 2007).

Hence, the survey was conducted with 405 respondents who take place in the target population.

2.7. DATA COLLECTION METHOD

In order to make an analysis, primary data has been collected by conducting the survey as a quantitative method. Respondents were asked to 34 questions, including their demographic information, intentions, motivations, and behaviors about mobile food applications. The questionnaire comprises of three parts. The first part is to understand their habits about mobile food applications, and the questions are both Yes/No questions and multiple choices. The second part of the questionnaire is to grasp respondents' behaviors and opinions about mobile food applications. Likert type is used for the second part. It is one of the widely used measurement scales. There are five responses from strongly agree to strongly disagree (Malhotra & Birks, 2007). Respondents are asked to state their degree of agreement or disagreement in the second part. The final section includes mainly demographic questions to analyze the differences between respondents.

The questionnaire was completed by respondents online. In fact, the survey was prepared through Google Forms; then, the link was sent to participants. As the research has been conducted in Turkey with Turkish citizens, the language of the survey is in Turkish (See in Appendix 6). Nonetheless, the English version of the survey will be presented in Appendix 5.

2.8. DATA ANALYSIS METHOD

The data obtained from the survey is analyzed in the statistical programs. SPSS Statistics Subscription was used to make analyze. In addition to SPSS, SmartPLS 3.3.2 was used for Structural Equation Modeling (SEM). The previous studies proved that Partial least squares path modeling (PLS-PM) was used to estimate the structural equation models and make a hypothesis test (Wold, 1982; Merli et al.,2019). PLS-PM is used as it is an approach based on regression, which minimizes the residual variances of variables (Hair et al., 2011; Merli et al., 2019). Moreover, as a Structural Equation Modeling technique, PLS enables the researcher to analyze complex relationships between variables while also examining their direct, indirect and moderating relationships (Nitzl et. Al 2016; Sport Management Using Partial Least Squares Structural Equation Modeling (PLS-SEM), n.d.). Hence, SmartPLS was preferred for PLS-PM.

3. RESEARCH FINDINGS

This part of the study will analyze the outcome of survey and then interpret them.

3.1. NON-RESPONSE BIAS

The extrapolation method is used to analyze non-response bias. It is a widely known method to avoid non-response bias. The extrapolation method enables the researcher to detect differences in variables by comparing early and late respondents (Armstrong and Overton, 1977). Thus, the researcher conducted an independent sample t-test to compare the first 203 and the last 202 respondents. An independent t-test was conducted to find whether there is a significant difference in key variables. The critical variables about the usage of mobile applications which are delivery service and frequency were analyzed. The findings present that there is no significant 0.05 level differences between these groups because sig. values are smaller than 0.05 (Table 6).

Table 6

Independent Samples t-Test Results

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Using App for Delivery Service	Equal variances assumed	3,031	0,082	0,868	403	0,386
	Equal variances not assumed			0,868	397,045	0,386
Frequency of Food Order	Equal variances assumed	2,920	0,088	-1,476	403	0,141
	Equal variances not assumed			-1,477	401,433	0,141

Source: Computed by the researcher

3.2. DESCRIPTIVE ANALYSIS OF RESPONDENTS

As it is stated that the survey was conducted with 405 respondents. In order to provide a better understanding of the survey results, descriptive analysis is done. It provides respondents' general information about demographics, socioeconomic characteristics, and their habits of using mobile food applications.

3.2.1. Demographic and Socioeconomic Characteristics

The majority of the sample group consists of males with 50,62% whereas the percentage of female respondents is 49,14. The rest of the population who does not want to state gender is 0,24%. Among a total of 405 respondents, 205 of them are male, 199 of them are female and 1 respondent did not state the gender.

The largest age groups are 18-25 and 26-35, which means the overall sample age is between 18-35 with 360 respondents. In addition, 39 participants are between 36-45 years old while 6 participants are older than 45 years old.

Respondents were asked about their education level. The results indicate that the majority of education level is postgraduate by 40,74%. Secondly, 30,62% of respondents are university students. 16,54% of them continue their Master and/or Ph.D. while 7,16% of participants completed their Master and/or Ph.D. degrees. Furthermore, majority comprises employees (45,19%) and students (33,58%).

The survey has mainly conducted in big cities. 377 of respondents live in İstanbul, 3 of them in İzmir, and 5 of them in Ankara. Moreover, the sample's home mates were asked to understand their lifestyles.

Participants are asked about whom they live with. 209 of them state that they live with their parents. The rest of them live with spouses (78 respondents); alone (60 respondents); friends (46 respondents).

Finally, the survey presented six expense levels to respondents and they selected their average monthly expense amount on the Turkish Liras basis. The majority of them have less than 5001 TL expenses.

The descriptive statistics mentioned above are indicated in Table 7.

Table 7

Sample's Demographic and Socioeconomic Characteristics

Attributes	Distribution	Frequency	%
Gender	Female	199	49,1
	Male	205	50,6
	Not Stated	1	0,2
Age	18-25 Years	178	44,0
	26-35 Years	182	45,0
	36-45 Years	39	10,0
	45 + Years	6	1,0
Education Level	School	3	0,7
	High School	17	4,2
	University (Student)	124	30,6
	Bachelor	165	40,7
	Master - PhD (Student)	67	16,5
	Master - PhD	29	7,2
Occupation	Student	136	33,6
	Employee	183	45,2
	Manager	44	10,9
	Academician	14	3,5
	Others	28	6,9
Place of Residence	İstanbul	377	93,1
	İzmir	3	0,7
	Ankara	5	1,2
	Others	20	4,9
Home Mate	Alone	60	14,8
	Parents	209	51,6
	Spouse	78	19,3
	Friends	46	11,4
	Others	12	3,0
Monthly Expense	0-1500	113	27,9
	1501-3000	97	24,0
	3001-5000	105	25,9
	5001-8000	56	13,8
	8001-10000	16	4,0

	10000+	18	4,4

Source: Computed by the researcher

3.2.2. Mobile Food Ordering Application Habits of the Sample Group

In order to understand the sample's mobile food application usage, their motivations about food apps were analyzed. First, they are asked about why they prefer to use food applications. The results indicate the main reason is the food delivery service by 91,4%. Other reasons are respectively purchasing food products (46,9%), trying to find special offers (23,7%), searching information about food and beverage services (21%), sharing their experiences with others (4,9%) (Figure 12).

Figure 12. Sample's Food App Usage Motivations
Source: Computed by the researcher

Moreover, the survey asked a question about the frequency of food order. In other words, how often respondents make a food order is analyzed. As shown in Figure 13, most of them stated "Occasionally" with 47,41 % whereas the minority of respondents specified "almost always" with 7,4%. Participants who answered "to a considerable degree" are 26,67 % of the sample. 18,52 % of them make food orders "seldom".
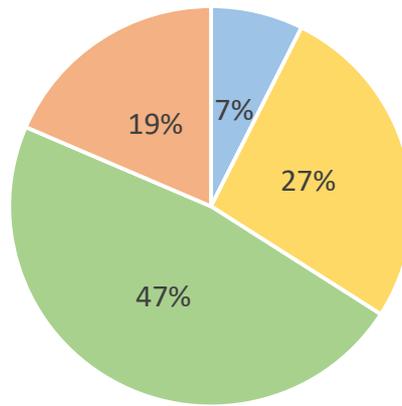
Figure 13. Sample's Frequency of Food Order

Source: Computed by the researcher

As it is mentioned in the literature part, previous studies proved that mobile applications are widely used and food & beverage applications are one of the popular categories among mobile applications (Clement, 2019c). This study also strives to understands which way the sample uses more to make a food order. Figure 14 testifies the most used instrument for food ordering is a mobile application. Others said websites by 11,11 % and phone calls by 8,64%.
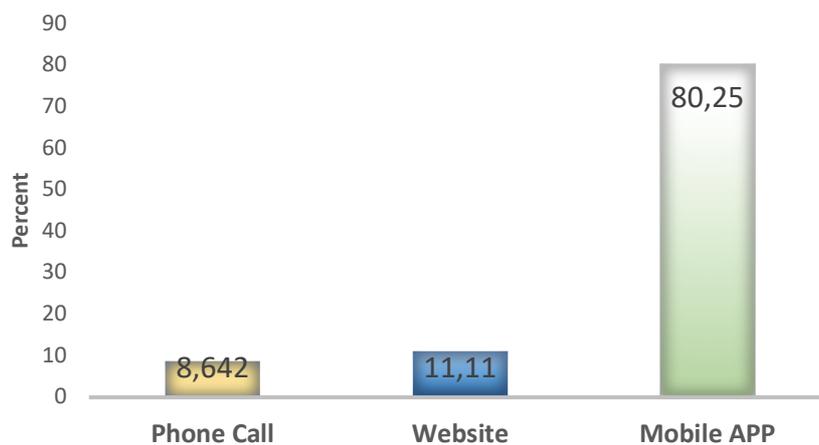
Figure 14. Sample's Instrument Preference for Food Ordering

Source: Computed by the researcher

Moreover, respondents were asked where they make a food order. More than half of the respondents make food orders when they are at home. 23% of them answered the question as a workplace; 15% of them as a friend's home and 2% of them as a campus (Figure 15).

Figure 15. Sample's Place for Food Ordering
Source: Computed by the researcher
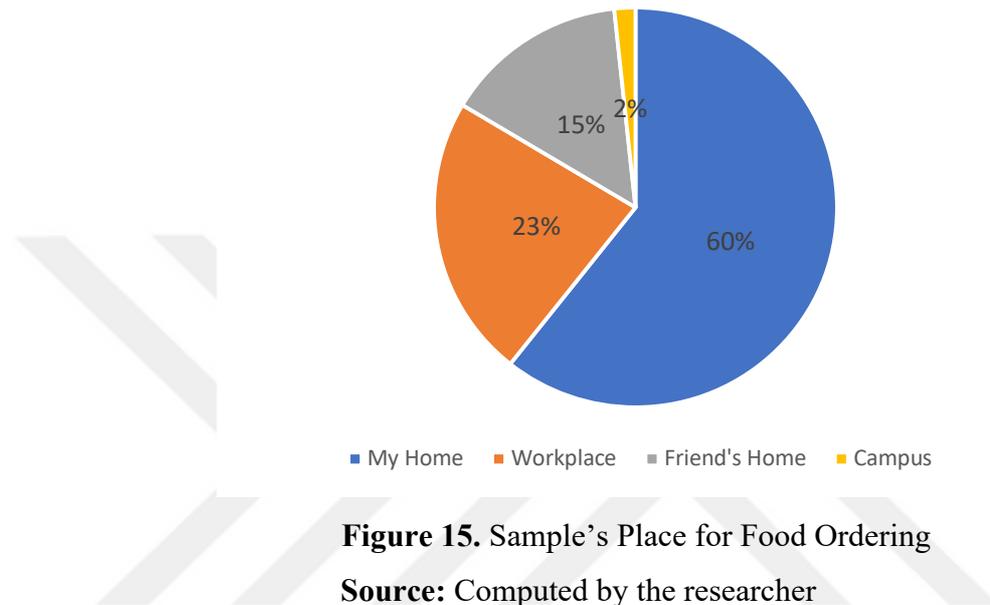
Food Matrix (Figure 9) shows that distinctive food applications are available to download and use. As it is stated before, this study focuses on applications which work as a third party and delivery foods for their users. Therefore, respondents were asked which mobile application they use more to order food. The observable outcome is that 93,83% of them use Yemeksepeti. GetirYemek is the second preferred application by 3,2%. Glovo and other applications are not prevalently used (Figure 16).
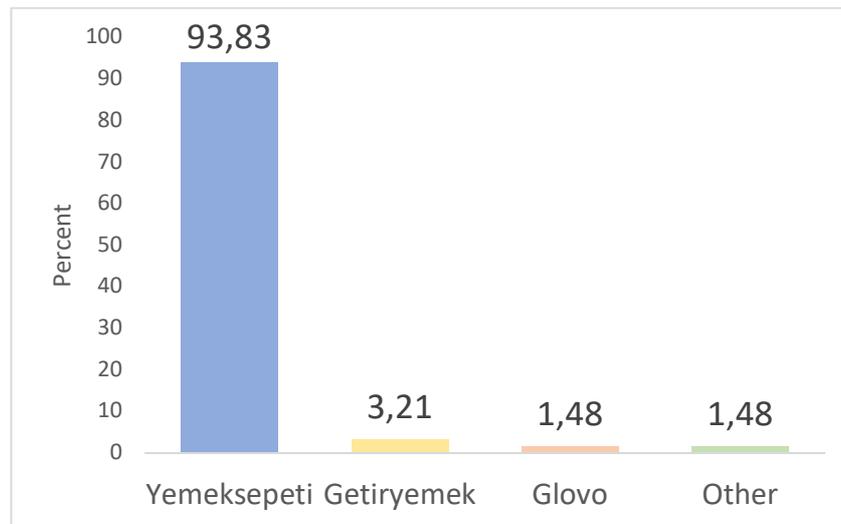
Figure 16. Sample's Mobile Food App Choices

Source: Computed by the researcher

The survey asked why respondents use food ordering application to understand their general opinions about food ordering applications. Figure 17 presents their reasons to use MFOApps. The main three reasons are important because more than half of the respondents state them as reasons to use the applications. They are respectively easy to use, functionality, and fastness. Indeed, they prefer to make food orders via mobile applications because they consider that mobile applications are easier to use, functional, and faster. On the other hand, other reasons should not be ignored as their percentage, shown in Figure 17, are also critical. 48,1 % of respondents use the applications because the applications provide benefits for them whereas 40,5% of them use the application to get special offers (e.g. discount and gift). Other reasons affecting respondents' usage behaviors are reliability, positive customer comments about the apps, free of risk, high customer satisfaction, and friends' suggestions.
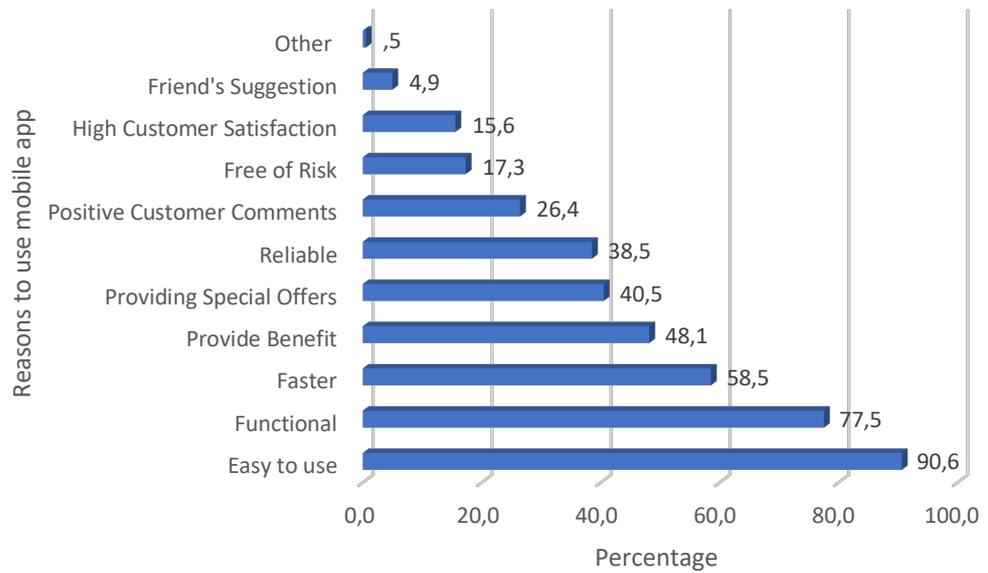
Figure 17. Reasons to Use MFOApps

Source: Computed by the researcher

3.2.3. Relationships Between Food Ordering Frequency, Gender and Home mate

Chi-Square Independent test was conducted to understand whether there are relationships between usage frequency of food ordering and living alone or with someone by taking gender into consideration. Since one respondent answered gender question as "not stated", Chi-Square Test was conducted with 404 participants. As Table 8 indicates findings, the frequency of food ordering has a relationship with gender and whether they live alone. Since less than 20% of the expected frequencies count less than 5, Pearson Chi-Square is used ($p<0,01$) (Morgan et al., 2004).

Table 8
The Outcome of the Chi-Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	19.696[a]	9	0,020
Likelihood Ratio	15,981	9	0,067
Linear-by-Linear Association	0,179	1	0,673
N of Valid Cases	404		

Source: Computed by the researcher

a. 2 cells (12.5%) have expected count less than 5. The minimum expected count is 2.15.

As a result of the Chi-Square Test, males who live alone make a food order more frequently compared to others. To exemplify, males living alone order food almost always are 24,1% whereas females living alone make a food order almost always are 12,9%. Besides, 34,5 % of males living alone prefer to order food to a considerable degree. Hence, more than half of them order food more frequently (Figure 18).
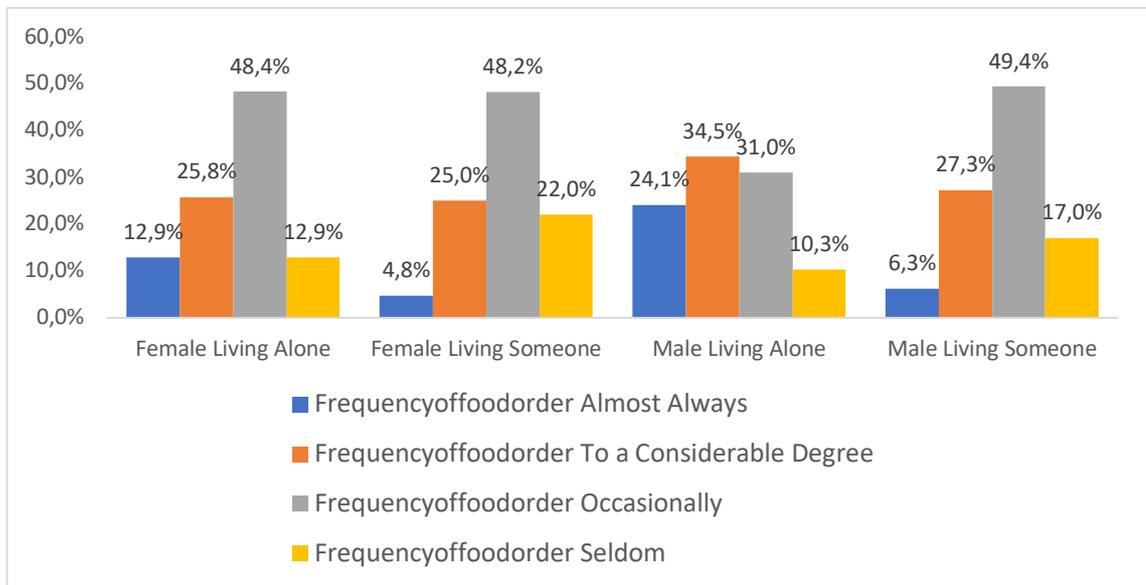
Figure 18. The Relationships Between Food Ordering Frequency, Gender and Home Mate

Source: Computed by the researcher

3.3. NORMAL DISTRIBUTION TEST

Before conducting analysis, a Normal Distribution Test is done to understand whether the dependent variables are normally distributed.

The acceptable value range for Kurtosis and Skewness is between -1,5 and 1,5 (Tabacknick & Fidell, 2013) According to output, the dependent variables are normally distributed because the values of Skewness and Kurtosis for all dependent variables are between +1,5 and -1,5. Even though the Kurtosis value of App Usage is 1,523, it is also acceptable. First, the Skewness value is -1,436. Secondly, George & Mallery (2010) signified that a Kurtosis value between +2 and -2 can be acceptable in many cases (Table 9). In addtion, if VIF values are less than 10, the data is free of Multicollinearity problem. Appendix 8 indicates that the values are less than 10 (NgugiNkuru, 2015). Hence, the data was normally distributed.

Table 9
Findings of the Normal Distribution Test

VARIABLE	VALUE	STATISTIC	STD. ERROR
APP SATISFACTION	Skewness	-1,258	0,121
	Kurtosis	1,367	0,242
MOBILE APP USAGE	Skewness	-1,436	0,121
	Kurtosis	1,523	0,242
BRAND SATISFACTION	Skewness	-0,895	0,121
	Kurtosis	0,492	0,242
BRAND LOYALTY	Skewness	-1,178	0,121
	Kurtosis	1,355	0,242
NEGATIVE REACTION	Skewness	-1,339	0,121
	Kurtosis	1,486	0,242

Source: Computed by the researcher

3.4. DATA ANALYSIS OF THE CONSTRUCTS

As the conceptual model indicates, there are five different variables. Before conducting the structural model, construct reliability and validity were analyzed.

The findings of Factor Analysis indicate that Cronbach's Alpha and Composite Reliability (CR) values of the constructs are more than 0,70 as it is suggested (Cohen, 1988). In addition, As Hair et al. (2014a) suggested that Average Variance Extracted (AVE) value should exceed 0,50 and all constructs have more than 0,50 AVE values. The reliability and validity values are indicated in Table 10.

Table 10
Reliability and Validity of Reflective Constructs

Latent Constructs	Cronbach's Alpha	CR	AVE
APP Satisfaction	0,957	0,967	0,854
Brand Loyalty	0,916	0,947	0,856
Brand Satisfaction	0,954	0,964	0,844
Mobile Application Usage	0,936	0,959	0,887
Negative Reaction	0,880	0,925	0,805

Source: Computed by the researcher

The discriminant validity was estimated by using the Fornell-Larcker criterion as shown in Table 11. The discriminant validity was established because the numbers with a star in the diagonal line are the square-root of AVE and they are more than then estimated correlation values (Hair et al., 2014b). Furthermore, AVE values are more than 0,5 as it is stated above.

Table 11
Discriminant Validity of The Constructs

Latent Constructs	1.	2.	3.	4.	5.
1.APP SATISFACTION	0,924*				
2.Brand Loyalty	0,859	0,925*			
3.Brand Satisfaction	0,895	0,852	0,919*		
4.Mobile Application Usage	0,873	0,768	0,773	0,942*	
5.Negative Reaction	0,651	0,682	0,634	0,597	0,897*

Source: Computed by the researcher

*The square-root of AVE

The outcome indicates that all the factor loadings exceed 0,707, which is suggested for factor loadings (Benitez et al., 2020). As it is presented in Table 12, factor loadings of all variables exceeded a critical point 0,707. Therefore, all the factor loadings were acceptable.

Table 12
Factor Loadings of Variables

Variable	Item	Content description	Factor Loading
MOBILE APP USAGE	AppUse1	I prefer to make my food orders from mobile application.	0,924
	AppUse2	I typically use food ordering application.	0,940
	AppUse3	I use mobile application for my food orders.	0,960
APP SATISFACTION	AppSat1	Mobile food ordering application fulfills my needs.	0,904
	AppSat2	Food ordering application that I have used has high value.	0,912
	AppSat3	Food ordering application fulfills my expectations.	0,953
	AppSat4	I like using food ordering application.	0,911
	AppSat5	Generally, I satisfy from food ordering application.	0,938

BRAND SATISFACTION	BrandSat1	Food brands found at the application fulfill my needs.	0,880
	BrandSat2	I like food brands found at the application.	0,942
	BrandSat3	Food brands found at the application fulfill my expectations.	0,951
	BrandSat4	Food brands found at the application have high value.	0,895
	BrandSat5	Generally, I satisfy from food brands I have made order from.	0,925
BRAND LOYALTY	BLoyalty1	I intend to continue to make order from food brand that I made order from.	0,945
	BLoyalty2	I strongly suggest food brands found at the application others.	0,901
	BLoyalty3	I expect I will make food order from food brand in the future.	0,929
NEGATIVE REACTION	NReaction1	Given that mobile application did not satisfy my expectations, I predict that I would not use them.	0,880
	NReaction2	I delete mobile food application unless I am satisfied from the application.	0,892
	NReaction3	Given that mobile application did not satisfy my need, I predict that I would not use them.	0,919

Source: Computed by the researcher

3.5. ANALYSIS OF THE STRUCTURAL MODEL

The structural model was conducted through PLS-PM. As the results are represented in Table 13, Beta values are positive and p-values are significant.

Table 13
Hypothesis Assessment

#	*Hypothesized path*	*β-value*	*t-value*	*p-value*	*Decision*
H1	Mobile App Usage ➡ App Satisfaction	0,873	53,015	0,000	**supported****
H2	App Satisfaction ➡ Brand Satisfaction	0,895	57,906	0,000	**supported****

61

H3	App Satisfaction ➡ Brand Loyalty.	0,488	6,002	0,000	**supported****
H4	Brand Satisfaction➡Brand Loyalty.	0,415	5,232	0,000	**supported****
H5	App Satisfaction ➡ Negative Reaction.	0,244	2,890	0,003	**supported***
H6	Brand Loyalty ➡ Negative Reaction.	0,473	5,895	0,000	**supported****

Source: Computed by the researcher

*p<0,01

**p<0,001

3.6. THE MODEL'S GOODNESS OF FIT

In order to assess model fit in PLS-PM, a Standardized Root Mean Square Residual (SRMR) and discrepancy values should be estimated. If the SRMR value is smaller than 0,080 and discrepancy values are smaller than 0,95, the model can be acceptable (Benitez et al., 2020). Besides, NFI value is between 0 and 1, and if the value is closer to 1, it is a better fit. As long as the Normed Fit Index (NFI) value is more than 0,90, the model fit is acceptable (Model Fit, n.d.). In this framework, the model is accepted because all these values are valid as Table 14 indicates the results.

Table 14
Model Fit Results

CRITERION	ESTIMATED MODEL
SRMR	0.043
D_G	0.401
D_ULS	0.359
NFI	0.903

Source: Computed by the researcher

R Square is assessed as it used to evaluate the goodness of fit in regression analysis (Wooldridge, 2013; Benitez et al., 2020). The R Squares would be expected as high as long as phenomena are already grasped well. However, if phenomena are less understood, the lower R Square can be acceptable (Benitez et al., 2020). Table 15 indicates the R Squared values of this study. They are satisfactory.

Table 15
Evaluation of R Square

Variable	R Square
APP Satisfaction	0.761
Brand Loyalty	0.773
Brand Satisfaction	0.802
Negative Reaction	0.482

Source: Computed by the researcher

As a result of PLS-PM, the conceptual model is accepted with supported hypotheses. Appendix 9 demonstrates the path analysis of the model.

3.7. CLUSTER ANALYSIS BASED ON RESPONDENTS' USAGE BEHAVIOUR

The reason for conducting cluster analysis is to make segmentation in the sample based on respondents' similarities. The segmentation was made according to user behaviour and demographic characteristics. The two-step method was used as it is preferred when three or more variables are involved in the analysis (Satish & Bharadhwaj, 2010). In fact, the cluster analysis for the study includes four variables which are app usage, gender & home mate, preferences for food order platform, and frequency of ordering food.

As a result of the two-step method, ten clusters are determined (Table 16). The clusters are chosen according to the Bayesian Criterion (BIC). Smaller BIC value is preferred to have a better fit for a model (Symonds & Moussalli, 2011; Jakaitiene, 2019). In this study, the smaller BIC value indicates a better cluster solution. Moreover, the

values of the Ratio of BIC changes and the Ratio of Distance Measures should be high to have a good cluster solution (Trpkova & Tevdovski, 2009).

Table 16
Cluster Profiles and App Usage

Cluster	Cluster Size	App Usage Mean	App Usage Std. Dev.
1	39	3,2821	1,16864
2	41	3,4309	1,08332
3	44	3,8561	,82718
4	45	4,5481	,59525
5	62	4,5430	,45662
6	19	1,3509	,47757
7	63	4,4497	,61393
8	38	4,7368	,45294
9	34	4,7549	,42091
10	19	4,7544	,45599
Combined	39	4,1155	1,06702

Source: Computed by the researcher

- **Cluster 1:** The cluster comprises of mostly females living with someone. Their app usage level is moderate. They rarely make food orders by using dominantly websites and also phone calls.

- **Cluster 2**: The dominant respondents are male living with someone. The level of app usage is moderate. They prefer to use mostly websites and also phone calls for their food orders. Their frequency of food ordering is occasional.

- **Cluster 3**: Females living someone make food orders rarely by using mobile applications. Their level of app usage is good.

- **Cluster 4**: The respondents living alone, dominantly males, use food applications significantly and occasionally.

- **Cluster 5**: Females living with someone prefer to use mobile applications for their food orders. The frequency that they make food orders is occasional. They use food applications significantly.

- **Cluster 6**: Males living with someone use mobile applications for their food orders. Their ordering frequency is occasional. However, their app usage level is low.

- **Cluster 7**: Males living with someone occasionally make food orders via mobile applications. Their app usage level is significant.

- **Cluster 8**: The dominant gender is male living with someone. Their app usage is quite significant, and they make food orders to a considerable degree via mobile applications.

- **Cluster 9**: Females with someone use mobile applications for their food orders. They make a food order to a considerable degree and their app usage level is quite significant.

- **Cluster 10**: Males living with someone make almost always food orders via mobile applications. Their app usage level is significantly high.

4.   DISCUSSION

This research was conducted to examine the relationship between mobile applications and food marketing. The Technology Acceptance Model was used as a starting point for the conceptual model because TAM was developed to understand user intention towards information technologies (Davis, 1989; Bigne et al., 2007). Particularly, this study tried to explain the role of mobile food applications in food marketing by using TAM. Antecedent variables and consequent variables were added to the Technology Acceptance Model by taking food marketing into account. Antecedent variables were separated into two as "Mobile Quality Dimensions" and "External Variables". These variables and original TAM variables (Venkatesh & Davis, 1996) which are perceived usefulness, perceived ease of use, behavioral intention, and usage were proposed as their effects have been already proved in past studies. The details of the propositions are presents in Table 3.

In order to understand the influence of mobile food application usage in food marketing, hypotheses (Table 4) were tested. Figure 9 presents that different food mobile applications are available to use. They were segmented into four categories according to their business model. This study focused on food ordering applications which are delivery oriented and third parties. In this framework, the survey was conducted with 405 respondents to analyze hypotheses.

First of all, the sample's demographic characteristic and their mobile application usage habits were understood. Since the study focused on food ordering applications, who makes food orders more is critical. Chi-square test was conducted, and the findings presented that food ordering frequency has a relationship with gender and whether they live alone ($p < 0,01$). Males who live alone make a food order more frequently compared to others.

The conceptual model has five constructs including mobile app usage, app satisfaction, brand satisfaction, brand loyalty, and negative reaction. The relationships between themselves were conducted by using the partial least squares path modelling via SMART-PLS.

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4.1. MOBILE APPLICATION USAGE

Usage Behaviour is one of the main variables in TAM (Davis, 2986). It was placed in the Technology Acceptance Models as a last variable in the literature. That is to say, it has been a consequence. However, usage is both consequent and antecedent in this study. One of the propositions is that "Behavior intention influences mobile application usage.". In this case, usage is a result. On the other hand, the first hypothesis is stated as "Mobile application usage ends up with application satisfaction.". Hence, mobile app usage is also an antecedent.

Mobile app usage questions were collected as a factor, and it has high reliability and validity values. Cronbach's Alpha, CR and AVE values are 0,936; 0,959; 0,887 respectively. In order to understand respondent' mobile app usage, three questions were asked which are "I prefer to make my food orders from mobile application."; "I typically use food ordering application."; "I use mobile application for my food orders.". The mean values are respectively 4,14; 4,08; 4,12. In other terms, participants mostly chose to agree and strongly agree with these questions. To sum up, it can be accepted that they prefer to use MFOApps.

4.2. APPLICATION SATISFACTION

Before people use mobile apps, they have certain expectations. Mobile application satisfaction depends on these expectations. In other words, application satisfaction is users' pleasure or disappointment. Users compare their application expectations with the perceived value based on what they really obtained, which ends in satisfaction or dissatisfaction (Kotler, 2000; Chang et al., 2009). By taking previous studies into account, the statement "Mobile application usage end ups with application satisfaction" has been hypothesized.

The survey has five different satisfaction questions to determine participants' app satisfaction. These questions constitute one factor as "App Satisfaction". The findings present that the factor is reliable and valid since the values of Cronbach's Alpha, CR, and AVE are 0,957; 0,967; 0,854 respectively.

As a result of the hypothesis analysis, mobile app usage lead to app satisfaction because the beta value is positive with 0,873, and the p-value is significant ($p < 0,001$). Therefore, the hypothesis is highly supported.

4.3. BRAND SATISFACTION

As Figure 9 presents that food ordering applications (e.g. Yemeksepeti, Getiryemek, and Glovo) are the intermediary between food brands and consumers. Thus, these applications have different food brands on the systems. As much as the users have application expectations, they have also expectations from food brands from which they make food orders. Moreover, they evaluate the service depending on their satisfaction after they apply the food app and get the food order (Zhao et al., 2012; Özer et al., 2013). Therefore, the statement is hypothesized; "Application satisfaction leads to brand satisfaction.".

The five questions about brand satisfaction were asked to the sample group. For the analysis, they were collected as a factor. The reliability and validity analysis proved that the factor is reliable and valid as the values of Cronbach's Alpha (0,954), CR (0,964), and AVE (0,844) are more than 0,70.

The findings show that application satisfaction has a positive relationship with brand satisfaction. Beta value is positive (0,895) and p-value is significant ($p<0,001$). Thus, the second hypothesis of the study is highly supported.

4.4. BRAND LOYALTY

The literature shows that customer loyalty is related to the level of satisfaction. As long as customers have high satisfaction, they will become loyal and tend to re-purchasing (Lambin et al., 2007). This study takes the relationship between loyalty and satisfaction and hypothesizes that "Application satisfaction leads to brand loyalty." As H3, and "Brand satisfaction leads to brand loyalty." as H4.

In order to analyze the sample's perceptions about brand loyalty, three questions were asked. The factor "Brand Loyalty" was generated by combining these three questions. The factor's reliability and validity values indicated that brand loyalty is reliable and valid as a factor. Cronbach's Alpha is 0,916; CR is 0,947; AVE is 0,856.

The third and fourth hypotheses of the study were highly supported by the analysis. The results demonstrate that application satisfaction has an influence on brand loyalty and brand satisfaction affects brand loyalty. H3 has 0,488 beta value while H4 has 0,415 beta value. Both of them has significant p-value ($p<0,001$).

4.5. NEGATIVE REACTION

The mobile applications are commonly downloaded and applied. Nevertheless, users may not use them for a long time. One study implied that they may give up using the application if the applications do not perform as they expected. (Inukollu et al., 2014). On the other hand, another research proved that they can maintain usage behavior even though they have negative experiences (Bendapudi & Berry, 1997; Picon et al., 2014). Therefore, this research hypothesized that "There is a positive relationship between application satisfaction and negative reaction." as H5, and "Brand loyalty is positively related to negative reactions." as H6.

The negative reaction of the sample was analyzed by asking three questions in the survey. Then it was created as a factor. The values of Cronbach's Alpha, CR and AVE are 0,880; 0,925; 0,805 respectively.

The beta value of H5 is 0,244 while H6's beta value is 0,473. The p-values are significant. Therefore, H5 is supported ($p < 0,01$) and H6 is highly supported ($p < 0,001$).

Consequently, application satisfaction and brand loyalty are important for the negative feelings of the users. If the users have high application satisfaction and brand loyalty, they will prefer to use MFOApps for their food orders. Nonetheless, they will react negatively, if they have a low satisfaction level.

To sum up, the model is accepted because model fit values are acceptable (SRMR:0,043 ; D_G:0,401 ; D_ULS:0,359 ; NFI:0,903).

Finally, cluster analysis was conducted to understand the differences between respondents in terms of usage behaviour. There are 10 clusters. The clusters indicate that respondents who frequently make food orders tend to use mobile applications for their food orders. Moreover, males have more tendency to make food orders either they live alone or with someone.

5.   CONCLUSION

The study was conducted to show how mobile food applications influence on food marketing. Indeed, the main purpose of the research is to understand the outcomes of mobile food app usage in terms of marketing in the food & beverage industry.

The usage of new Informational Technologies has been drawn of considerable interest (Bigne et al., 2007). In this framework, mobile applications become prominent. Mobile technologies and services provide notable opportunities for business life. Mobile devices have been powered with mobile applications because they offer different services, flexibility, mobility, and efficiency for the users (Rao & Troshani, 2007). Hence, the influences of mobile applications on the food service industry were analysed. In order to conduct this analysis, the Technology Acceptance Model (TAM) was taken as the main idea. In literature, TAM presents why people use information systems and new technologies. It also explains the factors which inspire people to use them. In accordance with the previous research, these factors are proposed. In other words, the main components of TAM are perceived ease of use, perceived usefulness and, behavioral intention. The fact that they lead to usage behavior. In addition to them, external variables and mobile quality dimensions have a role in the acceptance of mobile applications.

This study implies that the food service industry can take advantages of mobile food applications because the usage of mobile food applications may end up brand satisfaction and brand loyalty.

The survey was conducted and findings were analyzed to test conceptual model. The model was accepted. Consequently, mobile food application usage ends in application satisfaction. If they are satisfied with the application, they can be satisfied with food brands from which they already have made food orders. As long as they have food brand satisfaction, they show loyalty towards food brands. However, users can react negatively (e.g. deleting the application) unless they are not satisfied from the app and do not have brand loyalty.

5.1. ACADEMIC IMPLICATIONS

The studies about the technology, mobile application, and the Technology Acceptance Model have conducted in different areas. On the other hand, food marketing

studies have mostly focused on the fast food industry. Therefore, the common subjects in food marketing are obesity and marketing fast food products to children. Nonetheless, food marketing involves whole the food industry, it is not only about fast food. This study combined the technology and mobile application by using TAM. Earlier studies proved how food mobile apps are commonly used. However, it was not clear whether mobile apps assist food companies in terms of marketing. In this case, food companies include all restaurant types, not only fast food. The research shows that food companies can market their brands and create loyalty via mobile food applications.

5.2. MANAGERIAL IMPLICATIONS

New mobile services provide companies with a new way to serve better their customers (Slau, 2003). This study developed the Mobile Food Applications Matrix based on business models of different food applications. In the simplest term, mobile app the technology offers new business opportunities for food brands. Food and beverage companies can develop their own applications (e.g. Starbucks app). It can be a loyalty app or a sales channel. On the other hand, food and beverage companies may take place in different food apps such as Yemeksepeti or Getiryemek. Since applications have different business models, they provide different opportunities for the companies. For instance, a food brand will take food orders if it is a member of Yemeksepeti or Getiryemek. However, it is responsible for delivering the stage if it is a member of Yemeksepeti. Getiryemek provides a delivery service for the brands as well. Another opportunity for the food brands, applications like Zomato offer information to the users. Therefore, food companies have a chance to market their brands by taking place in those applications.

The results of the study present that food brands can create brand satisfaction and loyalty by using mobile food applications in their business. Based on the consequences of this study, the companies in the food service industry should highlight their marketing strategies.

5.3. RESEARCH LIMITATIONS

This study has some limitations in terms of different aspects. Firstly, the research focused on food ordering applications in the survey part, yet particular food applications

are available to use. Secondly, the sampling method is another limitation. Also, the sample is mainly from İstanbul. Hence, the findings should be evaluated with caution. Moreover, the study focused on only users of mobile apps. However, food brands' experiences and practices about mobile applications were not examined in detail.

5.4. FURTHER RESEARCH DIRECTIONS

Further research is needed to extend food marketing studies. Especially, Mobile Food Application Matrix (Figure 9) should be examined in more detail. The different business models shown in the matrix will be analysed. Since this study took food ordering applications into account, future studies may be conducted about other food app categories. In addition, this study shows application satisfaction affects brand satisfaction and brand loyalty. Indeed, food and beverage companies have a risk in the case of dissatisfaction of application. Thus, the negative effects also should be studied. Another further research should be about clusters. In addition to food ordering apps, which food applications clusters use ought to be analysed. Furthermore, further research may extend this study by conducting research with food and beverage brands. The relationships between food brands with application companies should be researched.

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APPENDIX 1- Countries with the Highest Number of Internet Users as of March 2019
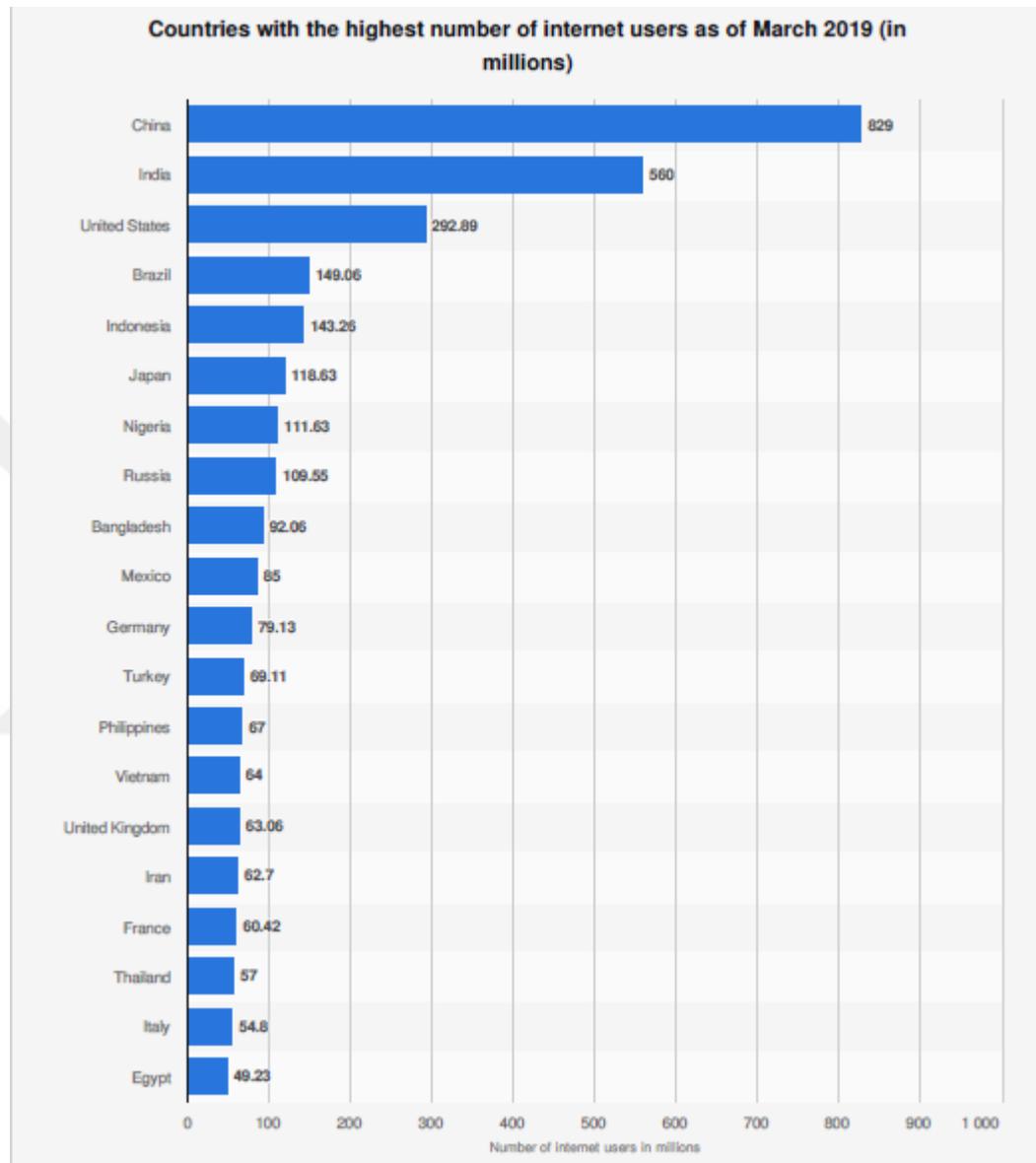
Countries with the highest number of internet users as of March 2019 (in millions)

Country	Number of internet users in millions
China	829
India	560
United States	292.89
Brazil	149.06
Indonesia	143.26
Japan	118.63
Nigeria	111.63
Russia	109.55
Bangladesh	92.06
Mexico	85
Germany	79.13
Turkey	69.11
Philippines	67
Vietnam	64
United Kingdom	63.06
Iran	62.7
France	60.42
Thailand	57
Italy	54.8
Egypt	49.23

Source: Clement, J. (2019b, 08 09). *Countries with the highest number of internet users as March 2019*. Retrieved 10 14, 2019, from Statista: https://www.statista.com/statistics/262966/number-of-internet-users-in-selected-countries/

84

APPENDIX 2- Number of Mobile App Downloads Worldwide From 2016 to 2019 (in billions)
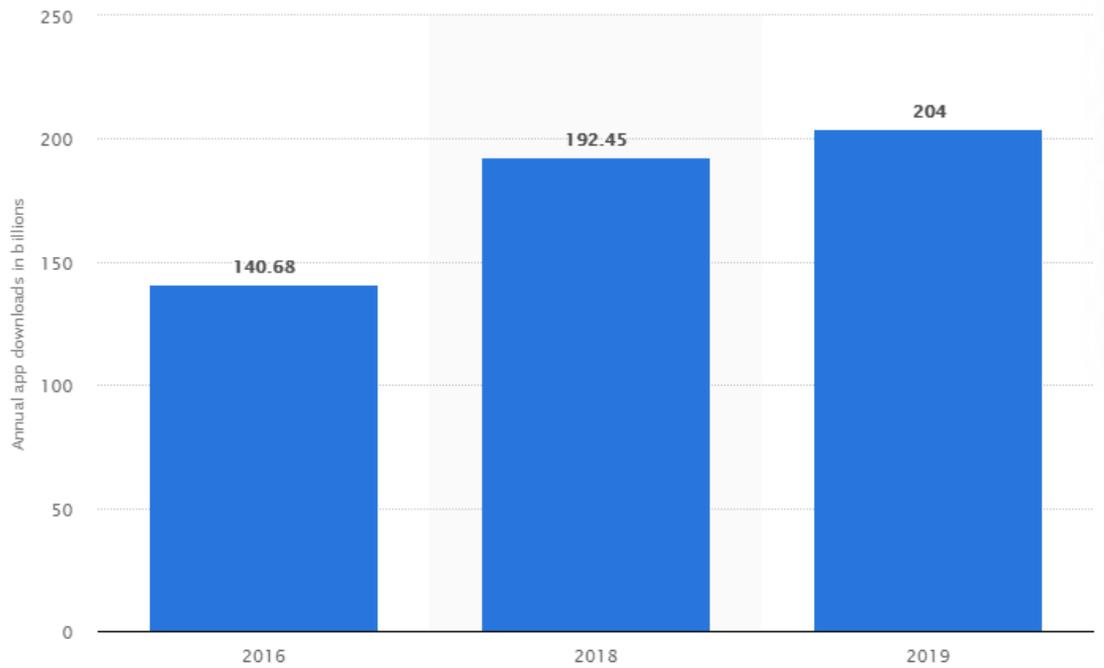
Source: Clement, J. (2020, January 17). *Annual number of global mobile app downloads 2016-2019*. Retrieved 2020, from Statista: https://www.statista.com/statistics/271644/worldwide-free-and-paid-mobile-app-store-downloads/

APPENDIX 3- Most Popular Apple App Store Categories

Most popular Apple App Store categories in May 2019, by share of available apps

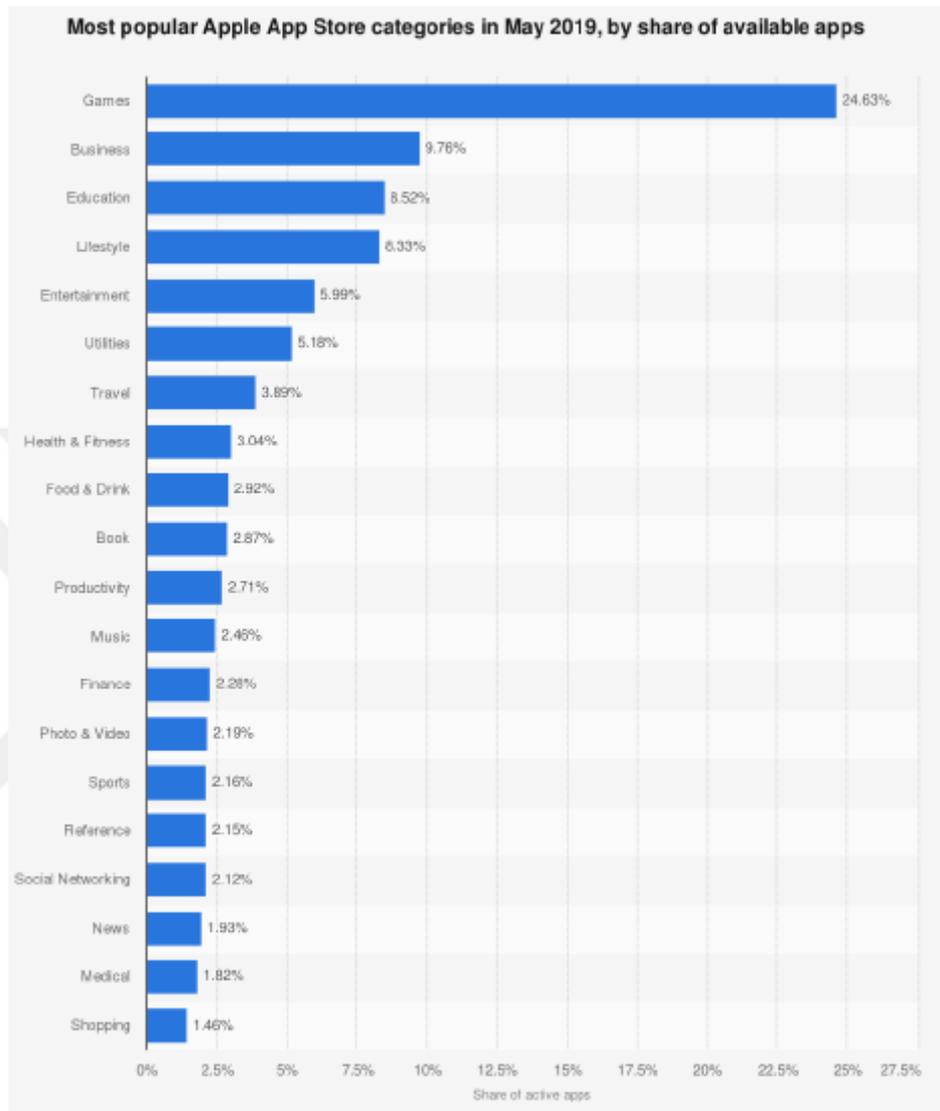| Category	Share
Games	24.63%
Business	9.76%
Education	8.52%
Lifestyle	6.33%
Entertainment	5.99%
Utilities	5.18%
Travel	3.89%
Health & Fitness	3.04%
Food & Drink	2.92%
Book	2.87%
Productivity	2.71%
Music	2.46%
Finance	2.28%
Photo & Video	2.19%
Sports	2.16%
Reference	2.15%
Social Networking	2.12%
News	1.93%
Medical	1.82%
Shopping	1.46%

Share of active apps

Source: Clement, J. (2019c, 05 07). *Apple: most popular app store categories 2019*. Retrieved 09 2019, from Statista: https://www.statista.com/statistics/270291/popular-categories-in-the-app-store/

APPENDIX 4 - Survey of DINESERV

The "DINESERV.per" Interview

Introduce yourself, say that you're trying to measure the quality of the service at your restaurant, since you're always trying to improve, and that this will take only about ten minutes. Ask if you may have their time and cooperation. If they agree, ask them to indicate their position on each of the 29 statements by assigning a number from seven (strongly agree) to one (strongly disagree). If their feeling is between those extremes, they should assign an intermediate number.

The restaurant...

(1)   ...has visually attractive parking areas and building exteriors.
(2)   ...has a visually attractive dining area.
(3)   ...has staff members who are clean, neat, and appropriately dressed.
(4)   ...has a decor in keeping with its image and price range.
(5)   ...has a menu that is easily readable.
(6)   ...has a visually attractive menu that reflects the restaurant's image.
(7)   ...has a dining area that is comfortable and easy to move around in.
(8)   ...has rest rooms that are thoroughly clean.
(9)   ...has dining areas that are thoroughly clean.
(10) ...has comfortable seats in the dining room.
(11) ...serves you in the time promised.
(12) ...quickly corrects anything that is wrong.
(13) ...is dependable and consistent.
(14) ...provides an accurate guest check.
(15) ...serves your food exactly as you ordered it.
(16) ...during busy times has employees shift to help each other maintain speed and quality of service.
(17) ...provides prompt and quick service.
(18) ...gives extra effort to handle your special requests.
(19) ...has employees who can answer your questions completely.
(20) ...makes you feel comfortable and confident in your dealings with them.
(21) ...has personnel who are both able and willing to give you information about menu items, their ingredients, and methods of preparation.
(22) ...makes you feel personally safe.
(23) ...has personnel who seem well-trained, competent, and experienced.
(24) ...seems to give employees support so that they can do their jobs well.
(25) ...has employees who are sensitive to your individual needs and wants, rather than always relying on policies and procedures.
(26) ...makes you feel special.
(27) ...anticipates your individual needs and wants.
(28) ...has employees who are sympathetic and reassuring if something is wrong.
(29) ...seems to have the customers' best interests at heart.

The first ten items are about tangibles; items 11-15, about reliability; items 16-18, about responsiveness; items 19-24, about assurance; and items 25-29, about empathy.

Source: Steven, P., Knutson, B., & Patton, M. (1995). DINESERV: A Tool for Measuring Service Quality in Restaurants. *Cornell Hotel and Restaurant Administration Quarterly, 36*(2), 56-60.

APPENDIX 5. Questionnaire in English

SURVEY

Dear Participant,

This questionnaire form is the statistical part of the thesis that I have been continuing for Production Management and Marketing Master at T.C. Marmara University. All information demanded from you will be kept strictly confidential and will only be used for academic study, and you do not need to provide your name / surname. We will investigate the effects of mobile applications on Food Marketing with the answers we receive from you. We kindly ask you to read and answer each question carefully in order to obtain sound scientific data and thank you very much for your participation and support.

PART I

1.   Do you have a smartphone?

o   Yes

o   No

     If your answer is no, please terminate the survey.

2.   Do you use mobile applications about food? (E.g. Epexegetic, Zomato, Starbucks, Starbucks, Migros Sanal Market)

o   Yes

o   No

If your answer is no, please terminate the survey.

3.   Why do you prefer to use food applications? You can select more than one.

o   Food Delivery Service

o   Looking for special offer

o   Searching Information

o   Sharing your experience

o   Purchasing food products

o   Other…………………………….

4.   How often do you make food orders?

o   Almost always

o   To a considerable degree

o   Occasionally

o   Seldom

5.   Which one do you use more in order to make food order?

o   Phone Call

o   Website

o   Mobile Application

o   Other………………………………………………

6.   Where do you make food order for? You can select more than one.

o   My Home

o   Workplace

o   Friend's Home

o   Campus

o   Other………………………………………………………

7.   Which mobile application do you use most to make food order?

o   Getiryemek

o   Glovo

o   Yemeksepeti

o   Diğer………………………………………………………

*Remember your answer for next questions.

PART II

There are various expressions in this part. Please state your agreement levels in the statements below by considering the food orders you have made from mobile application by placing a cross on the appropriate box.

		Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
8.	I prefer to make my food orders from mobile application.					
9.	Given that mobile application did not satisfy my expectations, I predict that I would not use them.					
10.	I typically use food ordering application.					
11.	I delete mobile food application unless I am satisfied from the application.					
12.	I use mobile application for my food orders.					
13.	Mobile food ordering application fulfills my needs.					
14.	Food brands found at the application fulfill my needs.					
15.	Food ordering application that I have used has high value.					
16.	Food ordering application fulfills my expectations.					
17.	I like using food ordering application.					
18.	Generally, I satisfy from food ordering application.					
19.	I like food brands found at the application.					
20.	Food brands found at the application fulfill my expectations.					
21.	Food brands found at the application have high value.					
22.	Generally, I satisfy from food brands I have made order from.					
23.	I intend to continue to make order from food brand that I made order from.					
24.	I strongly suggest food brand founds at the application others.					
25.	Given that mobile application did not satisfy my need, I predict that I would not use them.					

| 26. | I expect I will make food order from food brand in the future. | | | | | |

PART III

27. **Why do you prefer to use mobile food ordering application? You can select more than one.**

- o   Easy to use
- o   Provide Benefit
- o   Functional
- o   Faster
- o   Reliable
- o   Free of Risk
- o   Friend's Suggestion
- o   High Customer Satisfaction
- o   Positive Customer Comments
- o   Providing Special Offers
- o   Other…………………………………………...

28. **Please state your birth: ……….**

29. **Please state your gender**

- o   Female
- o   Male
- o   Not stated

30. **Please state your city**

- o   İstanbul
- o   İzmir
- o   Ankara
- o   Other………….

31. Please state your occupation (E.g. Student, Employee, Manager, Business etc.)

o Student

o Employee

o Manager

o Academician

o Other……………

32. Please mention your level of education

o School

o High School

o University (Student)

o Bachelor

o Master - PhD (Student)

o Master – PhD

33. Who do you live with?

o Alone

o Parents

o Spouse

o Friends

o Other:………………………………………………

34. Please state your average expense amount in a month

o 0-1000

o 1001-3000

o 3001-5000

o 5001-8000

o 8001-10000

o 10000+

Thank you for your participation ☺

ANKET

Değerli Katılımcı,

Bu anket formu T.C. Marmara Üniversitesi Sosyal Bilimler Enstitüsü İşletme Anabilim Dalı İngilizce Üretim Yönetimi ve Pazarlama Bilim Dalı'nda sürdürmekte olduğum yüksek lisans programı tez çalışmasının istatistiksel uygulama bölümüne aittir. Sizden alınacak tüm bilgiler tamamen gizli tutulacak ve sadece akademik çalışma için kullanılacak olup, adınızı/soyadınızı belirtmenize gerek yoktur. Sizlerden alacağımız cevaplar ile mobil uygulamaların Gıda Pazarlaması üzerine etkilerini araştıracağız. Sağlıklı bilimsel veriler elde edebilmek için her soruyu dikkatle okuyup cevaplandırmanızı rica eder, katılımınız ve desteğiniz için çok teşekkür ederiz.

BÖLÜM I

1. Akıllı cep telefonu kullanıyor musunuz?

o Evet

o Hayır

    Cevabınız hayırsa, anketi sonlandırınız.

2. Gıda ile ilgili mobil uygulamalar kullanıyor musunuz?

o Evet

o Hayır

Cevabınız hayırsa, anketi sonlandırınız.

3. Neden gıda ile ilgili mobil uygulamalar kullanıyorsunuz? Birden fazla seçenek seçebilirsiniz.

o Yemek Siparişi vermek için

o Kampanyalardan haberdar olmak için

o Bilgi edinmek için

o Deneyimlerimi paylaşmak için

o Gıda alışverişi yapmak için

o Diğer…………………………………………………………………

4. Hangi sıklıkla yemek siparişi veriyorsunuz?

o Neredeyse Her Zaman

o   Sıkça

o   Ara sıra

o   Nadiren

5.   Yemek siparişlerinizi vermek için en çok kullandığınız yöntem aşağıdakilerden hangisidir?

o   Telefon ile arama

o   Web sitesi

o   Mobil Uygulama

o   Diğer…………………………………………………………

6.   Genellikle yemek siparişlerinizi nereye söylüyorsunuz? Birden fazla seçenek seçebilirsiniz.

o   Evime

o   İş yerime

o   Arkadaşımın Evine

o   Kampüse

o   Diğer…………………………………………………………

7.   Yemek siparişi vermek için en çok hangi mobil uygulamaları kullanıyorsunuz?

o   Getiryemek

o   Glovo

o   Yemeksepeti

o   Diğer…………………………………………………………

*Anketin devamında cevaplayacağınız sorulara bu uygulamayı düşünerek cevap veriniz.

BÖLÜM II

Bu bölümde çeşitli ifadeler ve görüşler yer almaktadır. Lütfen aşağıdaki ifade ve görüş cümlelerine mobil uygulama üzerinden verdiğiniz yemek siparişlerini düşünerek katılma derecenizi uygun kutuya çarpı işareti koyarak belirtiniz.

		Kesinlikle katılmıyorum	Katılmıyorum	Ne Katılıyorum ne katılmıyorum	Katılıyorum	Kesinlikle katılıyorum
8.	Yemek siparişlerimi mobil uygulamadan vermeyi tercih ediyorum.					
9.	Eğer uygulama beklentilerimi karşılamazsa, uygulamayı kullanmayacağımı düşünüyorum.					
10.	Genellikle yemek sipariş uygulamasını kullanırım.					
11.	Eğer uygulamadan memnun kalmazsam, telefonumdan silerim.					
12.	Yemek siparişlerim için mobil uygulamayı kullanırım.					
13.	Mobil yemek sipariş uygulaması ihtiyaçlarımı karşılıyor.					
14.	Uygulamada bulunan yemek markaları ihtiyaçlarımı karşılıyor.					
15.	Kullandığım yemek sipariş uygulaması yüksek kalitelidir.					
16.	Yemek sipariş uygulaması beklentilerimi karşılıyor.					
17.	Yemek sipariş uygulamasını kullanmayı seviyorum.					
18.	Genel olarak yemek sipariş uygulamasından memnunum.					
19.	Uygulamada bulunan yemek markalarını seviyorum.					
20.	Uygulamada bulunan yemek markaları beklentilerimi karışılıyor.					
21.	Uygulamadan bulunan yemek markaları yüksek kalitelidir.					
22.	Genellikle sipariş verdiğim yemek markalarından memnun kalıyorum.					
23.	Önceden sipariş verdiğim markalardan sipariş vermeye devam edeceğim.					
24.	Kesinlikle sipariş verdiğim yemek markalarını başkalarına tavsiye ederim.					
25.	Eğer uygulama ihtiyaçlarımı karşılamazsa, uygulamayı kullanmayacağımı düşünüyorum.					

26.	Sipariş vermediğim markalardan gelecekte de sipariş vermeyi düşünüyorum.					

BÖLÜM III

27. Neden mobil yemek sipariş uygulamasını kullanmayı tercih ediyorsunuz? Birden fazla seçenek seçebilirsiniz.

- o Kullanımı Kolay
- o Yarar Sağlıyor
- o Pratik / İşlevsel
- o Daha Hızlı
- o Güvenilir
- o Tehlikesiz
- o Arkadaş Önerisi
- o Yüksek Müşteri Memnuniyeti
- o Olumlu Müşteri Yorumları
- o Promosyon Avantajları
- o Diğer……………………………………………………………

28. Lütfen yaşınızı belirtiniz: …….

29. Lütfen cinsiyetinizi belirtiniz

- o Kadın
- o Erkek
- o Belirtmek İstemiyorum

30. Lütfen yaşadığınız ili belirtiniz:

- o İstanbul
- o İzmir
- o Ankara
- o Diğer……….

31. Lütfen işinizi belirtiniz (Öğrenci, Çalışan, Yönetici, Öğretmen vb.):

o   Öğrenci

o   Çalışan

o   Yönetici

o   Akademisten

o   Diğer

32. Eğitim düzeyiniz:

o   İlköğretim

o   Lise

o   Üniversite (Devam Ediyor)

o   Üniversite

o   Yüksek lisans - Doktora (Devam Ediyor)
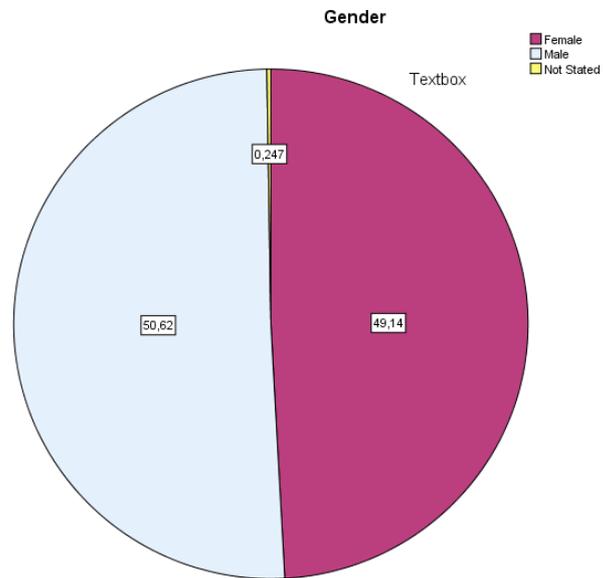
o   Yüksek lisans – Doktora

33. Kiminle yaşıyorsunuz?

o   Yalnız

o   Ailemle (Ebeveyn)

o   Eşimle

o   Arkadaşlarımla

o   Diğer:………………………………………

34. Lütfen bir aylık ortalama bireysel harcamanızı TL olarak belirtiniz:

o   0-1000

o   1001-3000

o   3001-5000

o   5001-8000

o   8001-10000

o   10000+

Katılımınız için Teşekkür Ederiz ☺

APPENDIX 7. Sample's Demographic Characteristics

APP 7.1. Distribution of Sample's Gender in Percentages

Source: Computed by the researcher

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	199	49,1	49,1	49,1
	Male	205	50,6	50,6	99,8
	Not Stated	1	,2	,2	100,0
	Total	405	100,0	100,0	

APP 7.2 Distribution of Sample's Gender

Source: Computed by the researcher
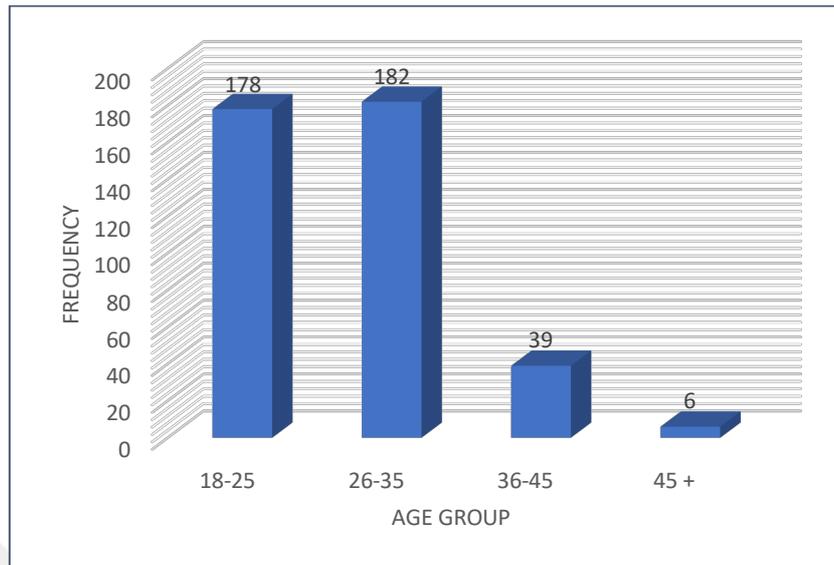
APP 7.3. Distribution of Age Groups

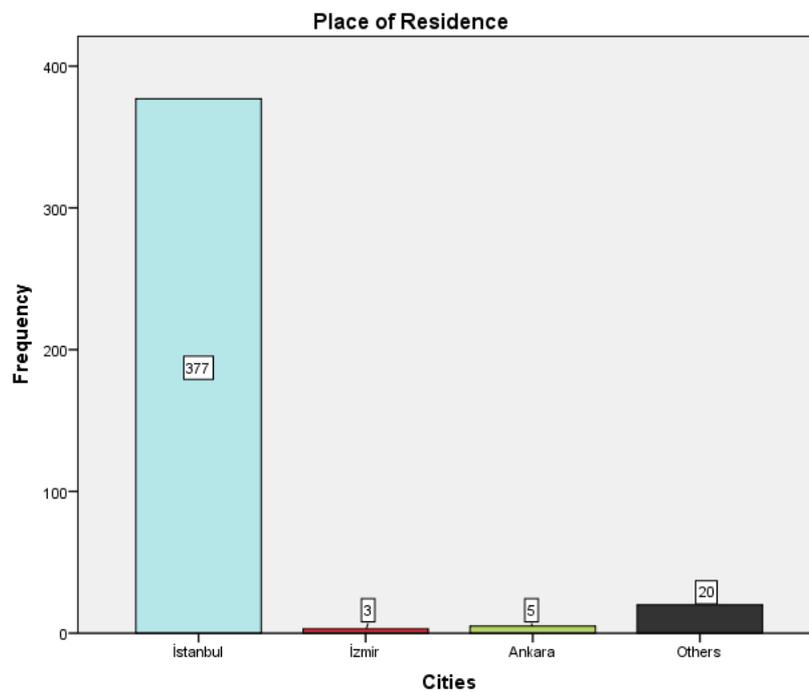**Source:** Computed by the researcher
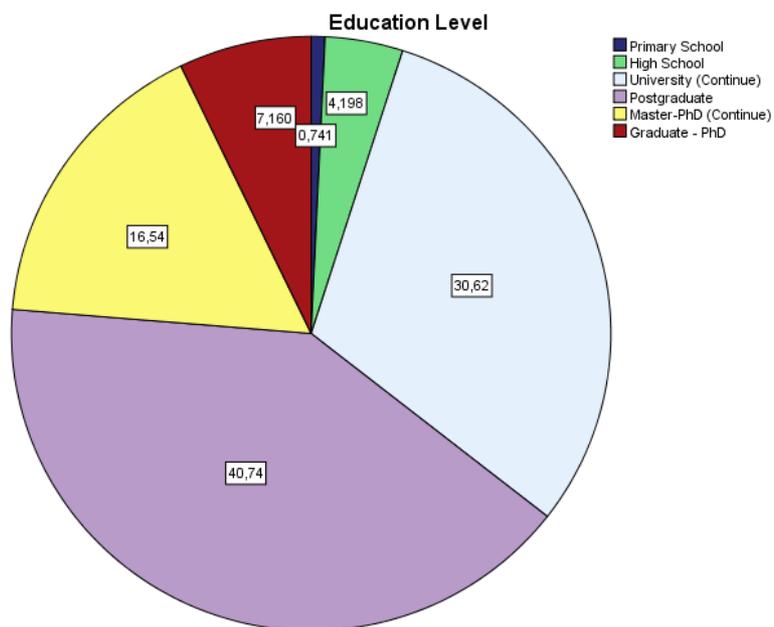
APP 7.4. Distribution of Education Level
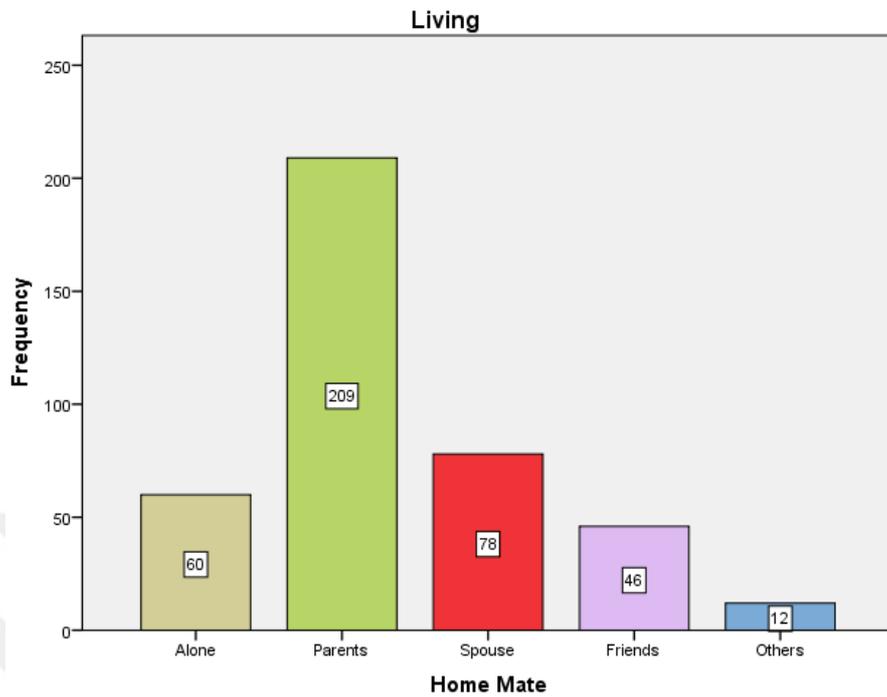
Source: Computed by the researcher
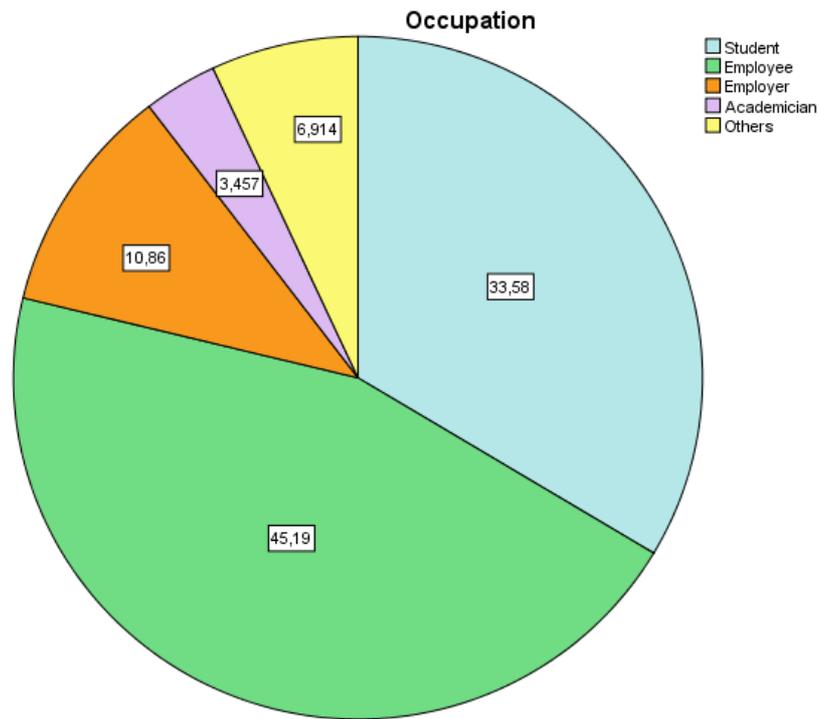
APP 7.5. Distribution of Occupation
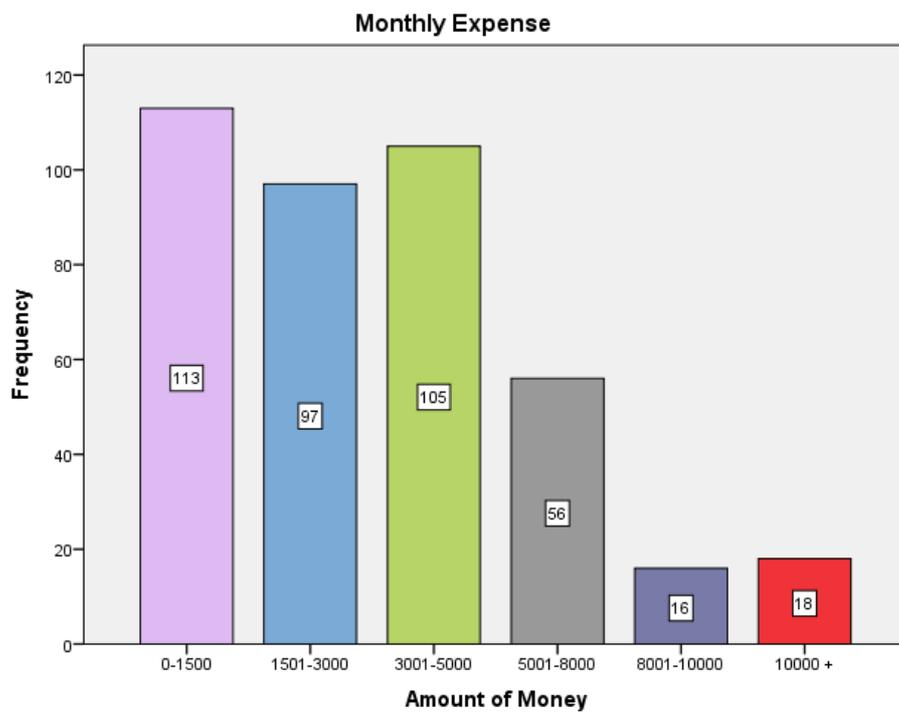
Source: Computed by the researcher

APP 7.6. Sample's Place of Residence

Source: Computed by the researcher

APP 7.7. Sample's Home Mate

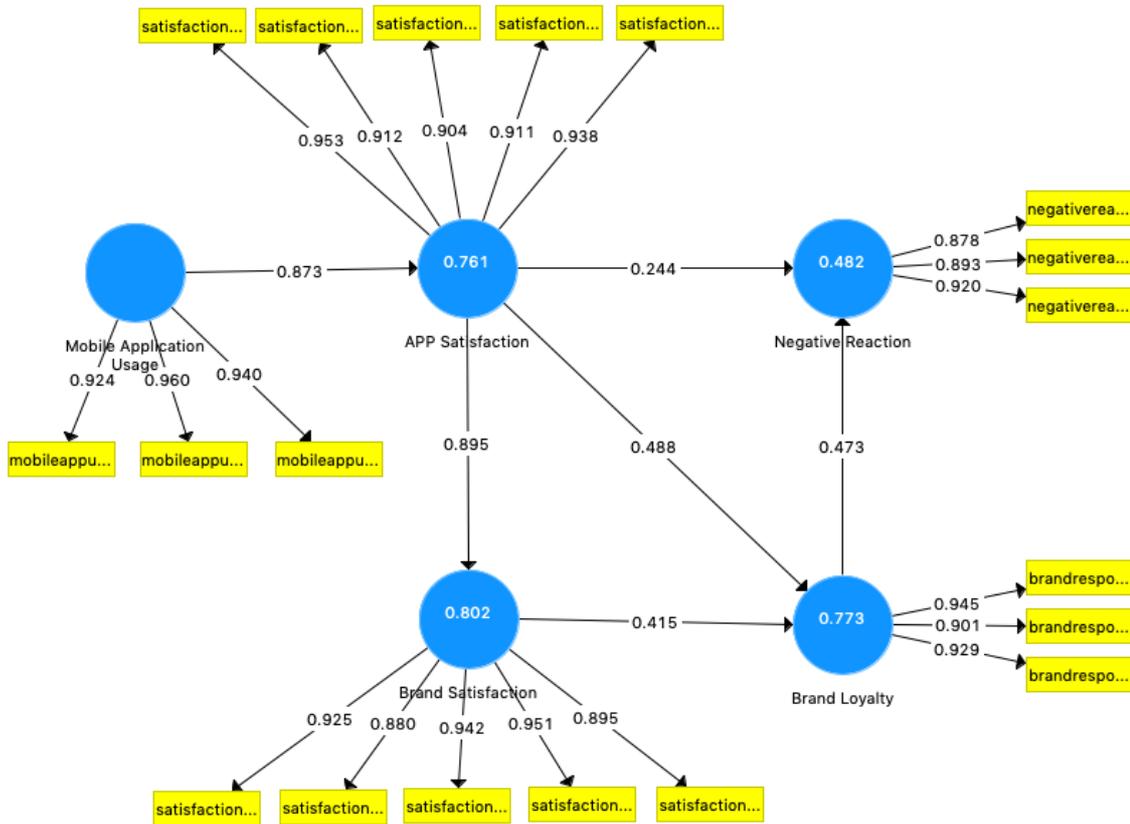**Source:** Computed by the researcher

APP 7.8. Sample's Monthly Expense

Source: Computed by the researcher

APPENDIX 8. The Values of VIF

Variable	Item	VIF
Mobile App Usage	AppUse1	4.402
	AppUse2	3.403
	AppUse3	5.554
App Satisfaction	AppSat1	3.793
	AppSat2	4.656
	AppSat3	7.454
	AppSat4	4.106
	AppSat5	5.441
Brand Satisfaction	BrandSat1	3.190
	BrandSat2	5.824
	BrandSat3	6.915
	BrandSat4	3.468
	BrandSat5	4.807
Brand Loyalty	BLoyalty1	4.064
	BLoyalty2	2.742
	BLoyalty3	3.468
Negative Reaction	NReaction1	2.199
	NReaction2	2.584
	NReaction3	2.617

Source: Computed by the researcher

Appendix 9. Path Analysis of The Model

Source: Computed by the researcher