THE REPUCLIC OF TURKEY
BAHÇEŞEHİR UNIVERSITY

ARTIFICIAL INTELLIGENCE BASED E-COMMERCE TYPES AND CONSUMER BEHAVIOURS

Master's Thesis

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THE REPUCLIC OF TURKEY
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THE GRADUATE SCHOOL OF SOCIAL SCIENCES

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This is to certify that we have read this thesis and we find it fully adequate in scope, quality and content, as a thesis for the degree of Master of Arts.

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To my mom,

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First of all, I am appreciated to my supervisor, Dr.Selçuk Tuzcuoğlu, for his support the achievement of this work. His experience and knowledge has highly contributed to the decisions taken through this study.

I would also like to extend my gratitude to all the respondents, who have take part in this study.

And finally to my family and all friends for being always by my side with patience and support, thank you.

ABSTRACT

ARTIFICIAL INTELLIGENCE BASED E-COMMERCE TYPES AND CONSUMER BEHAVIOURS

SİBEL YILDIZ

THE GRADUATE SCHOOL OF SOCIAL SCIENCE

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The purpose of this study is to analyze the behavior of consumers about the artificial intelligence based e-commerce types. Nowadays, the number of online shoppers is increasing with the expanding volume of e-commerce. The companies that pioneered technological developments in the world have brought together the concept of artificial intelligence and shopping and people started to use cashierless stores and smart assistants in their shopping experiences. This study focused on the factors; such as technology eagerness, technology anxiety, online shopping adoption, trust, demographical factors and their effect to intention to use artificial intelligence based e-commerce tools. 393 questionnaires with snowball sampling method have been collected and tested the hypotheses. The survey consists of 24 questions that measure online shopping behaviour , attitude towards artificial intelligence and intention to use artificial intelligence based e-commerce tools besides the demographic questions like age, gender and educational background. There are no previous studies that is conducted on this precise topic, therefore this study aims to fill this gap and suppose to make a contribution to literature.

Keywords: Artificial intelligence, smart assistant, voice shopping, cashierless store, consumer behaviours

ÖZET

YAPAY ZEKA TEMELLİ E-TİCARET ÇEŞİTLERİ VE MÜŞTERİ DAVRANIŞLARINA ETKİSİ

SİBEL YILDIZ

İŞLETME YÜKSEK LİSANS PROGRAMI

TEZ SORUMLUSU: DR. SELCUK TUZCUOGLU

Aralık 2018, 154 sayfa

Bu araştırma yapay zeka destekli alışveriş yöntem ve araçlarının müşteriler tarafından benimsenme eğilimini ölçmek için yapılmıştır. Günümüzde artan e-ticaret hacmiyle online alışveriş yapan kişilerin sayısı da gitgide artmaktadır. Dünyada teknolojik gelişmelere öncülük eden şirketler yapay zeka ile alışveriş kavramını bir araya getirmiş ve dünyada kasiyer olmayan mağazalarda ve akıllı asistanlarla alışveriş yapılmaya başlanmıştır. Bu çalışma teknoloji merakı, teknoloji anksiyetesi, online alışveriş yapma sıklığı, güven ve demografik özellikler gibi faktörlerin yapay zeka destekli alışveriş yapma eğilimini nasıl etkilediğini incelemektedir. Kartopu yöntemi ile 393 adet katılımcıya ulaşılmış ve anket tamamlanmıştır. Anket online alışveriş davranışını, yapay zekaya karşı tutumu ve yapay zeka destekli yöntemlerle alışveriş yapma eğilimini ölçen aynı zamanda demografik özelliklerle ilgili yanıtlar arayan 24 sorudan oluşmaktadır. Literatürde henüz bu konuda yapılmış herhangi bir çalışma olmamasından dolayı araştıma öncü niteliktedir.

Anahtar Kelimeler : Yapay zeka, akıllı asistan, sesle alışveriş, kasiyersiz mağaza, tüketici davranışları

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ABBREVIATIONS

ICT : Information and Communication Technology

EDI : Electronic Data Interchange

SME : Small and Medium Size Enterprises

CRM : Customer Relationship Management

SSL : Secure Socket Layers

SET : Secure Electronic Transfer

S-HTTP : Secure Hypertext Transfer Protocol

EwoM : Electronic Word of Mouth

AI : Artificial Intelligence

IR : Image Recognation

ASR : Automatic Speech Recognation

NLU : Natural Language Understanding

DNN : Deep Neural Network

1. INTRODUCTION

The rapid spread of the internet in the world and in Turkey and it becomes increasingly more accessible, online shopping has become a part of human life. Brands are in a big competition in order to better understand their customers and provide them personalized services. Beside that, customers are becoming more and more demanding to get the cheapest and most convenient service. On the other hand, we have unintentionally or willingfully incorporated new technologies such as artificial intelligence into our lives. New shopping methods using artificial intelligence algorithms in the world, especially in the United States and England, have already been presented to the customers and researches show that these methods have been quickly adopted by the customer. The aim of this study is to measure the tendency of online shoppers to shop with tools supported by artificial intelligence like smart assistants or cashierless stores and to understand the demand and interest of Turkish consumers for innovation. As a result of the research, it has been found out that Turkish consumers are curious, excited and have knowladge about artificial intelligence and its implementation fields. The majority of the participants are concerned about trust but in the future their life will be much easier than now through artificial intelligence. Although most of the participants are not ready to shop with voice due to concerns about finding the best price, they think that Turkish consumers will get used to it in the next 5 years and the usage rate will gradually increase. Out of 393 participants, 297 stated that they would like to shop in a cashierless store. However , majority of the consumers are not ready for the “ship and shop” shopping method that Amazon already has the patent and works on it. The results of the research shows that Turkish consumer has an intention to use AI based e-commerce tools in general point of view.

There are no previous studies that is conducted on this precise topic, therefore this study can be accepted as a pioneer and suppose to make a contribution to literature, it is aimed to introduce this research at an international or domestic marketing conference.

2. E-COMMERCE

In this chapter definition and history of e-commerce will be explained , how the volume is changed in Turkey and the world. Another purpose of this part is to clarify the categories of e-commerce and effects of e-commerce on retail industry

2.1 DEFINITION OF E-COMMERCE

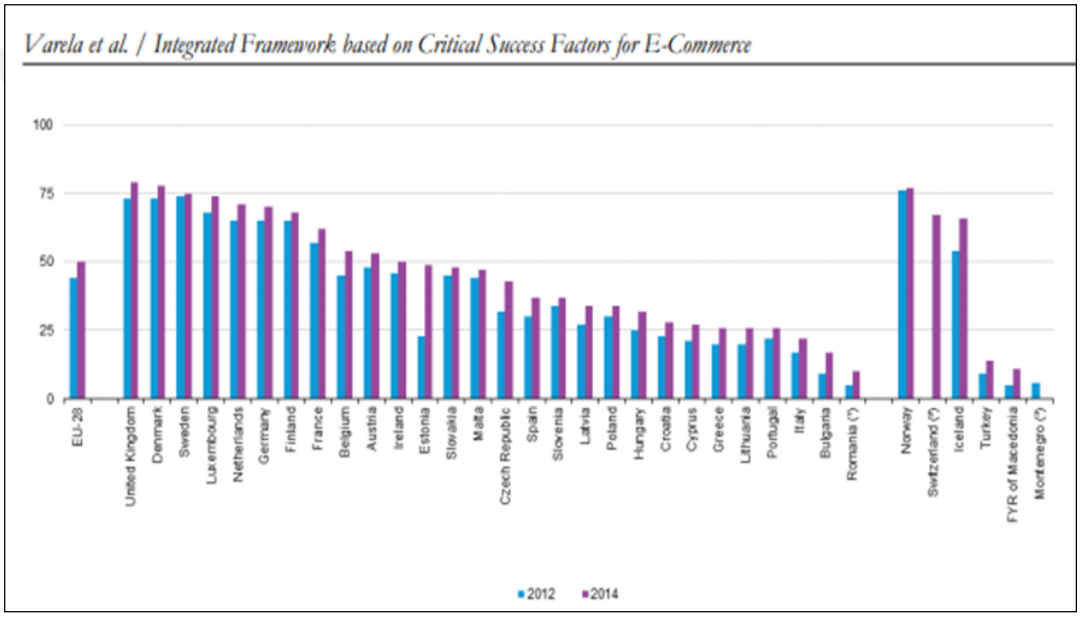
Electronic commerce is a concept that is handled with different dimensions to different institutions and persons, and thus has a lot of different definitions. Rapid and radical changes in information and communication technologies, differentiated consumer expectations and diversified products and services result in the expansion and diversification of the definition and scope of e-commerce day by day. According to the definition made by the Organization for Economic Cooperation and Development (OECD), e-commerce; refers to the purchase or sale of goods or services between businesses, individuals, countries, public or private organizations through any computer-based network (Terzi and Gökçe 2017, pp. 925-945).

According to the World Trade Organization e-commerce is the production, advertising, sales and distribution of goods and services through telecommunication networks (Keleş 2018, p.85). E-commerce or electronic commerce can be defined as a type of channel between buyers and sellers through generating and converting of the data electronically to create an economical value in online business (Mohapatra 2013, p. 73). Beside that, any transaction that contains payment by a credit or debit card for instance to download a content from a website like Gartner.com is also related with e-commerce (Mohapatra 2013, p. 9). Mohapatra also stated (2013, p.73), “E-commerce is the use of electronic communications and digital information processing technology business transactions to create, transform, and redefine relationships for value creation between or among organizations, and between organizations and individuals”. As a concept, e-commerce and e-business are different than each others.While information and communication technology (ICT) transactions level is inter-business or inter-organizational; for e commerce, e-business uses ICT to improve a single business unit. On the other hand there is a more inclusive concept than e-commerce and e-business named as internet economy

and it is constructed ICT,business and commerce basis (Mohapatra 2013, p. 74). In other words, while e- business involves production, marketing and internal management processes, e-commerce is digital transactions between institutions and individuals that includes commercial transactions (Sheikh and Bastı 2015, p.75).

Fundamentally, in e-commerce business the buyer and seller do not meet physically, the goods, services and information is came together at electronic environment. By this way, businesses can save time and money through operation cost of business activities are decreased (Varela and others 2017, p.3).

Figure 2.1 : Online individual consumers between 2012 and 2014



Source: Varela, M. L. R., Araujo, A. F., Vieira, G. G., Manupati, V. K. & Manoj, K., (2017). Integrated framework based on critical success factors for e-commerce. Journal of Information Systems Engineering & Management. September 2018.

Figure 2.1 shows the development of e-commerce in percents with the person ages between 16 and 74 years who make online shopping for personal needs (Valera and others 2017, p.2; Eurostat: June of 2015).

E-commerce is a very significant tool for this century to expand the businesses globally, that is why a framework should be specified that contains the key elements to be successful in this area (Valera and others 2017; Bandyopadhyay, N., 2010; p. 2). Accordingly the five main categories that is defined; adoption to technology factors, social factors, mental factors, moral factors and regional factors, at the same time, Valera and others (2017) proposes a multi-perspective model for critical success factors

(MPCSF), that should be considered before starting e-commerce business. This can be explained as solar system where the e-commerce at the center, factors are the stars that encircle it. These factors are; social networks, web marketing, design usability, marketing, brand, market, communication support, quality data processing, security, website and convert consumer.

2.2 E-COMMERCE HISTORY

In the mid 1960s, the very first step of e-commerce technology was evolution of electronic data interchange (EDI) that helps to transfer the commercial data to one device from another. During 1970s and 1980s, EDI has maintained the development cycle and under favour of EDI, companies could change and convert data, give orders and transfer money (Tian and Stewart 2008 p. 2; Sawanibi, 2001). In the late 1990s, not even one percent of companies in USA and Europe was using EDI. Reason for the slow development of EDI technology is cost and technical limitations (Tian and Stewart 2008, p. 2). The second step for e-commerce began with the launch of the internet by dealing of goods and services. However,when the date came to 1980s, internet was mostly being used by scientist and engineers and their work was not for commercial purposes. In fact, using and understanding computer language was very complicated that is why only the academic people with high ability could achieve. One of the most important event of the early 1990s is evolution of graphical user interface (GUI) and World Wide Web (WWW) that enable internet use more common. Through hypertext markup language (HTML) and uniform resource locators (URLs) the nature of web transformed the todays atmosphere (Tian and Stewart 2008 p. 2; Eccleson, 1999). It can therefore be assumed that the business environments noticed the potential of internet (Tian and Stewart 2008 p. 2). In 1991 the cancellation of limitation for commercial use of internet is fundamental for the e-commerce. Internet connection is supplied to commercial users by Advanced Network & Services (ANS), and MCI Communications Corp., and Merit Network, Inc. without any limitation. Mosaic is the very first web browser moved to the market in 1993 and the next year Navigator by Netscape is served and took the place at new era of e-commerce (Tian and Stewart 2008, pp. 2-3).

The saturnian age for e-commerce is triggered by privatization of the internet in 1995 (Tian and Stewart 2008, pp. 2-3; Kim, 1998, p. 283). In the new period, e-commerce

has become a familiar concept and internet started to be used for the business purposes step by step. The Amazon.com, world's biggest digital store that sells books is founded by 1995 it transformed a enormous valued business only in one year with the content of 1.1 million books. After 2 months eBay has founded as a very first auction online site of the world. Dell started to online sale of individual computers to consumer without a middleman in 1996 (Tian and Stewart 2008, p. 3; Kim 1998). Internet was the fastest technology becoming a key instrument in economic situation and consumers, financiers and companies were the stakeholders of e-commerce in this times (Tian and Stewart 2008, pp. 3). Between 1995 and 1999 lots of business settled their online sites on web and the revenue was $707 million in USA in 1996. It went up to $2,6 billion in 1997 and next year reached to $5,8 billion (Tian and Stewart 2008, p. 3; Fellenstein & Wood, pp. 9-10). Between end of 1998 and April 2000, at least 300 companies went to public (Tian and Stewart 2008, p. 3; IPOs; Cassidy, 2002, p. 192). By the end of 2000, electronic commerce sites in USA had reached to 600.000 (Tian and Stewart 2008, p. 3; Dholakia et al., 2002, p. 5). Online advertising commercial value was $267 million in 1996 and jumped to $3 billion in 1999.

In 1999, while Amazon sales increased to $1,6 billion from less than $16 million, Dell sales in jumped to $40 million from under $1 million per day, when compared with 1996 (Tian and Stewart 2008, p. 3; Costa 2001, p. 34). The dot-com bubble crashed in 2000 and 2001, the improved technology stock exchange NASDAQ, declined 34,2 percent, Amazon.com 29,9 percent and Ebay 27,9 percent (Tian and Stewart 2008, p. 4; Cassidy, 2002, pp. 292-293). In these years 80 percent of dot-com business had collapsed in the San Francisco Bay Area, and 30,000 jobs had missed (Tian and Stewart 2008, p. 3; Nevaer 2002, p. xii). The reason for the bursting of dot-com bubble was the nonrealistic predictions and the stocks seemed more valueable than they were. Silicon Valley, Wall Street, journalists, and government officers overstated the situation and caused the crash of dot-com, as a result of that economy growth had decelerated (Tian and Stewart 2008, p. 4; Cassidy 2002). Surprisingly e-commerce was going on the grow up in these years in spite of lots of dot-com businesses failed. In 2001, the approximate sales value of e-commerce was $32,6 billion with increasement of 19,3 percent when compared with 2000. This result proposed that, e-commerce was still supportable (Tian and Stewart 2008, p. 4). In the upcoming years, Amazon, eBay and Wallmart proceeded their success

in e-commerce and in 2002 sales of e-commerce reached to $45,6 billion and $54,9 in 2003 and went on to increase also in 2004. Despite of that, only the 2 percent of total sales in USA market was coming from online sales (Tian and Stewart 2008, p. 5; Department of Commerce, 2002, 2003, 2004). Because of the restrictions like not

having a secure connection, not being available in all over the world and online cheating doubts (Tian and Stewart 2008, p. 5).

According to Mohapatra (2013 pp. 3-4), in the year 1991 internet is started to be used for selling and buying operations so this year is an important milestone about e-commerce history, until 1991 internet was forbidden to use for commercial purposes. Initially, electronic data interchange (EDI) and electronic funds transfer (EFT) technologies that is available since 1970s, supported e-commerce by implementing commercial dealings.Through these techonologies compaines could make electronic data transition.As a significant reason that e-commerce could not spread rapidly, consumer confidence was low even the internet usage is increasing rapidly in 1994. Online users confidence is increased with the development of some security programs like HTTP. Furthermore, in 1998 through DSL online users met with fast and more protected connection to internet (Mohapatra 2013, pp. 3-4). When the date came 2000, through World Wide Web,there were so many online businesses in United States and Western Europe. As a result, the new definition of e-commerce is online shopping through secured internet and electronic payment system that is described as dot-com era.

Even the dot.com system crashed in 2000, e-commerce sales volume was still increasing,by the end of 2007 3,4 percent of total sales was performed by e-commerce.Because there were to many advantages of online selling when compared with brick and mortar business model. Consumers could reach lots of option of product and services and compared the prices easily (Mohapatra 2013, p. 4). Amazon and eBay has an historical importance for e-commerce business because they are the first companies who support online business. Amazon located in Seattle, Washington founded in 1994 by Jeff Bezos. Because of dot.com crash in 2000s, online business model is interrogated by business world but Amazon achieved to save itself and became profitable again by 2003. At the beginning Amazon name was Cadabra.com and selling only books but with the passing of time the content is expanded with software, DVDs, clothing and music

CD's.Under the favour of these growings, the CEO of company, Jess Bezos renamed it as Amazon. He is inspired from the world most extensive river to indicate to wide volume of online operations. Amazon.com was enrolled by USA and started its operations in Canada, France, Germany, Japan and United Kingdom. They started to sell well known brand's products like Lacoste and Marks and Spencer furthermore they introduced a new model by adding business associates to the online selling system. The third party's products offered on Amazon website and sold, after they distributed by a presetted associate. Through third party program, Amazon realised 40 percent of sales from associates in 2011 (Mohapatra 2013, p. 5).

As well as Amazon, PC company Dell made a big contribution to e commerce sector by changing the way of selling PCs. Dell created a new way to built a PC by bring the pieces together parallel to customer needs. They satisfied the customer by giving them opportunity to create their own computers according to their demands. Dell improved a new language among with customer that is not technical also very understandable. Thus the company does not need a retail store or salesmen, Dell started to sell PCs by phone or internet and move ahead of its competitors that is still use old distribution chanells. Dell could decrease the selling cost one-third of the rival's selling costs. In 1996, the company started to sell PCs from web channel, 50 percent of the sales was achieved by online channel in 2000. When the date came to 2005, Dell was the best PC seller in USA by doubling up the growing speed of industry. Dell contributed the e-commerce history in 2 ways, first one is giving opportunity to customers for customizing their PC according to needs and income, second one is breaking out of the standard selling methods and using dot.com technology. This indicates that, through e commerce business model, Dell improved itself and transformed into one of the best company's of USA (Mohapatra 2013, pp. 7-8).

2.3 E-COMMERCE VOLUME IN TURKEY AND THE WORLD

E-commerce eliminated the boundaries of the world and ensured to spread of businesses all over the world without related expenses. The expansion of e-commerce is going on not only the prospered countries but also the developing countries like China, Russia, Brazil and India has been effected (Agarwal and Wu 2015, p.198). The most significant criterias for the development of e-commerce are, commercial, legal, social and cultural

substructure of countries as well as the human and social factors (Agarwal and Wu 2015; Dutta 1997, p.198).

E-Commerce has many advantages over conventional methods. E-Commerce eliminates the store staff, high rent and operating costs, thereby enabling them to compete with large companies at the same time. It can create opportunities in national and international markets by providing global access to products and services, allows customers to collect, store, and data mining including shopping trends (Türen and others 2011, p. 52).

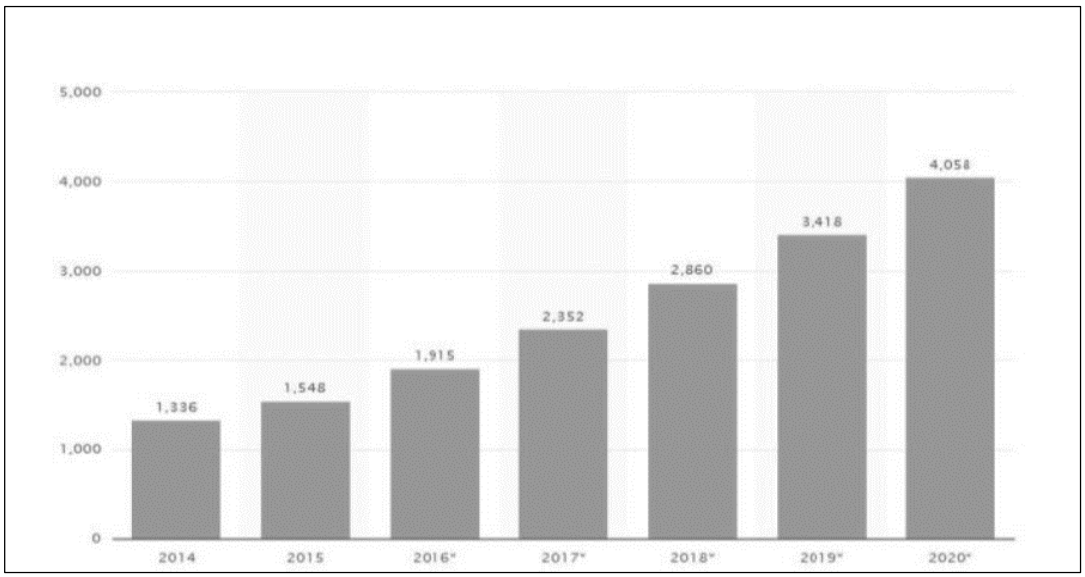
Since the 1990s, great changes have taken place in the field of information and communication technologies. The internet has become widespread and has influenced the way of commercial activities have taken place with the possibilities offered by producers, sellers, intermediaries and consumers, thus the notion of electronic commerce has emerged. The year 1991, when restrictions on the use of the Internet has been abolished, is considered to be an important milestone in the progress of e-commerce. The increasing use of internet usage rates, information and communication technologies, and the social media platforms and tools that have entered our lives right after the year 2000 have enabled e-commerce to continue its development without slowing down. Despite the fact that improvement of technology is the most important element in e-commerce development, these changes pioneered; social, cultural and political changes and innovations have also played a role in reaching the existing scope and dimensions of e-commerce (Terzi and Gökçe 2017, p. 926).

E-commerce may seem more advantageous for the developed countries for the short term but when the developing countries completed the improvement of internet infrastructure and technological requirements in the long term, they will be ahead of the game (Terzi 2011, p. 745). It is known that e-commerce can be affected by many different factors and that these factors may vary for each country. In particular, it is thought that the economic variables in the country and developments in the internet infrastructure can directly affect the e-commerce transaction volume. On the other hand, it is evaluated that the establishment of sound legal legislation to support e-commerce increases the e-commerce volume while the economic crises in the country may reduce the e-commerce transaction volume in the relevant periods. The factors affecting the development of e-commerce are the increase in gross national product. Another factor to increase the e-commerce volume, increase the number of Internet users in the country, to make internet access cheaper and

to invest more in information technology infrastructures. It has been observed that the regulation of legal legislation has been effective in bringing e-commerce safe and has increased e-commerce (Türen and others 2011,p. 55).

The world economy has entered a new phase with globalization. Globalization, the spread of capital movements around the globe, the intensive relations that develop between countries, are the result of economic, social and political integration. In economic and commercial direction; it is a multi-dimensional process in which the world becomes a common market by removing restrictions on the free circulation of goods and services (Terzi and Gökçe 2017, pp 926-927; Seyrek 2002). Significant increases are seen in e-commerce volume throughout the world. The presence of e-transformations, fast-growing internet initiatives and e-commerce in the traditional sectors of the developed world, such as the US, China, Japan and the UK, Germany, has a major role in this increase in both legal and practical support. As shown in Figure 2.2, the number of internet users increased worldwide since 2014. It shows that the number of Internet users will exceed more than half of the world population by 2020. With the widespread of the internet it will increase with online spending (Terzi and Gökçe 2017, p. 927).

Figure 2.2 : Number of internet users

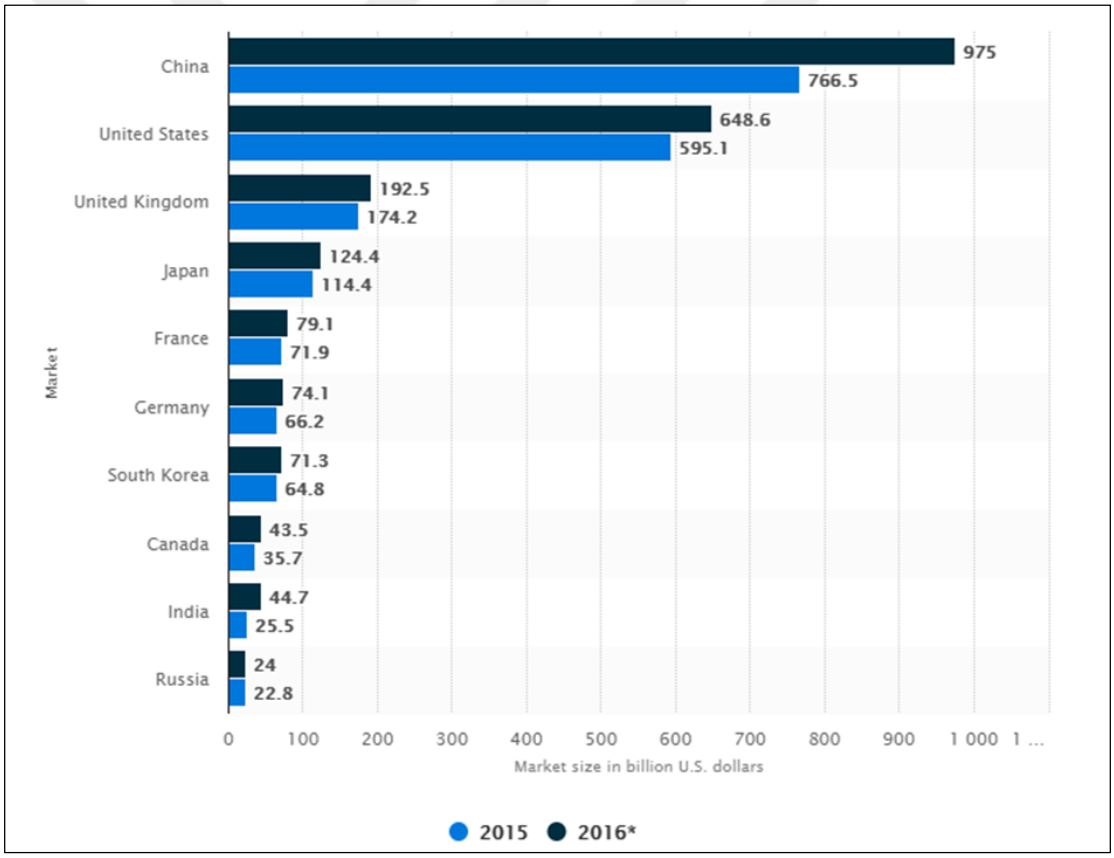


Source: Terzi N. &Gökçe C., 2017. Development of e-commerce in world and Turkey and the impacts of marketing strategies in e-commerce on Turkey's economy. *Global Business Research Congress*. 24-25 May 2017 İstanbul, Turkey: PressAcademia, p. 927

Increases in the number of Internet users have supported the way for e-commerce ecosystems to evolve by contributing to both e-commerce sales and consumers' online

shopping habits, both globally and locally. By 2015, there are more than 12 million virtual stores worldwide. According to a report published by E-marketer, in 2015, worldwide retail e-commerce sales volume is 1,548 trillion dollars. According to the same report; the ratio of e-commerce sales to total retail sales is 7.4 percent. By the year 2020, this ratio is expected to increase to 14.6 percent with the growing volume of e-commerce. As shown in Figure 2.3, in total global retail e-commerce sales; the countries with the largest share are China and USA. According to the data of 2016, it is stated that China has achieved the highest share of global B2C e-commerce volume by continuing its rapid growth rates. China is followed by the United States, Britain, Japan, France, Germany, South Korea, Canada, India and Russia, is seen (Terzi and Gökçe 2017, p. 927).

Figure 2.3 : Global B2C e –commerce transaction volume



Source: https://www.statista.com/statistics/274493/worldwide-largest-e-commerce-markets-forecast/, [Accessed 9 September 2018]

Just as in the past years, it is emphasized that Asian countries will be able to strengthen in the next 4 years with the forecast of the growth of the online retail ecommerce sector

in 2017. In anticipated figures, the e-commerce market is expected to grow by 23.7 percent in Malaysia, 23 percent in India, 20.7 percent in Indonesia, 18.3 percent in the Philippines and 17 percent in China (Terzi and Gökçe 2017, p. 928).

China is one of the most important examples of e-commerce in the world at the point of development of e-commerce. The share of e-commerce in the Chinese retail sector is estimated to be 15.9 percent in 2015, but this ratio is expected to exceed 20 percent at the end of 2020. Despite the high market shares and competitive strengths of the Chinese, US and European countries in the global e-commerce environment, the growth of e-commerce volume in developing countries continues with great speed (Terzi and Gökçe 2017, p. 928).

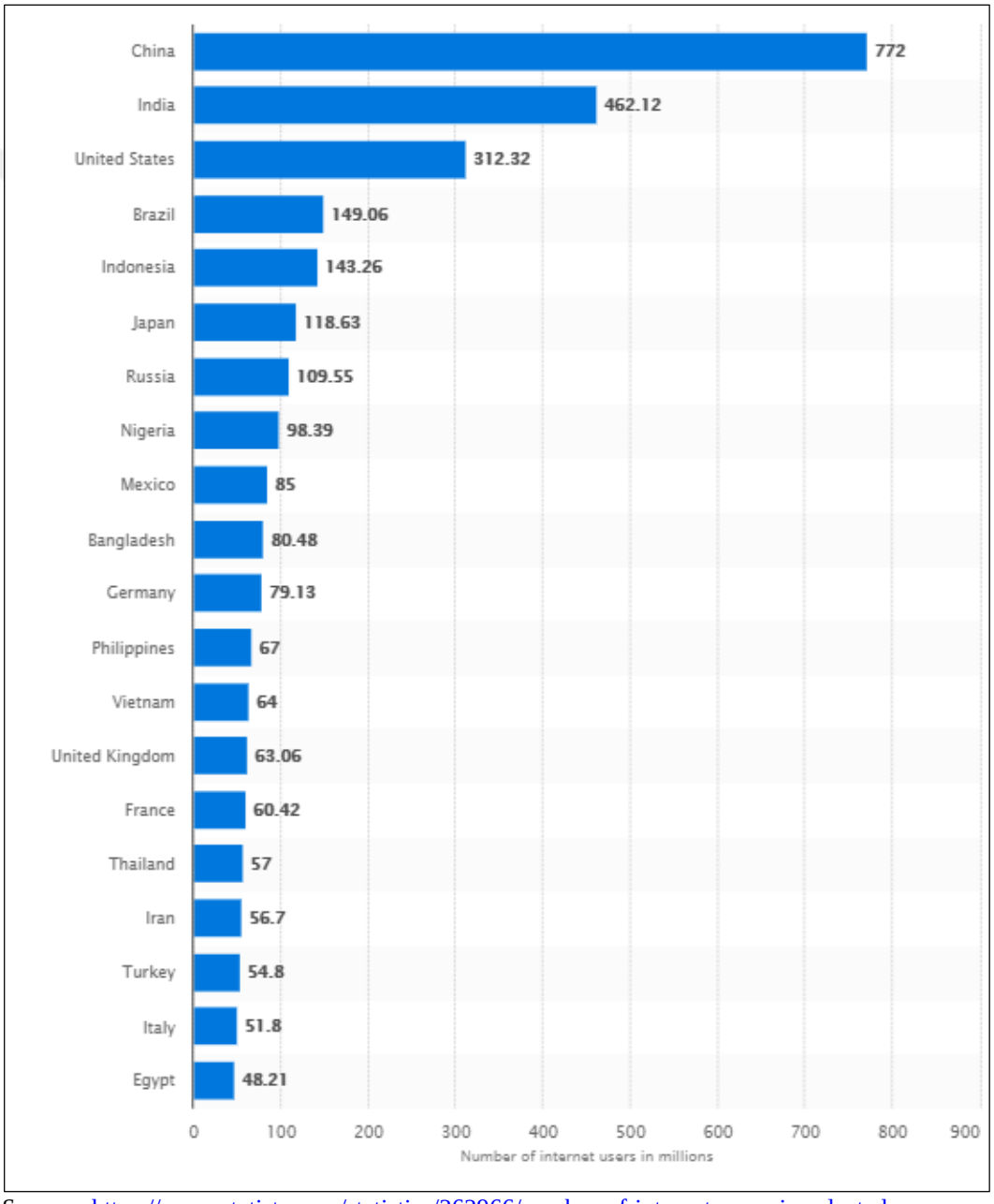
China Ministry of Commerce announced that cross border e-commerce volume is $943.4 billion in 2016. In the near future it is expected that e-commerce will grow more than 30 percent annually and will support 20 percent total trade volume in China (Jun 2017, p.22). Considering the increased volume and use of e-commerce in both developed and developing countries, it is expected that the e-commerce volume expected to reach 2.9 trillion dollars in 2018 will exceed 4 trillion dollars in 2020. Through the increasing volume of e-commerce, there will be both direct and indirect employment increases in the labor market, and new business relations will come to the fore (Terzi and Gökçe 2017, p. 929; Terzi 2016a).

Turkey, on April 12, 1994 first time acquainted with the internet connection provided through Middle East Technical University (Terzi and Gökçe 2017, p. 929; Türen vd 2011). According to the data of Electronic Commerce Operators Association in 2015, Turkey's e-commerce in the retail sector has a share of 2 percent, shows that Turkey behind many developed and developing countries. For example, the ratio, expressed as 2 percent in Turkey under the same report, 9.7 percent in China, 9.2 percent in the US, 9.2 percent in Germany, 7.2 percent in Japan, 6.8 percent in Poland, 6.8 percent in France, 4.1 percent in Brazil, 3.8 percent in Russia, 3.3 percent in Spain and 2.6 percent in Italy. But in recent years, investments in the telecommunications infrastructure, projects for the financial incentives of small and medium size enterprises, the legislation began to be formed to comply between EU and Turkey will increase the share of receivables from global e-commerce. For example; Turkey's e-commerce potential released by McKinsey underlines the e-commerce report Turkey in 2023. The goal of becoming one of the

world's 10 biggest economy in 2023,with the advantage of young age population compared with Europe made it one of the most ambitious players in the world field (Terzi and Gökçe 2017, p. 929).

As it can be seen in Figure 2.4, according to 2017 data, Turkey with the number of current Internet users is among the countries with the highest number of Internet users worldwide.

Figure 2.4 : Number of internet users in selected countries (2017)



Source: https://www.statista.com/statistics/262966/number-of-internet-users-in-selected-countries , [Accessed 9 September 2018]

According to a joint report by TUBISAD with Deloitte, at the end of 2014, Turkey's e-commerce volume is $ 18.9 billion. 2015 data is; e-commerce volume of 25 billion TL (Terzi and Gökçe 2017, p. 930).

The ratio of Internet users who prefer online shopping in Turkey is referred to as 34.1 percent. Just like the rate of e-commerce in the market, the consumer's preference for e-commerce is also below the density in developed countries. From the consumer aspect, question mark of security still draws attention as the most important factor preventing the development of e-commerce. In addition to security issues, product and service quality, logistics problems can lead internet users to remain aloof from e-commerce sites. As in other developing countries, the rise of the middle class in Turkey is increasing parallel manner and luxury consumer spending trends of the increase in e-sales ratio of specific sectors. According to the figures for 2015, online retail market, holiday, travel and legal betting spending have the highest shares in the e-commerce market. According to Turkish Statistical Institute's data, which are based on direct consumer responses, the most preferred sectors and categories in e-commerce are; 60 percent of clothing and sports equipment, 29.7 percent travel tickets, car rentals, etc. 25.8 percent of households purchasing goods through internet (based on the twelve month periods covering April 2015 and March 2015) 21 percent of electronic devices (mobile phone, camera, radio, TV, DVD player, etc.), 19,8 percent of food items and daily necessities including flowers, cosmetics, tobacco and drinks. Compared with the overall world figures that online travel spending in Turkey has an important place among the e-commerce spending. After Spain and the United Kingdom, Turkey is the 3. country with the highest incidence of online travel spending (Terzi and Gökçe 2017, p. 930).

According to research of A Positive Approach to Digital in 2016, 2 from every 5 credit cards in Turkey are being used in e-commerce. The share of e-commerce in general retail is 1.3 percent. It is seen that this ratio is 7 percent in the world average and the highest rate is in England with 11 percent (Keleş 2018, p.84). According to a report prepared by Informatics Industry Association (TÜBİSAD), e-commerce volume grew 37 percent in Turkey and reached 42.2 billion TL in 2017. However remained below the developing countries with 4.1 percent relative to the total retail market (Ulukan 2018).

The development of e-commerce sector in Turkey has accelerated with the founding of hepsiburada.com, gittigidiyor.com ve sahibinden.com. Since 1998, sahibinden.com

continues to serve in e-commerce area in 30 different categories with 2 million product variety with 10 million members (Keleş 2018, p. 88).

All over the world, the online trading volume is the highest in the United States, 54 percent of the country's population is shopping on the internet and 10 percent of total consumption expenditures are covered by e-commerce. As the second country China's e-commerce transaction volume reaches 540 million dollars by the end of 2015. According to this information, the number of mobile users is increasing rapidly and e-commerce transactions can be done easily from mobile devices plays a very important role in the preference of e-commerce (Keleş 2018, p. 88; Doğanlar 2016:6).

Monthly and quarterly transactions between 2011-2016 according to The Interbank Card Center's data the annual rate of increase is calculated. According to this, domestic e-commerce transactions in domestic credit cards increased by 161 percent within the 6-years period from 2011 until 2017, while transactions in foreign e-commerce increased by 292 percent. The overseas credit card in Turkey that have made the e-commerce transaction number has increased 85 percent (Keleş 2018, p.89).

According to Information and Communication Technology (ICT) Usage Survey on Households and Individuals" research conducted by Turkey Statistical Institute, in 2011 the 16-74 age group's computer usage rate was 46.4% while internet usage rate was 45%. In general 42,9 percent of the households had internet access in Turkey. By 2017 computer usage rate increased to 54,9 percent, internet usage rate 61,2 percent while the having an internet connection at home ratio is 76,3 percent in households (Keleş 2018, pp 91-92).

This research study showed that one of the most important developments behind the increasing trend of e-commerce volume between 2011-2016 in our country has been the increase in internet access opportunities and developments in internet speed. Parallel to this, the evolving means of internet access to mobile devices from computers and tablets has improved significantly. This development offers the opportunity to make purchases from customers everywhere and from 7-24 e-commerce sites. The widespread use of mobile devices has also shown that businesses need mobile platforms to move their e-commerce sites to a strategic advantage (Keleş 2018, p.93).

2.4 CATEGORIES OF E-COMMERCE

E-commerce can be categorized by trading partners, including business-to-consumer (B2C), business-to-business (B2B), business to government (B2G), consumer-to-consumer (C2C) and consumer to business (C2B) (Mohapatra 2013, p. 9).

Table 2.1 Matrix of models of E-commerce

	Business	Consumer	Government
Business	B2B	B2C	B2G
Consumer	C2B	C2C	C2G
Government	G2B	G2C	G2G

Source : The Economist, 26 Feb 2000, Sheikh and Bastı, p. 76

2.4.1 Business to Consumer E-Commerce (B2C)

Business to consumer e-commerce occurs between companies and consumers and includes commercial transactions. The objective of consumer is buying tangible products like books through the service of e commerce companies. B2C e-commerce is one of the oldest and biggest formation of e-commerce that provides opportunity to consumer to find the best price. By eliminating big investment costs, B2C e-commerce provides to enter international markets by only installing a website (Mohapatra 2013, p.79).

The most popular and growing part of B2C e-commerce is private shopping sites especially in clothing sector. Private shopping clubs sells branded products to their members for a certain period of time and in limited quantities, with serious discounts. Consumers feel themselves as members of a special club because they can join these organizations upon invitation. The organization that manages the site also supports this sense of belonging. The plan to create an environment where only members benefit from opportunities for a limited time turns into an attractive business model, coupled with significant discounts. These sites work with well-known manufacturers and offer only short-term sales of selected products, and members enjoy the benefits of watching these times. In case of any dissatisfaction, the members of the club can try a large number of products as the products are returned without question. This idea was first introduced in 2001 by the French entrepreneur Jacques Antoine Granjon from the founders of Vente-Privee. In 2006, the company sold 12 million units in France alone, with sales in Spain and Germany in 2007 with 239 million units sold in 18 million units, with an annual turnover of 350 million Euro (Durmuş and others 2015, pp. 18-19). The value of the

company was $ 1.3 billion in 2010 (Durmuş and others 2015, p. 19; Gobry 2011). An important reason for the success of private shopping sites is the fact that membership is gained by invitation only in the beginning years. The fact that everyone can not easily shop and access popular products at advantageous prices is increasing the demand on the site and more people wanted to join the site to take advantage of these opportunities. Vente-Privee changed this application, which it continued until 2009, and opened the site for all internet users. Anyone with internet access can join the site without invitation. Turkey and many private shopping club in the world until it reaches a certain number of members was initially use this application and after removing the invitation to join the system, they allow everyone to become a member of the site (Durmuş and others 2015, p. 19).

One of the major players of the e-commerce market, Hepsiburada, started the activities in 1998, and Gittigidiyor in 2000 in Turkey. The main growth in e-commerce was realized after 2008 with the emergence of exclusive shopping sites in fashion industry. Hepsiburada, one of the first online retailers, first turned to consumer electronics and then to other categories and became a horizontal platform. Yemeksepeti is also one of the pioneers of e-commerce sector in Turkey, it has been one of the first B2C marketplaces (Kantarcı and others 2017, p. 46). Another important marketplaces are that is in service in Turkey , N11, Trendyol and Amazon will join very soon. These marketplaces brings together vendors and customers and works on a commission basis by providing only a platform. It is the seller who is responsible to the customer in after-sale customer service. The seller is paid within 5 to 20 days after payment from the customer dropping the commission that is determined before. There is no need to pre-purchase and stock items in this business model but for popular products that has high sale ratios, marketplace may preorder these items and stock for a while. Within the B2C model, the marketplace model is a rising trend. It is preferred because it is an alternative for the sellers who are having problems or want to diversify distribution channels. Seller does not need to wait to get money and have direct contact with the customer. On this wise, sellers can get comments directly from customers about their products. Free market rules apply on this platform and sellers can sell products at the price they determined. For instance, a product with TAÇ brand that you sold your dealer with a certain price , can be sold with a lower price by your dealer in Hepsiburada.com and a different price in Gittigidiyor.com.

Another platform is shopping sites that organize discount campaigns that are valid for a certain time period. Trendyol, Morhipo can be given as an example in Turkey. These sites works with the popular retailers, makes agreements and sell their product through a campaign. Unlike the marketplace model, customer relation management is handled by the site and the site is responsible for the products being sold, not the retailer. After sale,the products are shipped by retailer most of time or site may want to get stock to its warehouse if the expected sale is high. The payment term is around between 30 and 60 days to retailer after agreement date. The biggest advantage of these types of sites is that they are visited too often and their click rates are high. Retailers that can not catch this traffic in their online store so they can increase their customer awareness through these sites.[1]

Amazon is the biggest online marketplace of the world expected to begin operations in Turkey very soon . Amazon has different methods as FBA and FBM that can be chosen by sellers. FBA (Fulfillment by Amazon) is a service that Amazon undertakes the picking, packing, shipping and the customer relations management. The sellers only responsibility is to sell their products and paying a storage and shipment fee for the each item per sold to Amazon. [2]

FBM (Fulfilled by merchant) users have to manage the cargo process themselves. Statistics show us that Amazon FBA sellers are getting 10 times more sales than FBM sellers because of Amazon's FBA sellers being preferred by Amazon with their special A9 algorithm and they are getting more advantageous is showing.[3]

Cross-border e-commerce is another concept that takes part in B2C e-commerce , mean to electronic shopping between sellers and buyers from different countries (Strzebicki 2017, p.161). This type of e-commerce increase rapidly because of improvements in internet technology and consumer seeking for cheaper and better quality products (Strzebicki 2017,p.162; Zalega 2017). To understand the popularity of this concept Table 2.2 can be seen below that clarify the increasement of population in percentage who use international electronic markets in selected European countries.

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[1] (Ö. CENGİZ, interview)
[2] https://services.amazon.com/fulfillment-by-amazon/benefits.html [Accessed 13 September 2018]
[3] https://www.amazonkursu.com/amazon-fba-avantajlari/ [Accessed 13 September 2018]

Table 2.2 Percentage share of consumers of selected European countries making online purchases abroad between 2011 and 2016

Country	2011	2012	2013	2014	2015	2016	Difference between 2016/2011
Austria	36	41	45	44	52	52	16
Czech Republic	8	8	10	11	13	13	5
Germany (former FRG)	13	15	17	18	21	23	10
Estonia	16	19	20	35	39	41	25
Spain	13	15	16	21	26	29	16
Finland	39	44	45	48	50	45	6
France	20	21	24	26	26	27	7
Italy	7	8	8	11	13	14	7
Poland	4	5	6	8	8	9	5
Portugal	12	14	16	19	22	23	11
Romania	3	2	3	2	3	5	2
Slovakia	16	23	25	25	30	32	16
United Kingdom	18	20	20	27	30	33	15
EU-28	14	16	18	21	23	26	12

Source: Strzebicki, D. 2017. Development factors for cross-border B2C e-commerce in the world and in Polland. *Acta Sci. Pol. Oeconomia.* **16** (4), pp. 163.

Table 2.2 indicates that , the big part of the population of Austria, Estonia, Finland, United Kingdom and Slovakia prefers to shop online from foreign countries. In that case, determinative factors are economical situation of countries and consumers and e-commerce market volume and options in the country (Strzebicki 2017, p.163).

Besides all these, there are significant obstacles that decelerate the improvement of cross border e-commerce. One of them is inconsistency of juridical issues from a country to another also high transportation expenses and delivery issues can be considered as barrier (Strzebicki 2017, p.167).

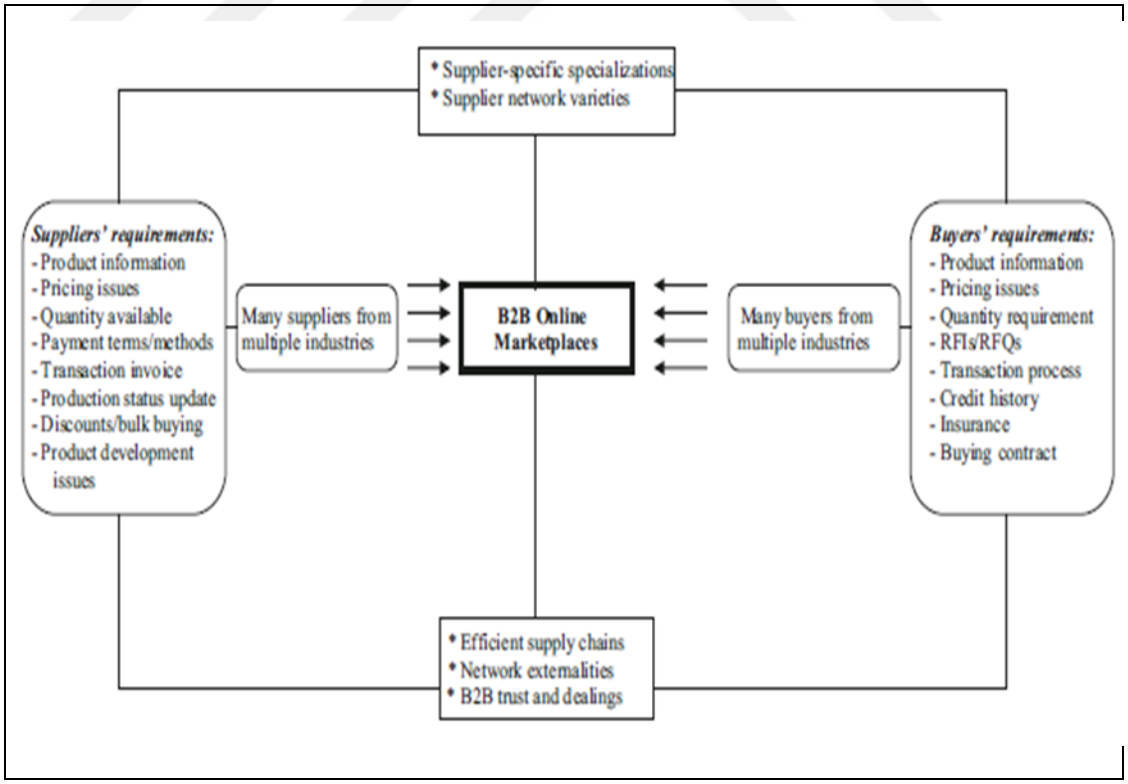
The biggest cross-border B2C e-commerce platform is Aliexpress.com that is founded in April 2010 in China. While Aliexpress trying to gain customer from all over the world, Taobao.com mainly provides service locally. Aliexpress announced in 2017 April ,the active customer numbers as 60 million from 220 country and all over the world.

2.4.2 Business to Business E-Commerce (B2B)

B2B e-commerce can be divided 4 groups according to different implementation. First type is independent B2B marketplaces where the buyers and sellers meet for auction on

an online platform to sell or to buy any good or facility from all over the world. The most populer companies are Commerce One, Ariba or Freemarkets in this type B2Be-commerce. The auction between buyers and producers is directed and ruled by a independent B2B provider. Buyers announces their projects data , bids and offers over the site , negotiate with producers , after agreement both sides pay a fee to independent provider. Second one is private B2B exchanges that is established by a company to ensure e- commerce opportunities to its internal units and predetermined supplier or buyer. Most of the companies prefer to use this type e-commerce instead of independent providers because private exchanges are easy to manage and control also they providecompany privacy against to competitors by not sharing project details to public. Wallmart and Siemens AG some of the compaines that use private B2B exchanges the consortium and the transitional types are the other B2B e-commerce implementations (Mockler and others 2008, p. 12). As it can be seen Figure 2.5 , B2B online marketplace area requires an efficient communication between players , even e-commerce achieved to survive from internet crash, too many company damaged because of their inefficient business models.

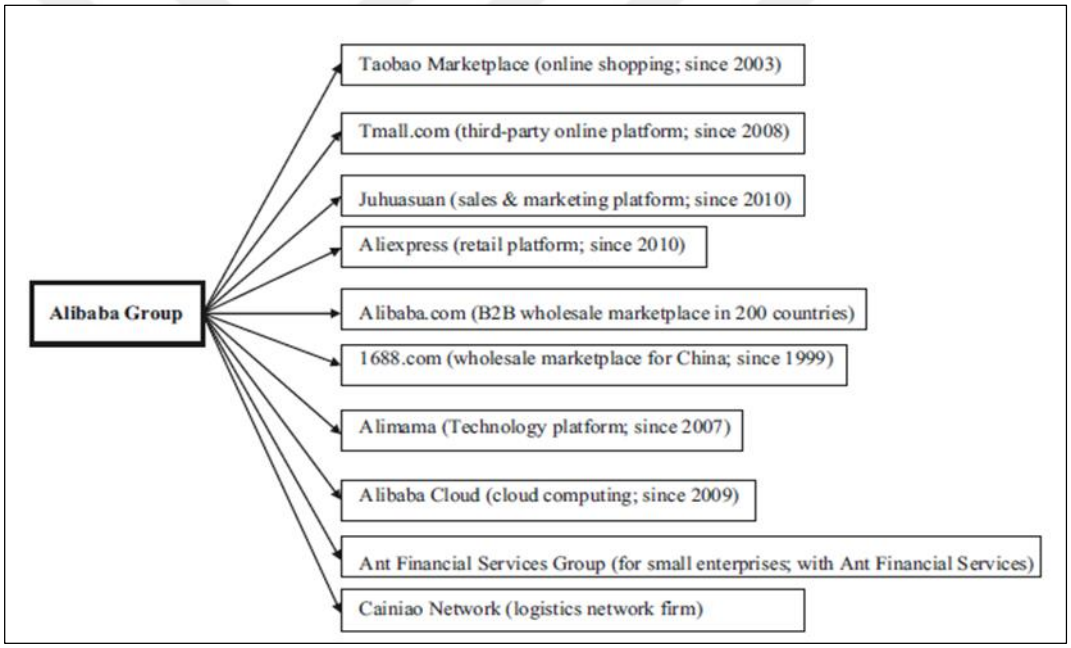
Figure 2.5 : Organizational system and process for B2B marketplace



Source: Anwar, 2017, Alibaba: Entrepreneurial growth and global expansion in B2B/B2C Markets. Springer, p. 376.

The biggest B2B firm is Alibaba through its unique business model and global development in the world (Anwar 2017, p.368; Kim et al. 2016). Alibaba is established by Jack Ma in 1999 with 17 small businesses in China, by targeting small and medium size enterprises (SMEs) by being an example of global entrepreneurship. Alibaba is the platform supplier for SMEs to provide them to sell their products from the website (Anwar, 2017, p.368). Alibaba provides 10 different B2B and B2C environments to MEs and end consumers in all over the world as it can be seen in Figure 2.6 (Anwar, 2017, p.369).

Figure 2.6 : Business and web properties of Alibaba Group



*Source:*Anwar, 2017, Alibaba: Entrepreneurial growth and global expansion in B2B/B2C Markets. Springer, 15, p. 369.

Alibaba has entered the USA, India, Japan and Western Europe markets since 2009. This move was critical to be global after conducting business model in local market. Alibaba is the first online B2B platform that connect SMEs from the web (Anwar 2017, p.377). Alibaba targets 2 billion consumer from all over the world and half of them should be from global customers till 2025 (Jun 2017, p.22).

2.4.3 Business to Government E-Commerce (B2G)

Business to government e-commerce is commercial transactions between companies and government sector. Through B2G e-commerce governments realise the purchasing operations over internet and take active roles to encourage e-commerce. Secondly public sector needs an effective system to make better purchasing (Mohapatra 2013, p.80). In this e-commerce type, taxation, customs clearance, social security, statistics and permissions are electronically monitored and regulated, and public procurement is announced in electronic form (Diker and Varol 2013, p. 31).

2.4.4 Consumer to Consumer E-Commerce (C2C)

Consumer to consumer e-commerce is defined as transaction of products or service between customers or consumers. E-bay can be given as an example for this type e-commerce (Albinsaad 2016, p.83). E-bay is an electronic platform that is established by 1995. E-bay has 90 million global users and they can buy and sell anyhing online, the total value of sold items is impressing with 2000 USD for each second in 2009 (Terzi 2011, p. 746). Turkish internet users showed great interest in internet sites where second hand products can be bought and sold. The sector is expected to grow by 30 percent in 2017, while brands are shaping their strategies next year. Letgo, Gittigidiyor.com and Sahibinden.com is the important web sites from Turkey. According to Alec Oxenford the founder partner of Letgo , they grew over 680 percent since it began operations in Turkey and currently 16,5 million items has been sold. Through Sahibinden.com that the second hand and zero shopping category, makes it possible for individual members to easily sell the items they do not use with the C2C business model.[4] Letgo is a newly growing C2C platform in the world that is gathering customers together and does not get any fee at the end of the sale. LetGo is free while eBay gets 10 percent commission from each sale. Seller takes a picture of the product and artificial intelligence mechanism send it to related category in Letgo website, after indicating the price of the item, it has been ready

[4] https://www.dunya.com/ekonomi/turkiye-ikinci-elde-online-pazari-sevdi-haberi-393923 [Accessed 15 September 2018]

to sold. Letgo software does not provide payment function, payment should be handled outside of the platform.[5]

Letgo continues to improve itself day by day with new features. Newly added features to Letgo, a fast-growing mobile platform for the sale of second hand goods, was the ability to add video with Reveal, an artificial intelligence-assisted listing feature. Letgo Reveal, which can be listed with artificial intelligence, provides the real value of the product to be sold. The only thing you need to do to use Reveal is to photograph your product. Letgo's new product, artificial intelligence, determines which product it is, the category, the average selling price and the duration of the sale. This feature has not yet been activated in Turkey yet. Letgo's second new feature was video lists. Starting today, users will be able to add short videos in search results and in the section of the app's main feed, as well as the photos on their listing pages. With Letgo's new video announcement option, users will be able to sell the items they do not need more easily, with the visuals being on the front. But the first question in mind when it comes to adding a platform video feature is how to tackle with unwanted videos. For this reason, Letgo's artificial intelligence technician stated that they will always be alert for disturbing content.[6]

The business model of Chinese Taobao is different than Amazon and eBay. While Amazon and eBay's source of revenue is the commission they receive from users, Taobao's revenue comes from advertisements (Wang and others 2016, p.201).

2.5 E-COMMERCE EFFECTS ON RETAIL INDUSRTY

Electronic commerce will change the jobs from first hand and second hand in the sector. Because of the development of data and communication industry , while new proffesions will occur , some of them will lose their validity (Terzi 2011, pp. 745-746).

2.5.1 Effects of E-commerce on Employment

It is a fact that e-commerce will spread rapidly in the coming years, will eliminate the traditional trade in some sectors and will affect the economic and social life deeply. The effect of e-commerce on employment is realized in two different ways. Beside the

[5] https://apiko.com/blog/how-to-make-letgo-clone-cost-and-timeline/ [Accessed 15 September 2018]
[6] https://webrazzi.com/2018/07/25/letgo-yapay-zeka-destekli-listeleme-ile-video-ilanlar-ozelliklerini-aktif- etti/ [Accessed 15 September 2018]

positive impact like creating new business areas, there is a negative impact on the existing jobs as a result of the reorganization of tasks and the elimination of some jobs. For instance, when there is no need for salespeople who need to be in a traditional store in e-commerce, high capacity employees will be needed to develop and manage software, and to do web design and maintenance in e-commerce. Employees need to be renewed especially in the field of information technologies production and usage and human resources projects should be implemented in this direction.

E-commerce businesses create fewer jobs than those employed by traditional methods. Amazon.com has a turnover of $ 241,000 per employee with 614 employees, and the largest book store, Barnes and Noble, has a turnover of $ 103,000 per employee with 27,200 employees.

Fedex, the largest shipping company in the world, has discharged 20,000 employees through the online customer service system it established in 1999.

Computing and communication technologies stimulate sectors with flexible working opportunities, and home-office employment opportunities that are particularly suitable for educated women.

Although it may seem like a solution to employ professionals to meet the need of information technologies, training of existing employees to adapt to information technologies is even more important. Employees are also aware that they should be multi-functional and the best way is to make the learning process continuous (Koçak 2005, pp. 458-460). As an example, Vera mentioned that (2006), according to result of study about effects of e-commerce on employment in 11 different industry of Philippines, 1202 jobs eliminated while 21.298 new jobs created between 2000-2005 (Sovbetov 2018, p. 258). According to a survey conducted in Turkey between 1994 and 2016, as a reason for the increase of female employment rates, to increase internet infrastructure investments in Turkey and encourage e-commerce initiatives (Sovbetov 2018, p. 257). Automation helps to decrease unempleyement in e-commerce by speeding up jobs and lowering costs, rather than causing people loose their jobs. Through automation, robotics and software applications, e-commerce has shortened delivery times, consumers prefer online shopping, which is a more viable alternative to physical stores, and sales are favored by online retailers. In this context, 16 million traditional retail sales people lost their jobs but Michael Mandel, an economist at the Progressive Policy Institute, has calculated that

in the past decade, the number of jobs in e-commerce and storage jobs has increased by 400.000 and that it easily compensates for the 140.000 loss of traditional retail jobs. Another example is that Amazon, the pioneer of automation, has deployed 100.000 robots in 25 warehouse stores around the world since 2014. In this regard, Amazon has increased its hourly workforce employment from 45 to nearly 125. On the other hand, new job descriptions have emerged in online shopping. For instance, Amazon's warehouse in Baltimore required human workers, or so-called "stowers", because the software in the robots did not have enough to decide which product would be placed on the long and narrow shelves in the process of placing the items carried by the robots on the shelves. Therefore, new job descriptions and employment in online sales have also increased. These trends are due to the possibility of automation to reduce costs. Online commerce exploding has also increased the demand for labor that can make software in robotics areas and work at high salaries. For example, according to analyzes by Andrew Chamberlain, chief economist at Glassdoor recruitment website, the share of labor force announcements that can make software has doubled in total labor force demand announcements since 2012 and reached 14%. Online trade will continue to cause the destruction of old labor force branches in the future, while also creating new business lines. [7] While e-commerce sector going on to improve, it will change the employment situation and wages of jobs with complicated group of variables. According to the first impressions, postal offices and travel agencies will probably affected in retail sector. Beside to that, effects may change across business , job definitions and geographical regions. In addition to that high qualified employer demand will increase in information and communication technologies sector (Terzi 2011, pp. 750-751).

As it is mentioned in McKinsey Global Institute Analysis (2017, p. 15),

> *Moreover, we find that workers of the future will spend more time on activities that machines are less capable of, such as managing people, applying expertise, and communicating with others. They will spend less time on predictable physical activities, and on collecting and processing data, where machines already exceed human performance. The skills and capabilities required will also shift, requiring more social and emotional skills, and more advanced cognitive capabilities, such as logical reasoning and creativity.*

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[7] https://www.ticaret.gov.tr/portal/faces/blog/newsDetail;jsessionid=EYeBLP9emWG1bOLraAIseh_aerb6FKhpiY0yV6-__WzGHv2MD6b!1898295794?news_id=EK250796&_afrLoop=34713728130520138&_afrWindowMode=0&_afrWindowId=null&_adf.ctrl-state=pj2mzf6pw_1#!%40%40%3F_afrWindowId%3Dnull%26_afrLoop%3D34713728130520138 26news_id%3DEK-250796%26_afrWindowMode%3D0%26_adf.ctrl-state%3Dpj2mzf6pw_5, [Accessed 28 August 2018]

2.5.2 Customer Relationship Management

Customer relationship management (CRM) is a business strategy to create a long term value to select and direct customers. CRM promotes the marketing and selling activities by creating a customer oriented business model. CRM tries to find out, estimate and meet the existing and future customers of an organization. Technological developments is directly related with the applications of CRM systems. Through the merger of CRM and internet , a new definition is occured as e-CRM (Tan and others 2002, pp. 77-78). The customer is a key source of success in business and has great importance for the e-commerce. Businesses understand the importance of the ability to eloquently manage customers. CRM is the best way to manage these conditions, as market conditions are much more competitive than the old ones. CRM systems are used to organize, analyze and evaluate the data of the customers. In this way services can be customized for individual customers and new customer needs can be identified. With the technological improvements of computer technology, through data collection or data mining companies can be more customer-focused (Feng and others 2008, p.706). There are four common methods to make inquiries about costumers. First one is classification means, a group of customers with the same characteristics are classified. So that confidential customers can be found and some measures can be taken in advance. Clustering is the second method that businesses can improve their marketing strategies , different demands of different customer groups can be satisfied in this way. The third method is user modelling that is not used for e-commerce till now, tries to understand consumer behaviour through an artificial intelligence based algorithm. The last one is association analysis that all the association rules may be found between items. Through this analysis, web site can put in order page structures and can built marketing models (Feng and others 2008, p.709).

As a result of using the internet as a business instrument, CRM and B2B are always accessible for customers. When a large service network is provided in the B2B business model, customer loyalty increases, which is also a priority for CRM. B2B and CRM both require customer research reports to recognize the customer and understand their needs. So they can protect existing customers or reach new customers. There is a need for information storage and information management systems for both B2B and CRM. While B2B needs internet connection to carry out B2B business operations , CRM uses it as a

tool to reach needed data (Zeng and others 2013, p. 41). Through the integration of CRM programme and B2B systems companies can gain favor for the managerial expenses, marketing expenses , response rate of customers and time of selling. The business success depends on the meeting the needs of its customers', vendors' shareholders and stakeholders. If it is assumed that the customer is the most demanding among them, CRM is an essential tool to keep customers. In the future, market , technology and the economy will designate the roadmap of CRM. Marketing model has been changed to customer oriented from product oriented that is why CRM will be more significant. Under favour of a high technology CRM system, while companies keeping existing customers , they will be able to gain new customers. Trying to make new customers is 5 or 10 times more expensive than trying to keep old customers (Zeng and others 2013, p. 42-43).

According to a research that investigate about early mover advantage in e-commerce platforms with low entry barriers and CRM relationship, CRM ability of e-tailers support the early mover advantage in terms of customer demand. That is already demonstrated , CRM activities increase the profit of companies. The ways of gaining new costomers for e-tailers are , banner advertisements, search engine marketing, social marketing and e-mail marketing. By converting website visitors to shoppers e-tailers gain new costomers named as consumer conversion. Another concept is costomer retention, it means, establishing close relationship with customers to keep them in hand. The goal is to increase customer loyalty by offering more personalized services. As a result of this research, early mover advantage concept is more effective for the cosmetic industry than women clothing industry. However CRM ability is more important in the clothing industry than cosmetic industry, that is why e-tailers should make their plan according to their industry needs (Wang and others 2016, pp. 197-204).

2.5.3 Reliability of E-Commerce System

The reliability of e-commerce transactions is only possible by providing security elements that protect against baleful attacks. There are various types of problems that could be occur during electronic commerce transaction regarging to security and reliability. If there is not a system that keeps informations digitally, all data may be lost by without any return. Beside to that , viruses can take over the system and cause the company to suffer great damage (Qin and others 2009, pp.137-138). Since the exploration

of internet and e-commerce subsequently, the main problem of consumer who prefer online shopping is security issues (Abyad 2017, p.20; Suh and Han 2003). Hackers can use them to their advantage when they realize the shortcomings in the system (Abyad 2017, p.20; Lee and Rahman 2003). At any time soon , all credit card and private informations of consumers were stolen by cyber terrorists that use Sony Playstation. The requirements for e-commerce performance are reliability, information confidentiality and security control (Abyad 2017, p.20; Suh and Han 2003). The methods can be considered as technological methods and principle of law methods to provide the security (Abyad, 2017 p.20; Laudon and Traver 2007). Secure Socket Layers (SSL), Secure Electronic Transfer (SET), Secure Hypertext Transfer Protocol (S-HTTP), Encryption Approach, Digital Certificate is some of the organizations who works for the security of e-commerce area (Abyad 2017, p.20).

Another key point is consumer behaviour for e-commerce. The confidence to e-commerce is directly influenced by the consumer economical situation and interest to technology (Abyad 2017, p.21; Mahmood et al 2004). As a result of different researchs, income and trust is directly proportional to each other (Abyad 2017, p.21; Alesina and Ferrera 2004; Zak and Knack 2001). Traditional business and online business are different than eachother in may ways but the most important one is having an adress to remark to someone phsically while doing traditional business. Online transactions continues without stopping any time, and that consumers are confused about the seller will adopt the responsibilities or not (Abyad 2017, p.21; Kim et al 2007). Confidence issue is becoming an important subject day by day because of the competitive market conditions that push consumers with lots of advertisement to consume more. Through electronic word of mouth (eWoM), lots of consumers from all over the world can exchange ideas with another about the products and brands during B2C e-commerce (Civelek & Ertemel 2018, p. 333; Levine et. all 2009). The theme and volume of the eWom effect the brand awareness positively through brand confidence is effected in the same way (Civelek and Ertemel 2018, p.338). On the other hand, the website design is crucial for the consumer trust and there are mainly three point to explain it . First one is general perspective about internet and web site , second one is product information accuracy that is given on web site, and the last one is trust about service quality and arrival of products that is bought (Abyad 2017, p. 21; Urban et al 2000).

2.5.4 M-Commerce

When researchers compare with e-commerce, they emphasize many aspects of mobile commerce, such as accessibility from anywhere , adaptability, personalization, convenience, localization, local specificity, portability, wirelessity, location sensitivity, easy access. These features of mobile commerce are also important in terms of reaching consumers who are always online. Thanks to mobile commerce, consumers can obtain information about products at any time and anywhere and select products and make purchases (Alan and others 2018, p. 77; Huang et al., 2015: 266).

PayPal and Ipsos research company, searched for the mobile commerce market in PayPal Global Mobile Research including 22 countries along with Turkey, from 2014 to 2015. According to the survey results, Turkey has been identified as the 3th country that shops through mobile channel. Research covers data from more than 17,500 people in 22 countries, including the world's largest e-commerce markets such as the US, UK, Netherlands, Germany, China, and draws attention to the increase in the share of mobile commerce in online shopping with the increase in the use of mobile devices. According to the research, mobile commerce is growing three times faster than e-commerce. This ratio is 33 percent among countries in general, and 53 percent in Turkey who prefer to use their smartphones during online shopping transactions (Alan and others 2018, p. 76; PayPal Mobile Research 2014/2015).

One of the biggest reason of that, in developing countries such as Turkey, to spend a lot of time in the traffic for working people, therefore doing the shopping process from their mobile device to assess at this time (Alan and others 2018, p. 76; Patel, 2006).

3. ARTIFICIAL INTELLIGENCE

Artificial intelligence is defined as a subdivision of computer science, intelligence performed by machines or software. Artificial intelligence is effective in many areas like education, engineering, medicine and business to provide solutions for complicated issues. Smart machines are expected to support people's abilities in many areas or to replace them (Verma 2018, p.5).

3.1 DEFINITION OF ARTIFICIAL INTELLIGENCE

Copeland mentioned that (2004), “According to the father of artificial intelligence, John McCarthy, it is the science and engineering of making intelligent machines, especially intelligent computer programs”.

In the 1950s, Frank Rosenblatt initiated machine learning by making an electronic neuron who perceives digits.

Only in last 10 years many new applications, from driverless vehicles to virtual assistants, have entered to humans life. Too much algorithms is generated that tell computers what to do in every year. The underlying reality of the learning machines is to give them common ideas not the programmes with all details and machine learning will develop with experiences like humans do. The human brain is the reference of deep learning that is a populer machine learning paradigm, triggers with a simple mathematical model of a neuron type of work , creating relationships between millions of neurons and they build links between each others so they start to learn and data becomes meaningful. Even not with the hundred percent precision but the machines can perceive the faces, make translations of languages through these neural links

Some machine learning algorithms solve new problems by using the ones registered in the history. With this feature, e-commerce sites can offer products based on their customer preferences and tendencies. Another way for machine learning is to automate the scientific recipe. To make inferences and prove the trueness of a new hypothesis, that method may preffered to be used. As an example, a biologist robot has revealed a new malaria drug by using this method in the University of Manchester in England (Domingos, 2018, p.1).

As a result, learning can only be explained by the Bayes's theorem above all mathematical theorems. According to the theorem, the information we have and the hypotheses we establish according to the first possibilities, become more likely to be consistent with the data that is more close to. Thanks to the Bayesian learning machines, some medical diagnostics can be done better than human physicians, spam filters are created and Google can select and display specific advertisement to show customers.

Many people are worried that smart machines will get people out of their jobs. This is not too much possible because the machines do not have their own will. Actually AI algorithms' main drivers are the programs that is written by humans and works for to "find the shortest route from the hotel to the airport." One thing different for these algorithms from the common algorithms is, they have more opportunity to choose the way to carry out the order instead of following ready steps. They improve themselves with the experience , they are goal oriented and eliminate the solutions if it does not help to reach goals that humans targeted. In addition to that machines obey the instructions and do not break the predefined rules. Difficult problems can be solved by artificial intelligence. It does not require free will and is an extension of human as in other technologies, so its development is the best interests of humanity. Intelligent devices will replace a lot of jobs definition but this change will not be more than the times that automation started. In the near future AIs and people will be good in different areas. The first effect of machine learning will be to reduce the cost of intelligence. Job descriptions will evolve to new ones, more efficient results will be obtained with the same rate of manpower and intelligence will still be more economical and convenient. According to the singularity concept of futurist Ray Kurzweil , a machine can produce a more intelligent machine and more intelligent than another. But it is not sustainable because the limits of physics were already defined and even a quantum computer ability is limited. In the next decade, each person will have a digital pair. It doesn't need to physically exist with you but gets data from every action you perform in digital environment and records them in the cloud that can be seen in virtual assistants like Siri, Google Assistant and Alexa.

Digital double will be able to perform some tasks to save time for you like searching new jobs for you and find the most suitable one for you or negotiate with the car seller's bot when you need a car (Domingos 2018, pp. 2-4).

Martinez stated (2018), “AI is a broad term. It uses technology based on predictive analytics, machine and deep learning, natural language proccesing and others”. The IBM’s Watson is probably the very well know artificial intelligence engine that is used for commerce activities , but the problem is most of the probable customer of this engine do not know how to gain favor from it (Martinez 2018, p. 92).

Watson is an intelligent computer system developed by a research team working on IBM's DeepQA project and capable of responding to questions asked in natural language. It got his name from Thomas J. Watson, IBM's first boss. IBM Watson's artificial intelligence is a practice that develops hypotheses, collects, analyzes, and evaluates by using natural language processing, information access algorithms, information representation and reasoning methods, and machine learning technologies. And in the end, after the design was completed, in 2011 Watson showed its talents in the Jeopardy competition, which was reorganized for the man-machine fight. Watson's rivals were not the kind of people to be ripped off at all: Brad Rutter, the most money-winning contestant of all time and Ken Jennings, the man who managed to win the competition for the longest time (74 consecutive times) were famous. Watson received hints from people in electronic text format as soon as they appeared. In this text, it translated keywords and sentence particles into statistical sentences. The innovation that Watson brought was not that the algorithms to do that were new, but to try to get the right answer by running thousands of language analysis algorithms simultaneously and very quickly.

Watson undertook the task of evaluating these algorithms, often competing with each other, independently of their own.

The more the same result was achieved, the more secure the answer. Also after making the decision to answer the provision of the database was doing all the comparison. Watson speaks from text to speech and it has to give the answer as a question sentence according to the format of the program. For each hint, Watson reflected the three most likely answers to the screen with their degree of reliability percentages.

Approximately four terabytes of approaching 200 million pages of structured and unstructured data was available.

Watson, having access to all the data in the English version of Wikipedia, had no internet connection.

At the end of this competition, Watson was awarded its first-place prize of $ 1 million, while his rivals, Ken Jennings and Brad Rutter, had to settle for $ 300,000 and $ 200,000. Immediately after the competition, IBM announced that they would organize Watson as a diagnostic tool to help doctors diagnose and cure their recommendations. In this way, millions of Americans committed to provide current and evidence-based health service. IBM is responsible for providing basic Watson technology and integration on which these solutions will be implemented. Watson's ability to analyze the content and meaning of human language and to process a wide range of knowledge based banks quickly help the patient to propose options that are appropriate for his or her condition, to help doctors and nurses to decide on the most likely diagnoses and treatments. Doctors may consult Watson on the patient's medical history, the final test results, the recommended treatment protocols, the latest treatment-related treatment modalities, and even recent scientific research findings in recent years. In fact, Watson can help doctors better balance the interactions between different drugs, thus narrowing the treatment options that will have the highest success rate in choosing the most accurate and fastest treatment.[8]

The other engine is Einstein, is more user friendly and provides faster solutions for customer relationship management applications. Through Einstein engine's prediction service, businesses can learn if a customer will give up to use a servise or buy a product by investigating past behaviours and businesses can create solutions not to lost their costomers or gain new ones.

3.2 ARTIFICIAL INTELLIGENCE and RETAIL ENTEGRATION

According to Professor Hoffman definition for Web 3.0 including Web 1.0 and Web 2.0, Web 1.0 offers only pictures and text, there is no interaction between consumer and web. However in Web 2.0, communication is not one way like Web 1.0, consumers can share informations, thoughts and feedbacks to web content, share their location and send photos, so there is an interaction. Facebook, LinkedIn, Twitter, Google Map is the examples of application in Web 2.0. What is more, web 3.0 uses the power of artificial intelligence to individualise content according to consumer wants and demands (Jones 2011, p. 45; Hoffmann 2008).

[8] http://blog.aku.edu.tr/emreguraksin/2016/11/25/50/ [Accessed 17 September 2018]

While the industrial revolution was rapidly changing companies and employment rates, this change was further accelerated by the digital revolution. Through digital revolution, while large industrial companies getting smaller , mobile phone, internet and computer-related sectors has made a great improvement as it can be shown in Table 3.1 (Makridakis 2018, p. 18).

Table 3.1: Largest USA firms in 1995 and 2016

1995			2016		
1	GM	Industrial	*1*	Walmart	Retail
2	Ford	Industrial	*2*	Exxon	Oil & gas
3	Exxon	Oil & Gas	*3*	Apple	Hi Tech
4	Wal-Mart	Retail	*4*	Berkshire	Finance
5	AT&T	Telecom	*5*	McKesson	Health
6	GE	Industrial	*6*	United Health	Health
7	IBM	Computer	*7*	CVS Health	Health
8	Mobil	Oil & Gas	*8*	GM	Industrial
9	Sears Roebuck	Retail	*9*	Ford	Industrial
10	Altria	Industrial	*10*	AT&T	Telecom
	Summary			**Summary**	
4	Industrial		1	Retail	
2	Oil & Gas		1	Oil & Gas	
2	Retail		1	HI tech	
1	Telecom		1	Financial	
1	Computer		3	Health	
			2	Industrial	
			1	Telecom	

Source: Makridakis, S., 2018. Forecasting the impact of artificial intelligence: Part 3 of 4: The potential effects of AI on businesses, manufacturing and commerce. The International Journal of Applied Forecasting. (49), pp. 19.

Beside largeness of the firms another criteria is market capitalization and revenue per employee. That can be easily seen in the Table 3.2 which compares the for big digital firms and four big conventional firms. As an example, while Facebook's revenue per employee is $1.15, Johnson and Johnson's is only $0.12 means ten times less than Facebook. By no doubt, this situation shows that Facebook is a company with higher labor efficiency.

Table 3.2: Market capitalization and revenues: Digital and traditional firms

	Company	Number of employees (000)	Market cap (billion)	Market cap per employee (million)	Revenues (billion)	Revenues per employee (million)
Market cap: digital firms	Apple	115	617.5	5.37	233.7	2.03
	Google	57	560.8	9.84	74.5	1.31
	Amazon	270	365.9	1.36	107	0.40
	Facebook	16	347.2	22.1	18	1.15
	Total	458	1891	4.13	433.2	0.95
Market cap: traditional firms	Berkshire	331	407.2	1.23	210.8	0.64
	Jonhson and Johnson (J&J)	127	308.9	2.43	15.4	0.12
	Walmart	2200	214.6	0.10	482	0.22
	Toyota	346	200.7	0.58	237	0.68
	Total	3004	1131	0.38	945	0.31

Source: Makridakis, S., 2018. Forecasting the impact of artificial intelligence: Part 3 of 4: The potential effects of AI on businesses, manufacturing and commerce. The International Journal of Applied Forecasting. (49), pp. 20.

Apple, Google, Amazon and Facebook is the four big trendsetter digital companies for AI applications. They invest heavily in artificial intelligence research to provide new products to their customers. Another result of Table 3.2 while Amazon monetises 107 billion dolar with 270 employees , Wallmart revenue is only 4,5 times higher than Amazon with 2200 employees. Through high technology and artificial intelligence invesments of Amazon , they increased the efficiency of manpower and unemployement (Makridakis 2018, pp. 20-22). Just as in the case of digital and industrial revolutions, the artificial intelligence revolution should be discussed in terms of creating more jobs than the unemployment it causes (Makridakis 2018, p. 22; Stewart and colleagues, 2015).

As Makridakis stated (2018, p. 18):

> *Consider, for instance, Amazon's first GO store, which just opened in Seattle: no employees, no checkout lines, and purchases are automatically charged on customers' smartphones. How might such a system affect employment at retail stores? How many smaller stores would close that could not compete with this efficiency?*

In the century we live, it is much more difficult for retailers to anticipate customer needs because there are many more channels for customers. This situation forces retailers to differentiate, create better supply chains, and create more rapid responses to customers. According to the recent report of PA Consulting , with the recent advances in artificial intelligence and robotics, retailers can overcome the problems they face in the supply chain and turn the situation into benefits.

Jones (2018, p. 65) stated that,

> *According to PA Consulting's report, "AI and robotics automation has the potential to transform supply chains into high-performance, flexible supply networks which are genuinely consumer centric, delivering improved responsiveness, customization and supporting the multichannel buying behaviors of the modern consumer."*

In fact, a lot of retailers began to make some trials. For example, Wallmart tests robots that can perform predictable and repeatable works in the stores. Also robots can detect the empty shelves by scanning and can find the wrong and missing price tags. Target Corp use robot Tally that follows product stocks on the store shelves in U.S.

Also in health sector, CVS Health's MinuteClinics and health care startup Buoy Health came together to reflect patient doctor relationship bu using artificial intelligence. Patients describe their complaints and Bouy recommends the most appropriate treatment for them by eliminating all unnecessary costs (Jones 2018, pp. 65-66).

The companies that integrate new technologies in their business processes in the retail sector gain advantages to make more profit. According to the January 2018 Sectoral Overview- Retail Report prepared by KPMG, it is estimated that worldwide retail sales amounted to 23.445 billion dollars at the end of 2017, including e-commerce. Global e-commerce sales are expected to increase by an average of 20 percent annually by 2021 and to reach 4,048 billion dollars. Through investment made in digitalization, Mavi Jeans increased e-commerce capacity and online sales by 44 percent. Planned to focus on mobile technology investments and processes involving all channels for 2018, Mavi Jeans aims to be a pioneer in this area by using next-generation digital technologies in all its systems from business to retail applications. In the retail sector, consumer data, along with technology and digitalization, reached enormous amounts. By analyzing the data, it has great importance to provide the most accurate product and service to the consumer with the support of technology. The digitalization steps that extend from the effective use of artificial intelligence and data, the success in customer service and the size of the customer satisfaction created, directly affect the turnover. For this reason, data analytics is becoming one of the priority agenda items of the sector. ”Customer data is at the center of Mavi's brand strategy through Kartuş, which has been recognized as the best customer loyalty program in its class since 2007,. Says Yavuz. With 6.5 million members, loyalty card purchases account for 85 percent of retail revenue and enable the marketing team to analyze customer data and insights in depth.[9]

Many of the retail customers are faced with artificial intelligence applications without ever realizing it. For example, when receiving an email from a brand, visiting a popular

[9] http://www.fortuneturkey.com/mavinin-dijital-degisimi--54535 [Accessed 6 September 2018]

brand's website or using a loyalty card in the store. The basis of artificial intelligence applications is that retailers begin to store the data of their customers very well. Artificial intelligence in the retail industry is often used to exploit the data necessary to prevent fraud and provide individual services to customers. The Boohoo.com company is starting to use chatbots, which is one of the artificial intelligence applications. Chatbot can answer customers' questions like where the order is or the return policy. In this way, while the company increases its customer satisfaction with fast returns and it also reduces the cost of employee.

Another application area of artificial intelligence is call centers and machine learning technology is much more better than traditional methods according to Andy Britcliffe , group technology director at Holiday Extras. He adds, that can be useful only with good quality data beside well-equipped software engineers and data specialists. Diana Parker from Microsoft UK says that, artificial intelligence is not a fad, and the retail industry knows it very well. According to the Fujitsu survey, 95 percent of retailers are aware that AI and other emerging technologies will affect the industry (McDonald 2018, pp. 17-20). According to Natalie Kotlyar having omnichannel implementation for a company is essential. Because even a customer goes and check products phsically in the stores but prefer to buy online from a digital device or mobile phone. In addition to that 2018 will be the personalization year for the e-commerce world with the big support of artificial intelligence and big data. In online environment, customers' all clicks can be followed. What they search, what they put into online shopping bag and buy. Through these informations companies can offer personalized products to their customers (Daks 2018, pp. 14-15). An ordinary person can do this analysis in just twenty minutes for a customer, while artificial intelligence can do this in one second for ten thousand customers. Today, companies use CRM, loyalty programs and social media to determine their marketing strategies. But in the near future the definition of work will be revised as coaching artificial intelligence rather than analyzing shopping behaviors. The companies who decide to use artificial intelligence should consider about data scientists because all the data from all the channels for example in store , online and app , should be crystal clear, thus artificial intelligence proceed to find the reasons and learn itself (Muller 2018, p.34). IBM's cognitive computer software Watson is an AI software that can communicate with customers and can also be supported by voice-activated software. The North Face, a retail

sportwear brand, lead the others by combining Watson's questionanswering properties with Fluid XPS's recommendation features to give the customer personal support for their uniq needs and requests. Visual listening is an another promoter to AI. Visual listening examines the images shared by consumers on social media, for example in instagram, with the help of algorithms. Yoox Net-A-Porter's is started to test this concept with their shopping team by using the massive image data on social media.

Through the Wide-Eyes technology that combine artificial intelligence and image recognation (IR), customers can easily find what they are looking for from thousands of products by uploading the image they are looking for. This system supports the brands' e-commerce sites and social media streams, identifies similar products and transfers it to users instantly (Quinn and Marques 2017, pp. 169-170).

In many areas of retailing, artificial intelligence effects can be found , from installation to after-sales customer service. Sales and CRM applications, customer recommendation , manufacturing, logistic and delivery , payments and payment services are the main subdivisions that benefits from artificial intelligence technology.

As an artificial intelligence based product Conversica software, companies would increase sales by automating their sales transactions. Pepper is a human like robot that can communicate with customers and understand their feelings. Pepper is quite popular in Japan who welcomes customers and makes presentations to them in 140 stores of Softbank mobile company. Through Pepper, in Palo Alto store costomer traffic increased seventy percent and neo pen sales increased fifty percent is Santa Monica store.[10]

According to the official web page of Pepper ;

> *Pepper is the first humanoid robot able to understand and react to human emotions. A high-level interface and an artificial intelligence (AI) cloud-based system allow it to communicate with people around, analyzing gestures, expressions and tone of voice. Pepper naturally fits in any environment and constantly collects data and insights from your customers and prospects. Innovatively integrating the physical and digital channels, Pepper redefines the customer experienceand accelerates your business.*[11]

In the area of customer recommendation, IBM AI based software Watson serves too many services to retailers and 1800 Flowers.com's Gifts When You Need (GWYN) applications is one of them. The person who wants to give an order transfers the

[10] https://www.techemergence.com/artificial-intelligence-retail/ [Accessed 7 October 2018]
[11] https://www.meetpepper.it/en/ [Accessed 7 October 2018]

information about the recipient to the system, the system examines the orders given for similar recipients before and offers similar suggestions. In two months, rate of performing orders is seventy percent with GWNY service.

Regarding to logistic and delivery , Dominos announced its robotic unit that can deliver the foods in desired temperature and find out the best road map to the given adress. The design of this vehicles contains robotic military training technology that is used before. Dominos robotic units are presented in Australia, New Zealand, Belgium, France, the Netherlands, Japan and Germany in March 2016. Even if Dominos do not give an exact date, it is possible to see happen this technology in coming ten years.

Amazon made its first delivery with drone in 2016 in United Kingdom. Prime Air is the future delivery system and they commit to carry packages up to five pounds within thirty minutes time. The first flight of drone has been occured in December 2016 and last thirteen minutes. Amazon still works on the safe transport of packages.

PayPal also uses these algorithms to protect its customers from digital thieves. Through these security algorithm, fraud rates decreased to 0,32 percent less than the rate seen in ecommerce is 1 percent.[12]

3.3 ARTIFICIAL INTELLIGENCE BASED PRODUCT

The aim of artificial intelligence is to establish a natural communication between people and devices. The new generation of virtual personal assistants will be able to use two or more data to detect features such as body movement, speech, posture, look. These systems will provide services in many areas, from training assistance to medical assistance and home automation (Këpuska and Bohouta 2018, p. 99).

3.2.1 Chatbots

Chatbots and conversation bots are the boxes that answer your questions when you enter a web page. Apple's Siri and Microsoft's Cortana can be give as an example for conversation bots. While some non-smart bots can answer simple questions in stock, intelligent bots feed on artificial intelligence and try to understand not only the words that

[12] https://www.techemergence.com/artificial-intelligence-retail/ [Accessed 7 October 2018]

customers use, but also what they really want. These bots can improve themselves by learning each new conversation. Google Home and Amazon Echo is the examples of these technology.

The market leader is Amazon in the smart assistant market with 70 percent market share approximetly and Google's ratio is 24 percent as the second player by 2017 (Stucke and Ezrachi 2017, p. 1244).

Chatbots can now interpret natural conversations of people and learn from these interactions. Moreover, it is also possible to use chatbots in sales transactions. They can make better connections with customers than even people, and make suggestions during the sales process. For all businesses that are selling online in the global e-commerce industry, having a chatbot software is now almost a necessity, and many customers don't even realize that they're talking with a computer (Martinez 2018, p. 94).

H&M's bot works like a personal shopping assistant. After asking the customer some questions about style preferences and body measurements, it makes appropriate recommendations to customer. Bot continues to learn new things and data about customer preferences in every purchase.[13]

3.2.1.1 Amazon Echo

Amazon uses the automatic speech recognition (ASR) to translate speech into text, and natural language understanding (NLU) to understand the content of the text by using deep learning technology. In this way, the developer can develop applications that provide a very realistic communication with users (Këpuska and Bohouta 2018, p. 99).

Amazon Echo does not imply more meaning than a radio for many people. But when customized, comprehensive features can be used wisely. Amazon Echo offers its users a number of options to name their virtual assistants. These are Alexa, Echo, Amazon and Computer for Star Trek fans. Users can create different profiles with Alexa and Alexa will treat each one in different ways because for each user, the song playlist, the calendar, and the payment method used for shopping will be unique. For instance , when you want to buy something from Amazon, Alexa uses the payment method that is currently set for the active user. If you have children at home and don't want them to order some toys

[13] https://www.yotpo.com/blog/shopping-bots/ [Accessed 13 October 2018]

unbeknown, you can set a pin code to protect your online purchases. With the Alexa device users can talk on the bluetooth via the official voice remote also they are not near the microphone. Alexa also can be used as a hands free phone. Alexa is very strong in winning new skills. Skill store can be exhausting to search for them, but if you know the name of what you're looking for, you can call Alexa and report the train times or stop doing that (Rawlinson 2018, pp. 43-45).

As Stucke and Ezrachi mentioned (2017, p. 1247);

> *In early 2016, for example, Alexa could directly order a pizza from Domino's or a car from Uber, check credit card balances with Capital One, get fitness information from Fitbit, offer election updates from NBC News, play Jeopardy!, get stock quotes with Fidelity, hear headlines from the Huffington Post, provide a seven–minute workout, and test trivia knowledge with quizzes from Disney.29 Indeed, Alexa's skills selection tripled in three months in 2016 alone, with over "3,000 skills available, including Food Network, GE Appliances, Yahoo Sports Fantasy Football, and more.*

Amazon doesn't explain the algorithm that how to choose and recommend the products. But a person who is familiar to this algorithm mentioned that , Amazon does not always recommend their own product, this proposal is more related to the user's shopping history. The same person stated that this algorithm uses a machine learning model thus the suggestions will develop over time (Shabira and Sharon 2018, p. 2).

3.3.1.2 Amazon Echo Show

Amazon continues to develop Alexa-supported audio devices by adding new features. The Echo and Echo Dot are only supported by the voice features, while the Echo Show is supported by a seven inch touch screen and a five megapixel camera.

In addition to the bluetooth feature, it provides fast internet access thanks to its dual-band wifi feature. Echo show can be engaged with the smartphones and tablets to play music. Amazon Echo Show can answer your questions about your upcoming appointments, traffic and weather conditions and you may want to add things to your calendar.

Users can shop directly from Amazon, the touch screen shows a list of possible products and users can select and add them to your cart. However, a device such as a computer or a mobile is needed to make changes to the shopping cart. The Echo Show can work integrated with smart appliances in the house, turn on the lights, lock the door or change the temperature as desired. It can also be integrated with the security cameras in the house to show who is at the front door.

Through the drop in system , Echo Show can send voice and video messages to the selected contact. But this system is closed so can be used if only both sides has been using Alexa application (Greenwald 2017, pp. 1-6).

3.3.1.3 Google Home

Google develop Google Assistant by using Deep Neural Networks (DNN) that emphasize deep learning mechanism and its derivatives (Këpuska and Bohouta 2018, p. 99).
The smart assistant of Google Home is familiar to people using the android mobile phone. It can be defined up to 6 different people voice and Google Home can make and share their daily schedules. Up to now Google made agreements with third part companies like with Honeymoon and Nest for the smart thermostats and Philip Hue for the smart lights (Pitsker 2017, pp. 66-67).
Wallmart and Google Home announced their partnership against the Amazon the leader of voice shopping. The retail giant Wallmart plans to reach its products by Google Home's smart assistant through Google Express (Baig 2018).

3.3.1.4 Apple Siri

Siri, smart assistant of Apple is available in Iphone, Ipad, Apple Watch, Apple Tv, Mac computers and HomePod, however functionalities of Siri is different for in every single product (Simon 2018, pp. 45-46).
According to Simon (2018, pp. 47-57), while users can find the best Siri application in Iphone and Ipad, Apple Watch's Siri is much more slower. Mac is weakest Siri product because it can not help to set a alarm, can not engaged with the smart home products , and can not create a playlist and users can not call it out "Hey, Siri". Siri's best-in-class product for detecting and responding to voice is Homepod. Apple Tv is the product that reflects Siri technology in minimum. Siri needs to have more personality, when compared with Amazon Alexa and Google Home, Siri can not read stories, play game and make jokes. All the devices except Apple Tv that can not perceive 'Hey Siri' command,can answer basic questions like 'How many quarts in a gallon?', and can give general informations. While the best Siri product is HomePod for playing music and arrange playlist among all of them, the others are not bad. Also, except Mac computer you can control smart home with all devices like turning lights. When compared to Alexa and

Google Assistant, the Siri appears to be far behind in terms of displaying personal features, as an example HomePod is in a silence when it is asked to play a game.

In addition to that , users can not set more than one alarm with Siri in HomePod while Amazon Echo is highly preffered bacause of this feature. However, Amazon Echo also has a weakness about getting chain commands, it only perceives when command seperately. Another weak point for Siri is not being used while it is not connected to a internet network, it can not achieve any command without internet.

Siri is quite behind the competition in terms of understanding the contents. Siri must be able to remember who it was talking to, as well as its old conversations with that person. When it is compared with Amazon Alexa, it is not only the perfect technology and organisation of Amazon , but also the agreements of it third party applications and services that makes it more powerful than HomePod. For example, users can not command applications like Pandora and Overcast through Siri (Snell 2018, pp. 96-99).

3.3.1.5 Microsoft Cortana

Microsoft develop Cortana by using Microsoft Azure Machine Learning Studio and its derivatives (Këpuska and Bohouta 2018, p. 99).

Cortana is available in Ipad after Iphone but is not populer too much when compared with the competitors of it like Google assistant and Alexa. Cortana has some limitation in IOS devices that means users can not command it with voice like they can do with Siri. However the consumers who mainly use Microsoft tools, Cortana improves day by day and become more useful.[14]

3.3.1.6 Amazon Dash Buttons

Introduced in 2015, the Amazon Dash Button allows repeat orders with the same content to be delivered by pressing a physical button. In this type of order, such as card information and address information, the contents of the basket is also constant, so there is no need for an additional human touch. Amazon Dash Button technology is adapted to almost every product group that comes to mind today, and even in the same year, Domino

[14]http://go.galegroup.com/ps/i.do?v=2.1&u=bahcesehir&it=r&id=GALE|A526714850&p=ITOF&sw=w, [Accessed 17 October 2018]

Pizza was able to see this trend and offer a one-touch pizza ordering service. In 2016, Whirpool announced that new laundry and dishwashers would be integrated into this service.[15]

Amazon provides the dash button service only for Prime members. Members of Prime need to pay a annual or monthly fee. It includes free delivery on lots of items, using Prime Music streaming for free and some special discounts.[16]

With the new technologies announced by Vestel and Arçelik on the same day, they adapted the Amazon Dash Button to their target audience, which reduced the daily shopping to a single key.

With the press release released on January 4, Vestel announced that it had collaborated with P&G. In 2018, Vestel will carry out the installation of a 10 kg capacity washing machine application. After putting a button on the machine, an application to the smartphone and the account information process is completed. The second part of P&G's brand, Ariel, is designed to automatically detect and self-order detergent. This technology can also be used with automatic dosing system, which means that it can detect the amount of detergent**.**

Vestel cooperated with P&G and P&G undertakes the distribution operation by its own network. In the first quarter of 2019, 9 or 10 kg auto-dosage washing machines will be available, but the integration of the project with P&G will finalise hopefully the second quarter of the year.[17]

Arçelik cooperated with Unilever and applied this application to its products. Arçelik, which will work with Omo, one of the brands of Unilever, has carried out over 1,000 installations since July 2017 for the establishment of One Touch technology. One Touch, which can be used in Arçelik and Beko washing machines, is installed on the button machines by the experts of the brand and the application is placed on the smart phone. The user needs to press the button as soon as necessary. This practice of Arçelik was first introduced in Istanbul, Izmir, Antalya, Denizli, Adana, Ankara, Gaziantep.[18]

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[15] https://bigumigu.com/haber/biten-deterjanin-siparisini-tek-tusla-verme-teknolojisi-turkiye-de/ [Accessed 19 October 2018]

[16] https://www.lifewire.com/amazon-dash-buttons-4129293, [Accessed 19 October 2018]

[17] (H. ZARSAZEGAR, interview)

[18] https://bigumigu.com/haber/biten-deterjanin-siparisini-tek-tusla-verme-teknolojisi-turkiye-de/ [Accessed 19 October 2018]

Amazon dash button technology is also virtual for prime members and available in Amazon web site and Amazon application. Consumers can reach millions of products and reorder the mostly used products by adding unlimited dash button to their account without paying any charge.[19]

3.3.1.7 Amazon Prime Air

Amazon Prime Air is the future delivery method developed by Amazon that uses drones and can deliver shopping packages in 30 minutes or less.[20]

Fedex and UPS companies, which provide transportation of Amazon products due to the rapid increase in fuel costs in recent years, have also increased their costs. This led to the Amazon that boast by serving the best price to its customers to researh for new shipping methods. For this reason, it is announced that Amazon is working on the method of shipment by drones in 2013. When the traditional and aerial delivery method is compared, while the traditional delivery of a 2 kg package over a distance of 9.7 km varies between $2 and $8, aerial transportation is only 10 cents. The approximate cost of a drone is $ 4000 and a recharge pad cost is $ 5000 by being not very definite. According to the case study that is simulated in San Francisco city, Amazon could make profit $0,49 per kilometers with drone delivery system and that shows the investment is very logical because the investment cost can be regained only in 1 year (Shavarani and others 2017, p. 3148).

The US did not support commercial drone applications as much as countries such as Australia, Britain and Rwanda, and as a result companies like Google Amazon and Zipline did the testing in countries where the laws were more flexible. According to the statement made by Amazon, all approval procedures will be completed in 2019 in US.[21]

Amazon took out the patent of delivering orders by a parachute. Amazon will also gain an advantage over other e-commerce sites. Because the patent received products that is ordered will be delivered through the drone to related adress. After reaching the destination, drone throws the product vertically through a parachute. Different types of parachutes are used according to the dimensions of these packages delivered by drone.

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[19] https://www.amazon.com/b?ie=UTF8&node=17729534011 [Accessed 17 November 2018]
[20] https://www.amazon.com/Amazon-Prime-Air/b?ie=UTF8&node=8037720011, [Accessed 20 October 2018]
[21] https://dronedj.com/2018/03/14/amazons-prime-air-drone-delivery/, [Accessed 20 October 2018]

However, the boxes are also able to prevent that the products are not broken or damaged. However, the current weather conditions are one of the biggest factors that can affect delivery with drone. Amazon is expected to direct the drone and delivery program in accordance with this patent. Because drone delivery has risks especially in the city in terms of landing and take of both cost and aviation. Parachute delivery thus facilitates the saving of energy that drones will spend on landing and taking off. Another issue that Amazon has to think about, of course, is that the parachute will be thrown into the right area.[22]

3.3.2 Amazon Echo vs Google Home

Amazon Echo and Google Home is the smart speakers of 2 different company beats each other in different features. For the smart home control feature, Amazon Echo is the winner because Google Home could not be succesful when it was integrated with another smart home device and when it is required to achieve 2 tasks. When the audio performance compared, Google Home better than Amazon Echo. About the media streaming both devices are perfect, if user prefer to use Youtube frequently, they will prefer Google Home, and Amazon Fire Tv users will may remote it with Echo. About the searching about general information like weather and traffic conditions , Google Home is better than Echo because it has the biggest and best search engine of the world (Brown 2018, pp.110-112).

The Echo Show's angled design seems a bit old when compared with the Echo sound assistants and especially the Google Home (Greenwald 2018, p. 2).

Admittedly, Amazon's customer obsessive approach created millions of people around who advocated, and admired it. The success of the technology company in the e-commerce platform, the subject of the sale of technological products in the success of the same slope continues. Google's smart assistant, Google Home with a rare race in the Amazon Echo, even managed to enter the house of millions of households.[23]

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[22] https://webrazzi.com/2017/06/08/amazon-drone-uzerinden-parasutle-urun-teslimati-patentini-aldi/, [Accessed 20 October 2018]

[23] https://webrazzi.com/2018/08/07/amazon-echo-kullanicilarinin-sadece-yuzde-2si-alexa-uzerinen-alisveris-yapti/ [Accessed 13 October 2018]

While Google and Microsoft have given a special name for virtual assistants, while Amazon Echo offers users a few options. These are Alexa, Echo, Amazon and Computer for Star Trek fans (Rawlinson 2018, p.43).

Alexa perform better if the user wants to shop something, because it can directly contact to Amazon website, explain the product features and asks if user wants to buy anything by recommending other alternatives.[24]

Jeff Bezos the CEO of Amazon announced that they have made an agrement with Best Buy by November 2017, and consumers can purchase electronics only by saying "Alexa, talk to Best Buy." Best Buy is already in a partnership with Google Home in Canada.[25]

[24] http://go.galegroup.com/ps/i.do?v=2.1&u=bahcesehir&it=r&id=GALE|A517882515&p=AONE&sw=w [Accessed 15 October 2018]

[25] http://go.galegroup.com/ps/i.do?v=2.1&u=bahcesehir&it=r&id=GALE|A513548204&p=ITOF&sw=w [Accessed 17 October 2018]

Figure 3.1 : Price comparison of Amazon Echo and Google

Source: Pitsker, K., 2017. Home smart home. *Kiplinger's Personal Finance* (10), p.69.

3.3.3 Amazon Go

Computer vision and machine learning has become so widespread that it has become available even in scientific studies with animals. 3D computer vision software can learn about animals behaviors in normal and non-normal environments and notice the differences between them (Polacco and Backes 2018; Barnard,Calderara, Pistocchi, Cucchiara, Podaliri-Vulpiani, Messori, et al. , 2017). Some hotels also use a similar

system in their mini-bars, through motion sensors and electronic scales in it, that can be charged otomatically from customer if it is used (Polacco and Backes 2018; Laasby, 2014).

The customers who want to shop from Amazon Go store should have an Amazon account and smart phone to make purchases. After downloading the Amazon Go application, customers can enter to store by scanning this application. After that, customers can freely move around the store and add or remove their products in virtual shopping carts.

As Polacco and Backes stated (2018, pp.82-83):

> *For Amazon Go to accomplish this paradigmatic shift in the operational model of retail shopping, it relies heavily on technological innovation. The technology Amazon Go uses automatically senses when an item is picked up, put back on the shelf, and tracks who committed the action. Once the customer is satisfied with the items they have chosen, they simply walk out the door - no lines, no checkouts, and no waiting. The purchased items are charged to the customer's Amazon account and a receipt is sent to the Amazon Go app (Amazon Go Editorial Staff, 2017).*

The technology is named as Just Walk Out Technology that Amazon used. Through this technology, they can track the virtual shopping carts and items that is picked or returned back to the market shelfs (Polacco and Backes 2018). To achieve this, Amazon uses a technology related with driverless cars. The main components of the technology is sensor fusion, computer vision and deep learning algorithms. Beside automative industry , this technology is also used for manufacturing industry to ensure quality and test requirements (Polacco and Backes 2018; Dipert 2017). Each product has a code that can be recognized by the cameras in the store and can determine who is buying the product. System is a combination of infrared and weight sensors that can perceive removal of a product from the shelves and all of these informations sent to the computers to charge the cost from customers. It can be thought that it would be very easy to steal the products in such a system, but this is very difficult, many journalists tried to play the system to test it, but they all failed, because the technology in the store is really high. Amazon's mission here is to make shopping a simpler activity. This idea is perfect for people who don't like to go shopping and interact people too much. Also the store can also gain profit here. In addition to this, customers are reassessed when they wait in the queue and they are likely to give up. Another important issue concerns unemployment, while many people may be unemployed if Amazon applies this technology to the Whole Foods chain of markets it owns. According to the Amazon, there will still be employment but will be different.

Somebody will always have to keep stocks up to date, help customers with technological problems and prepare the products to be sold and there will also be an employee to check the age limit in the alcohol drinks section (Hannah 2018, pp. 1-2).

According to an unknown source in the news Bloomberg, Amazon will open more than 3000 stores till 2021 but that is not verified by the Amazon officiers. Up to today , Amazon has four Amazon Go stores , three of them in Seattle and one is Chicago. Also it is announced by Amazon that outlet stores will open in New York and San Francisco in a non-specific time.

However, Amazon that is very powerful with the acquisition of Whole Foods market should have more store to rival with big brick and mortar grocery retailers like Walmart, Kroger, Albertsons Cos., Target and Costco. In the District of Columbia Whole Foods market has 470 stores that is bought by Amazon in 2017. According to Wolfe Research analyst Scott Mushkin, Amazon knows very well that they should increase the diversity of the product range to compete with the brick and mortar stores (Redman 2018, pp 1-2). This new retail model will likely affect some industries as well. With the increase in the Amazon accounts, more data about customers will be collected and Amazon's payment systems will become more approved. This will lead to the competition of payment platforms such as PayPal, Square and Visa (Polacco and Backes 2018; Melville, 2017).

3.4 BIG DATA and IMPORTANCE OF A.I.

A current study of McKinsey has explored the sensitivity of the jobs done by people to the possibility of making robots in the future. According to the study, data collection, data processing and predictable physical work related jobs are under the group of high sensitive, interactions among stakeholders and unpredictable physical work related jobs are under the group of less sensitive. The third group jobs are related with managing others and applying expertise are least sensitive (Makridakis 2018, p.25).

For many reasons, the effects of the artificial intelligence revolution will be felt more in developing countries than developed countries. Firstly, developed countries may prefer local production in their country because of decreasing production costs through artificial intelligence technologies (Makridakis 2018, p. 26; Ford 2016). Secondly emerging countries will not spend money for the technological investments. The utmost issue is educating young generations about artificial intelligence. If this can not be done, the fate

of these countries will be the same as the fate of those who can not keep up with the industrial revolution (Makridakis 2018, p.26).

4. CONSUMER BEHAVIORS

Nowadays, in retail sector, it is seen that the applications based on customer focus, brand image and quality products and services are the main determinants of business life. On the basis of all these developments, consumers appear to be involved (Bakan and others 2009; Ada Kazançoglu ve Aracıoglu 2005: 607). Therefore, businesses operating in today's competitive environment need to know the consumers very well to win new customers or protect their existing customers. The customer is the person who acquires the goods and services revealed by the producer directly or through the retailer in line with his / her needs (Bakan and others 2009, pp. 138-139).

4.1 FACTORS AFFECTING CONSUMER BEHAVIORS

There are many factors that determine the decision making process, purchasing behaviors and preferred brands of a consumer. Consumer culture, subculture, social class, family structure personality and other psychological factors play a significant role in consumer decision-making process (Rani 2014, p. 52).

4.1.1 Cultural Factors

As Solomon and others mentioned (2006, p.498), “Consumption choices cannot be understood without considering the cultural context in which they are made: culture is the ‘prism’ through which people view products and try to make sense of their own and other people’s consumer behaviour”.

Consumers decide on the products and activities they will prioritize according to the cultures they come from. There is an mutual relation with consumer behaviour and culture. On the one hand, the products that reflect the priorities of a culture are more likely to be accepted by the customer, while the creation of new product designs that reflected by a culture can have a very strong impact reflecting its own period. As an example, changes in the family structure explain the decrease in time spent on housework and the demand for ready and practical food like fast food. Culture is a living organism, continues to evolve by blending old and new. The culture consists of a combination of 3 basic elements; ecology, social structure and ideology. In the 1950s, Italy identified the scooter as the symbol of the young, modern, libertarian woman, and identified with the blue collar

and the heavy industry in Britain, resulting in a cultural conflict. Afterwards it is mainly adopted as a means of transportation. Even a simple thing like drinking a cup of coffee can carry different meanings in different cultures. (Solomon and others 2006, pp .500-502).

4.1.2 Demographical Factors

In order to evaluate consumers objectively, it is necessary to examine how people consume according to some demographic characteristics. Demographic characteristics are the innate physical, social, economic and geographical attitudes that determine the individual and explain its place in the social environment (Tekvar 2016, p. 1602; Wells ve Prensky 1996: 131). Some features in the person determine demographic structures. These characteristics that distinguish and connect people and communities from one another are gender, age, race, religion, social class, geography and family (Tekvar 2016, p. 1602). The gender and gender identity of the person do not only affect the consumer's decision-making at the consumption stage, but also an important factor determining marketing and sales strategies. In the field of marketing there is always a special interest for women; because the social and economic role of women is changing and its visibility in the public sphere is increasing. The social changes created by a noticeable increase in the rate of women working outside the home have also diversified the image of women and the representation of women. Therefore, purchasing and consumption habits have also changed. Nowadays, many women or services that are customary for men to buy now also buy. Whether it works or not, many women are more positive about marketing campaigns that emphasize freedom in creating their own lifestyles as they begin to gain more awareness of their rights and freedoms (Tekvar 2016, p. 1604; Solomon, 1994: 306). However, according to a study conducted in Turkey, compared to men, women have been found to perform unplanned buying more (Tekvar 2016, p. 1604; Özgüven Tayfun 2015). Aggressive and ruthless image of men like masculine sports and activities are still widely used in advertising strategies, but their roles in society have started to change in recent years. One of the biggest reasons for this is that women have entered the business world. Married men, especially the wife working in big cities, began to play a more active role as a father in housework and child care. Thus, consumption and purchasing habits started to develop in different directions. Apart from this, some marketers now use the image of

a sensitive, romantic, warm, emotional male instead of a tough image. It is possible to see this in the most cosmetics and food advertisements. At the end of the nineteenth century, markets began to explore new markets, especially in large cities, where the consumption potential of LGBT groups, which increased their legitimacy. As homosexuality became more visible in the public sphere and in the struggle for gender equality, the work of the markets for homosexuals began to develop. It has been found that the welfare levels of many LGBT groups consumers are at the highest level, highly educated and upper class (Tekvar 2016, p. 1604; Solomon 1994: 309). This gave a new identity to the demographic profile of consumption.

Age groups are considered when developing a marketing plan, because the physical and developmental differences that determine the age groups show social and psychological contrasts. Clothing, accessories, health products, foods, cosmetics, social services and many other products, according to age groups are consumed in different sizes and different purposes. Regarding to economical situation of consumers, the important point here is that the level of income and class level are not confused. Revenue does not always determine the class. The income of an auto mechanic and a pharmacist may be at the same level; but this does not mean that they belong to the same class. In addition, the investments, real estates, preferred social events; in other words, as consumption is mostly dependent on income, income can be seen as an element of class. The result is a proportional situation with income, regardless of the high standard. However, there are studies that show that the importance given to brand products increases as the income level increases (Tekvar 2016, p. 1612).

4.1.3 Socio-economic Factors

Consumer behaviour is directly affected by the socio economic factors like wages, prices and employment. Income is a very important criterion that determines the financial situation of households (Krasko 2018, p. 315). Social class is a determinant factor in the social and economic structure of the society and has a hierarchical structure. Persons of the high social class are stronger in social, economic and political terms than people in the lower social class. Therefore, social class is a very important factor in marketing in two respects. First, it is easier to divide the large population into slices. Secondly, since social class and lifestyle characteristics affect individuals and families at every stage of

life, it is possible to obtain many opinions about what consumers are buying and how they buy products (Tekvar 2016, p. 1610; Berkman et al. 1996: 485). People of the same class share common values, beliefs, opinions and behaviors.

Humanbeing is a social creature, and the way they behave greatly influences the environment in which we belong. People would like to get approval from our environment and do not exhibit behaviors that our environment will not approve. The concept of family is also a social factor that affects consumer behavior. The family may affect shopping behaviour in two ways, one of them is family effect on the individual's characteristics, personality and behavioral pattern and judgement criterias. Besides, family can also work as a decision-making mechanism in shopping action.

The personal income and family income are the decisive factors of shopping behavior. Income can be divided to category as disposal income and discretionary income. The higher the discretionary income, the higher the standard of living and the luxury spending of individuals (Ramya and Mohamed Ali 2017, p. 79).

4.1.4 Psychological Factors

Individuals' motives, perceptions, forms of learning, beliefs and attitudes are psychological factors that affect their purchasing behavior.[26]

Consumer behavior develops according to the needs of people. For this reason, first of all, people have to be motivated by a desire to choose a particular brand and they should be motivated. Consumers want to be affected by a certain feature of the brand, feel close to itself or identify with the brand as a result of the purchase is formed. The consumer's personality traits are influenced by his / her affinity towards a brand and poses positive attitudes towards the brand. The beliefs and value mechanisms developed by the consumer towards the products and services have a directing effect in choosing one of the many brands (Aktuğlu & Temel 2016, p. 47).

4.1.4.1 Motivation

Motivation is the person's action under the influence of an internal or external stimulus. Three aspects of motivation can be mentioned. These are; the motivating situation that

[26] https://prezi.com/bisz0wmoar8v/tuketici-davranislarini-etkileyen-faktorler/ [Accessed 24 October 2018]

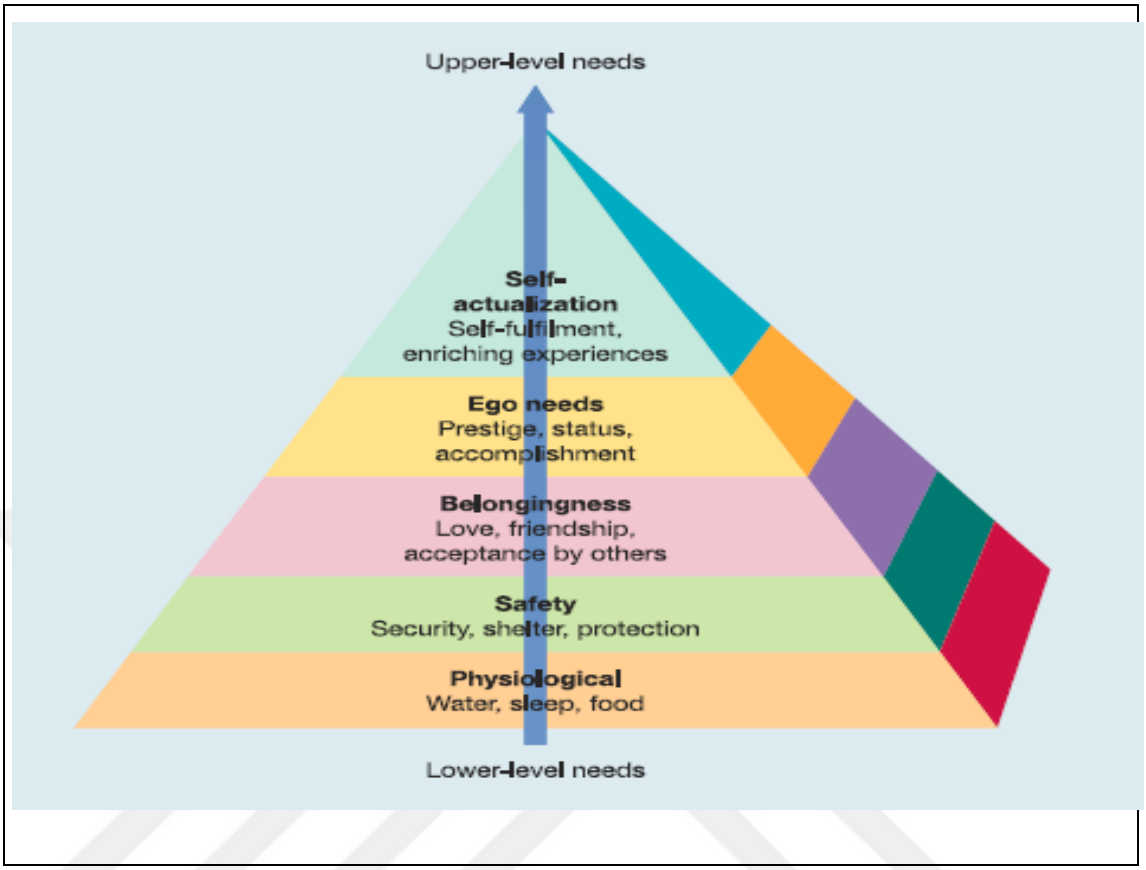
pushes the person in a certain direction, behavior to achieve the goal and getting to the goal. When the temperature of a consumer increases, the need for thirst occurs. The consumer can relieve this need by water, cola drink or juice. While this necessity evokes these kinds of drinks, the consumer is under the influence of health and safety incentives and can buy them for protection. If the same consumer is in a hotel lobby or garden, this time because of the status may be purchase of a coke , perhaps not water.[27]

Motivation is a phenomenon related to the subconscious and difficult to measure. The motivation level determines the purchasing behavior and the needs of each person and the priority of these needs are different. While psychological needs are prioritized for some consumers , in some of them sociological or biological needs are more urgent. Motivation is directly related to needs and brands must create a motivation in their subconscious to encourage customers to buy (Rani 2014, p. 58).

In the Figure 4.1 hierarchy of Maslow can be seen. For example, while developing economies have not yet been able to meet their basic needs, luxury products are trying to be sold. In a study, Romanian students are asked to rank what they want to have. Besides sports car and television, there are many basic needs such as water, soap and food (Solomon and others 2006, p. 99).

[27] https://prezi.com/bisz0wmoar8v/tuketici-davranislarini-etkileyen-faktorler/ [Accessed 24 October 2018]

Figure 4.1 : Levels of need in the Maslow hierarchy



Source: Solomon and others, 2006. Consumer Behaviour: A European Perspective, p. 99.

4.1.4.2 Perception

Two people may think very differently about the same thing or event; because they witnessed the same incident together, but perceived it differently. Sensing is the acquisition of information through the senses on the presence of an event or object. With the perception process, the person gives meaning to the stimuli around him or her. There are several factors that affect perception. The main characteristics are: the physical qualities of the stimulus, the relationships with the environment of the stimulus, and the characteristics of the person. The impact of the characteristics of physical stimulants on perception can be cited as a colorful newspaper advertisement takes more consumer attention than colourless one. Sensing needs influence the purchasing behavior of the consumer by conditioning motives and attitudes. For this reason, it is necessary for the consumers to make an effort to turn the selective feature of their perception into their own favor and to ensure continuity in this. However, detection is a two-way process. Motives and attitudes also affect perception (Satıcı 2000, p.11).

4.1.4.3 Learning

Learning consists of a person's behavioral change caused by knowledge and experience. Learning process has a great place and importance in directing human behavior. According to psychologists, the psychological presence and characteristics of human beings are largely determined by experiments obtained during the learning process. In this way, the effect of human behavior on the basis of influence - reaction and repetition - reinforcement has given the advertisers an important clue on influencing people. If the human brain is a closed box that gives rise to certain behaviors due to certain stimulants, the desired behavior is achieved by adjusting the type and nature of the stimulants (Satıcı 2000, pp. 11-12).

4.1.4.4 Beliefs and Attitudes

The attitude as a factor directly affecting the consumer's perceptions and behaviors expresses the positive or negative feelings or tendencies of an individual to an idea or object. Attitude also affects beliefs. Belief includes opinions and opinions about right or wrong information based on personal experimentation or external sources. It has been determined that consumer attitudes are influenced by the purchasing decisions in the product type and brand selection. Attitudes of the person in the past, family and relations with the surrounding environment, as well as personality plays a role. The consumer's attitude towards operations and products is very important for the success or failure of the marketing strategy. Therefore, marketing managers should be tried to determine consumer trends in a variety of ways, such as by directing consumer opinions through salespeople, or by using researchers, and by conducting motivational research and developing some attitude scale tests. With effective advertising and other promotional efforts, the saleswoman tries to ensure that the consumer adopts a positive attitude towards his property or that his goods comply with his attitude (Satıcı 2000, p. 12).

5. CONSUMER BEHAVIOR CHANGING BY TECHNOLOGICAL DEVELOPMENTS

Although Amazon's latest technologies will destroy many things in the retail business, the only thing that will not change people will continue to be emotional as always (Polacco abd Backes 2018, p. 87; Merholz, 2011).

5.1 ADAPTION TO NEW TECHNOLOGIES

For today's consumer, consumption behavior is more than a concrete behavior that results from only physical needs. The individuals no longer tends only to their physical needs but also to consumption behavior due to their various abstract needs based on their psychological and sociological needs. An important factor in the purchasing behavior of consumers is the expectation of innovation related to products or services, in other words consumer innovation (Köker and Maden 2017, p. 836). Consumer innovation refers to the level of consumer openness to new products, services and practices (Köker and Maden 2017, p. 837; Feng, Fu and Kin, 2016: 336). Besides, it can be defined as the tendency of consumers to adopt innovations. Consumer innovation has a critical role in the expansion of new products and services. The diffusion of innovation is one of the most important processes of consumer innovation. The theory of diffusion of innovations examines the pioneering role of the individuals in adopting innovations, focusing on the consumer's individual innovation, the speed of adoption of innovation by the individual and the effects on the other individuals. The theory examined consumers in five different groups according to their adoption to innovations. Starting with the group with the highest degree of adoption; innovators, early adopters, early majority, late majority and laggards (Köker and Maden 2017, p. 838; Rogers, 2003).

Innovators are the those who make the inventions, and develop systems. Those who first meet innovation and who play a critical role in the spread of innovation to society are the early adopters. The critical majority is the early majority that the innovation has reached and has included this innovation in their life and culture for a variety of reasons. Late majority is constituted through spread of the innovation to other parts of the society after

the maturity of the innovation. Those who continue to use the innovation that is abandoned or replaced by a new technology are the laggards.[28]

Innovators are the people who are excited about new technologies and can't wait to integrate them into their lives. They are usually located in sectors where technology is very fast therefore, they encounter new technologies and begin to explore and experience new technology through their own investigations. After experiencing new products, they give feedback to producers to improve the products. Early adopters adopt new technologies faster than most of the other consumers, for instance these consumers are the ones who are waiting in the queue in front of the Apple store at 6 am to be the first to use Iphone's newest model. They can learn new technologies with their own efforts and use them after being suitable for puclic. Just like the innovators, they tend to ignore a few mistakes to experience something new and exciting. The early majority represents a segment that is excited about trying new things that are curious about new technologies, but that take longer to take action. They want to make sure that the technology proves itself to take action, so they don't spend money on anything unnecessary. For example, this group is the masses waiting for the 3rd and 4th versions to get the Iphone. This group constitutes the largest segment of customers, and once a technology has reached this point, it is the prove that the technology will take an important place in the future. Late majority users are consumers who use technology only when they have to. When they adopt new technology, technology has already matured and became a norm. When a technology comes to this stage, it means that it has become a part and standard of culture. Laggards are the last part of the circle and they reject to adopt new technology. In general, when a technology reaches this level, it dominates the market, the consumer has no other choice. This group constitutes a small portion of consumers, when a technology reaches this stage it is the new normal. That can be given as an example, selling food from online channel is new and the costomer is still in early adoption stage of the lifecycle.[29]

In this century, technology has an important place in customers' daily life because they give priority to digitalization. As a result, modern consumers have great demands and

[28] http://mis.sadievrenseker.com/2014/05/yenilik-yayilimi-diffusion-of-innovations/ [Accessed 10 November 2018]

[29] http://joshuafischer.com/2016/02/03/technology-adoption-lifecycle/ [Accessed 10 November 2018]

wants to see continuous innovation in a very fast and cost-effective manner (Farah and Ramadan 2017, p. 54).

According to the survey that is conducted in May 2018 between 1203 U.S. adult older than age 18, 62.3 percent of consumers still prefer to shop at the physical store while online shopping is growing rapidly. While 26.3 percent prefer web shopping, 7.6 percent are using mobile phones and only 0.58 percent are shopping with smart assistants.[30]

One of the biggest reasons for consumers to shop online is the convenience. Through internet shopping they spend less time and energy, can give response more quickly to advertisements and discounts, and the freedom to shop every time in a day. Another factor is innovativeness which is related to customers' desire to experience a new product or service. Donthu and Garcia (1999) found empirically that, nonshoppers are less innovative than online shoppers. The third factor is risk aversion which is related with the possibility of credit card theft, financial lost and privacy issues that influence online shopping decision. Donthu and Garcia (1999) predicted that consumers who do not shop online would have higher risk aversion than online shoppers and this idea is supported (Brashear and others 2009, p. 269). According to the research that is conducted in 6 countries United States, New Zealand, England, Brazil Bulgaria and China, internet shoppers are more risk averse than nonshoppers while there is no difference for Chinese and Bulgarian samples. According to the results of the same study, demographic factors such as age, education and gender do not play the same role in each country. Although people who shop online and do not, differ by factors such as income, having a computer and internet, they are not different in many countries in terms of age and gender and education. This is the opposite of the previous research in the United States where online shoppers were found young, educated and male (Brashear and others 2009, p. 277).

Although the internet provides users with advantages such as time saving, more information, convenience, competitive prices, more choice and more information, customers are often reluctant to do shopping on the internet and they prefer traditional shopping methods (Turan 2008,p. 726; Lin, 2007). In a study in which individuals' attitudes towards electronic markets and marketing practices were analyzed, it was found that consumers enjoyed being in electronic markets, but they were not willing to carry out

[30] https://voicebot.ai/voice-shopping-report-2018/ [Accessed 11 November 2018]

transactions that were risky for them, however, they saw the future of the internet as positive and thought that it would become more widespread (Turan 2008,p. 726; Aksoy, 2006b).

In the US and UK's small cities, empty shopping malls are too common situation because most of the customers are preferring online shopping especially over the last 10 years. The total expenditure of generation Y is $ 1 trillion in all US. The spending styles of generation Y are different from their predecessors, so their value judgments are different. They keep the experience and the deep meaning above the material and money, and this has caused damage to the shopping centers. Credit Suisse estimates that by 2022, 1 out of every 4 shopping centers will close, which means that in 2017, 8600 stores will be closed.[31]

Nowadays, retailers are trying to minimize the impact of their competitors while trying to develop new technologies to give consumers a satisfying shopping experience (Farah and Ramadan 2017, p. 55; Singh 2017).

Shopping with voice assistants is quite a new technology. According to research that is conducted in U.S. in May 2018, one in five consumers have preferred voice shopping at least once. While nearly half of consumers are using their smartphone for voice shopping, 22 percent of them use computer and 13 percent of them use smart speakers. However smart assistants are more suitable to voice shopping, only 21.6 percent of adults in U.S. have smart assistant. In January 2018 research, Voicebot revealed that 11,5 percent of smart speaker owners used them for shopping, after four months this rate increased to 16 percent. That means consumers are getting accustomed to voice shopping rapidly. There may be promotions that make a significant trigger in achieving this progress. Amazon and Google offer special deals only for the smart assistans Echo and Google Home.

Voice shopping may also change the norms about gender and shopping. While 63 percent of voice shoppers are men and 37 percent are women.

When voice shopper is investigated in terms of age groups, 18-29 age group constitutes 34,5 percent of them. This is followed by consumers between the ages of 30- 44 with 21.3 percent.

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[31] https://www.forbes.com/sites/alicebonasio/2018/07/22/will-virtual-shopping-malls-save-retailers/#74fa97126232 [Accessed 22 October 2018]

Consumers who like voice shopping mentioned that it is hands free and they can do other task at the same time also they can get faster answers and results.

There are abstract concepts such as the fact that consumers do not like the voice shopping, they do not feel comfortable or have no confidence in payment procedures. Another key reason is, not able to view products because of lack of screen.

The amount of voice shoppings are $100 and under for the 85 percent of the purchases. There may be many reasons for this situation, the first one is that small-scale purchases carry less risk and the loss will be less if things go wrong. The second reason is that customers want to be more careful when buying expensive products and have more confidence in the screen than voice.[32]

According to a research conducted by OC&C Strategy Consultants, shopping with smart assistants will increase in value to $40 billion from $2 billion by 2022. Furthermore Amazon will be the leader company with biggest market share of smart assistants among its rivals Google and Microsoft. Today 10 percent of the people in UK have a smart speaker in their home, but it is estimated that it will jump to 50 percent till 2020. Researchs proves that 44 percent of the smart assistant owners already experienced shopping. The voice shopping is 0,1 percent means £0.2 billion of the total online shopping volume, but it is forecasted to be £3.5 billion in coming 5 years as customers will be accustomed to use this technology.

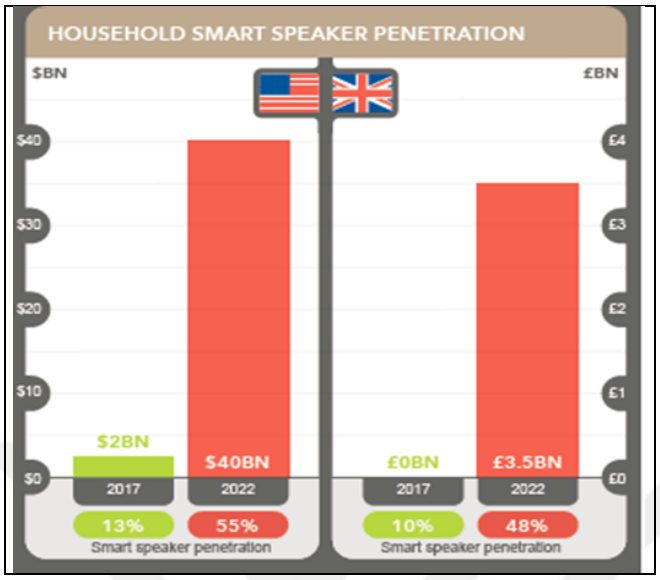
In the near future, one of the most challenging issues in retail operation will be the voice commerce , with customers' fast adaptation and increasing tendency to shop with smart assistants. So retailers should not underestimate this new channel.

As it can be seen Figure 5.1 smart speaker penetration will increase to 55 percent in U.S and 48 percent in UK by 2022.[33]

[32] https://voicebot.ai/wp-content/uploads/2018/06/voice-shopping-consumer-adoption-report-june-2018-voicebot-voysis.pdf [Accessed 11 November 2018]

[33] https://www.occstrategy.com/en-tr/news-and-media/2018/02/talking-shop-infographic, [Accessed 17 October 2018]

Figure 5.1: Household smart speaker penetration in U.S. and UK

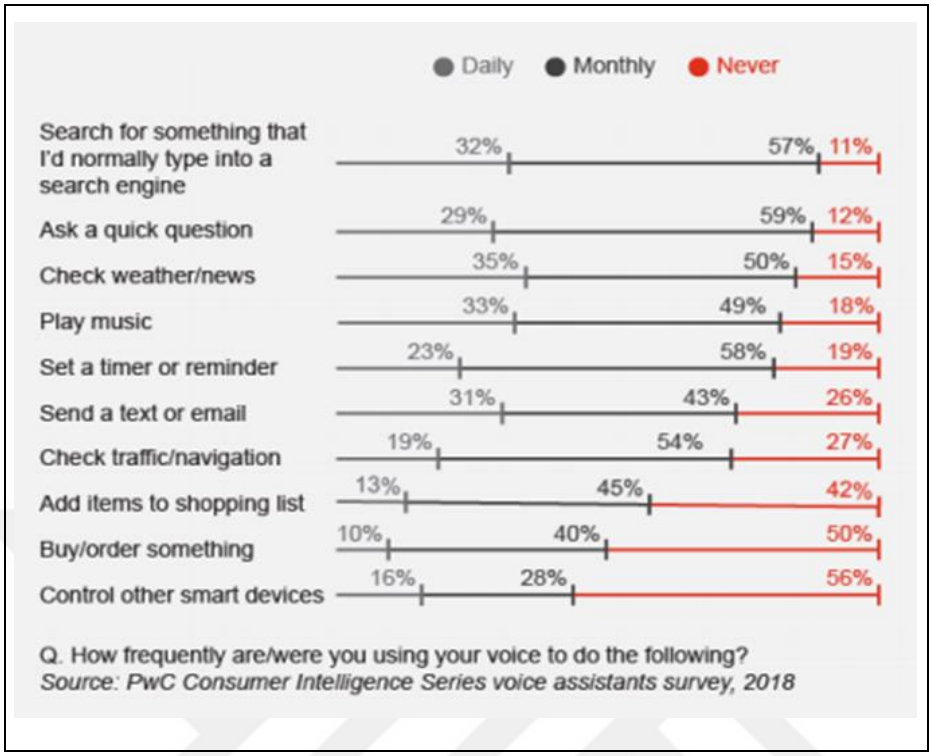


Source: https://www.occstrategy.com/en-tr/news-and-media/2018/02/ talking-shop- infographic, Access Date: 17.10.2018).

According to the survey results of PwC that is conducted by February 2018 with 1000 Americans between the ages of 18-64, only the 10 percent of respondents have never been heard about voice enabled devices and 72 percent of them already used such a device. The age group of respondents are divided in three groups; between 18-24 ages is the youngest group, second group ages between 25-49 and the last group is 50 and above. Surprisingly, while the youngest group heavy usage rate is 59 percent, 25-49 age group heavy usage rate is 65 percent. At least once a day usage refers to heavy usage. The 74 percent of consumers prefer to use their voice assistants at home because they do not want to seem weird. That is why 18-24 years old consumers uses voice assistants less because they spent more time at outside.

As it can be seen in Figure 5.2, 50 percent of consumers never order something with voice assistant and 56 percent of them never controlled other smart devices. They generally use voice assistants to search for something, ask a quick question, check weather and news, play music and set a timer.

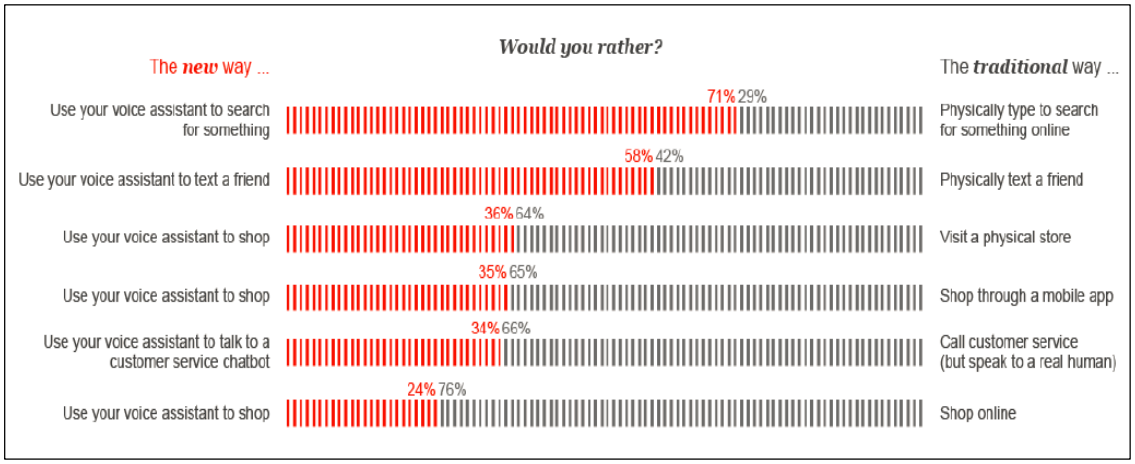
Figure 5.2: Usage rates of voice assistants for the different area of use



Source: https://www.pwc.com/us/en/services/consulting/library/consumer-intelligence-series/voice-assistants.html. [Access Date: 27.10.2018]

Three main reasons why consumers do not experience sound technology can be considered as; lack of sufficient knowledge of the capabilities of the devices, lack of confidence, high price of the item and the risk of not taking imagined efficiency.

Figure 5.3: Comparison between voice assistants and traditional ways for specific tasks



Source: https://www.pwc.com/us/en/services/consulting/library/consumer-intelligence-series/voice-assistants.html. [Access Date: 27.10.2018]

As it can be seen in Figure 5.3, customer mostly prefers, visiting a physical store,shopping through a mobile application or shopping online instead of using voice assistants. The ratio of customer that use them varies between 24 -36 percent.

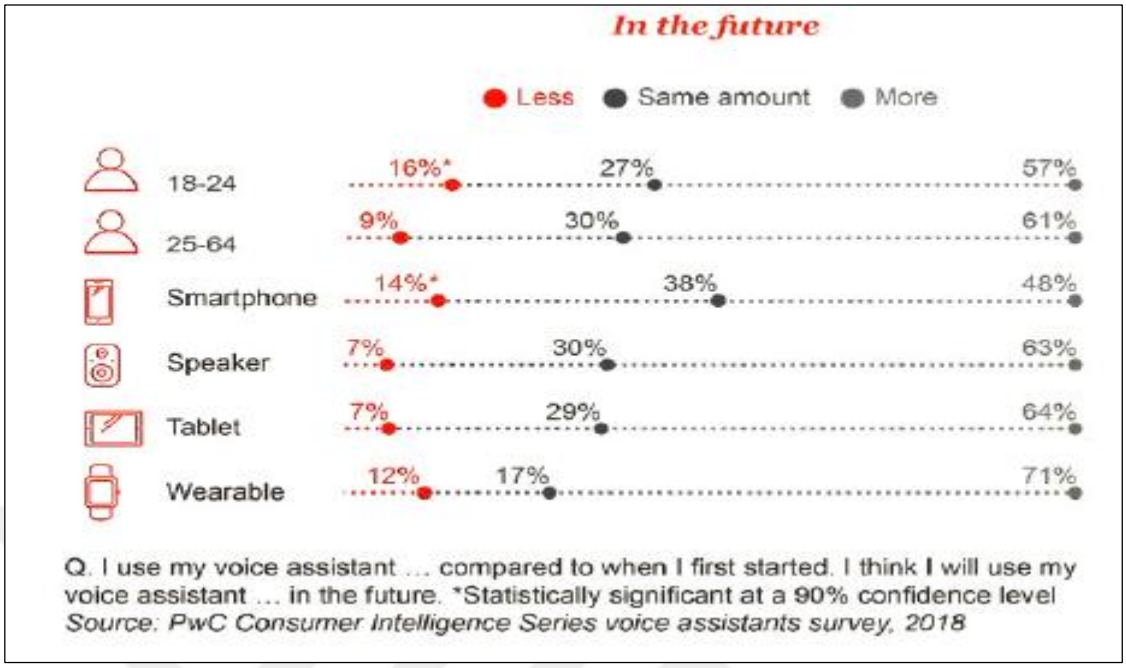
A shopping that satisfies the customer positively affects the trust and loyalty of the company and means to earn more money. Approximately 80 percent of the customers are pleased to shop with voice assistant. However, lack of confidence is still very evident, 25 percent of the consumers does not want to use the voice assistant now or in the near future. Another issue is privacy problem, one of the survey participant asked for the voice assistant should be controlling if the owner is alone or not, before making offers related with her previous purchase story.

Thanks to the voice assistants, people feel 50 percent organised, 45 percent informed, 37 percent happier, 35 percent smarter, 31 percent confident and 30 percent free through them.

As it can be see in Figure 5.4, consumers will going on to use more their voice assistants in the future. However, consumers expect from the voice assistants to be more accurate, understand the diction every time, save time, understand the difference between voices and make life easier.[34]

[34] https://www.pwc.com/us/en/advisory-services/publications/consumer-intelligence-series/pwc-voice-assistants.pdf [Accessed 27 October 2018]

Figure 5.4: Respondents statements about using voice assistants in the future



*Source:*https://www.pwc.com/us/en/services/consulting/library/consumer-intelligence-series/voice-assistants.html. [Access Date: 27.10.2018]

According to the Walker Sands The Future of Retail 2018 report that is surveyed 1600 U.S. consumers, 72 percent of consumers younger than 36 ages have some kind of smart home tools at home. The 93 percent of consumers who is between the ages 18-25, already has smart devices including smartphones. Averagely, 41 percent of the consumers shop from Amazon 1-2 times in a week. For the consumers ages between 18-25 this ratio increased to 50 percent and for the 26-35 ages the ratio is 57 percent. Consumers are accustomed to voice assistants more than before, the 64 percent of them used their voice assistants at least one a week and 50 percent of them used voice assistant for shopping in last year.

Consumers are more sensitive to technology than their past, their perceptions are more open and closer to sharing economic trends. Besides, they want to reach the channels of information in time and which are suitable for them as a response to the money they pay. The number of customers who want fast and free delivery and no longer see them as an extra is increasing. The fast and free delivery dominates the online buying behavior for 5 consecutive years.

The ideas and behaviors of consumers about the shopping experience were deeply affected by the rapid rise of the Amazon. In grocery sector, the purchase of Whole Foods

by Amazon, a grocery giant , has changed the way many retailers look at this issue. However 78 percent of customers are still prefers physical stores for shopping. Wallmart and Amazon will play a major role in boosting online grocery sales and need to make online shopping more attractive to ensure customer adaptation.

The voice assistant adoption by consumers increasing rapidly since last year report. However, security and the privacy issues are the main obstacles for voice shopping. The 45 percent of the consumers are hesitant about the technology because of security and 42 percent of them hesitant about their privacy. Beside that, 21 percent of the consumer reported they will buy a voice assistant and 36 percent of them will make shopping via voice in next year.[35]

According to an Accenture study, 77 percent of American customers prefer to solve service related problems with a human instead of a digital channel (Polacco abd Backes 2018; Davis, 2016). The desired personalization in the retail sector can only take place through a dynamic human relationship and at the end of the day it will be the customer's decision of how he wants to experience a shopping, not technology. Also customers are interested in the convenience of shopping activity and whether the prices are cheap, rather than how long they wait in the line. (Polacco abd Backes 2018; Boyle, 2017).

As Doupnik stated (2018, p.30):

> *The heavy-use patterns of traditional search points to the slow adoption of voice activated assistants. According to the survey results, 70 percent of participants have yet to use such a tool. And consumers don't have much faith in industry leaders like Google, Microsoft, or Amazon to get it right Sixty-three percent said they don't expect current leaders to crack the code on voice-activated assistants. "With many retailers looking to go beyond last-generation keyword-based search, brands and retailers would be best served by focusing on personalization and image search while positioning themselves to win with any developments in voice-based search," Ni said. Unsurprisingly, Millennials and Generation Z are more open to using voice-activated tools when shopping than older cohorts. The survey results found that 43 percent of younger consumers have used the feature, opposed to 30 percent of older participants. When they are using the technology, they're opting for Apple's Siri over Google or Amazon*.

When it comes to Alexa-assisted voice-over shopping experience , Amazon doesn't seem to have found what it hopes for. About 50 million smart assistants have been sold to date, with only 2% of users using Alexa for shopping . On the other hand, it seems that the first voice shopping experience through Alexa is just a piece of curiosity. Approximately 90 percent of people who buy something from Alexa are not trying to do it again. Instead of

[35] https://www.walkersands.com/resources/the-future-of-retail-2018/ [Accessed 28 October 2018]

shopping, consumers often use Alexa to answer simple weather-related questions, set timers, and play music and radio stations. For Amazon, the shopping adventure with sound, which is not a meaningful source of income, is now on the axis of early adopters. Alexa may at this stage be suitable for the consumer to receive the products in the daily shopping list. However, as far as it is known, the sale of the product in many categories, from clothes to accessories, to electronic goods, can be successful when image of the product is displayed. Amazon can provide a solution to the long-running shopping journey with the touch screen Amazon Echo Show, taking into account user reviews and friend recommendations.[36]

According to the consumer survey of conducted by OC&C Strategy Consultants, smart assistant owners mostly activities includes, playing music is the top with 97 percent of U.S. users and 95 percent of UK users, learning weather and news 94 percent of U.S. users and 92 percent of UK users, asking general questions 90 percent of U.S. users and 88 percent of UK users , setting an alarm 87 percent of U.S. users and 77 percent of UK users, make a to do list 71 percent of U.S. users and 63 percent of UK users , shopping 62 percent of U.S. users and 44 percent of UK users , using with smart home devices 57 percent of U.S. users and 44 percent of UK users , sending emails and making calls 55 percent of U.S. users and 41 percent of UK users.

For the customers, voice shopping is a purchasing method not a browsing experience and 70 percent of them know accurately what they want to buy. The product category does not contain expensive items , most demanded items are food grocery, electronics and homeware products.[37]

When it comes to the dash button , according to the reports of Wall Street Journal although Amazon continues to add many new brands to the Amazon dash button technology, it seems that consumers use them only 1 time or never to buy something. According to the market report of Slice Intelligence, less than 50 percent of customer who buys dash button used it only 1 times for shopping. Dash button price is $4,99 but after use it 1 time, Amazon give it back as a credit so it is necessary to use at least 1 time to not bear the cost

[36] https://webrazzi.com/2018/08/07/amazon-echo-kullanicilarinin-sadece-yuzde-2si-alexa-uzerinen-alisveris-yapti/ [Accessed 13 October 2018]

[37] http://www.occstrategy.com/en-pl/insights/stu/the-talking-shop [Accessed 17October 2018]

of it. One of the reason is that customers do not prefer to use them because they can not see the current price of the products and any other information on the dash button and that creates anxiety and if they will have to check the price from an online source before every purchasing with buttons, this is not a time-saving application. In order to be successful in this technology Amazon customers should give up to use their brains and only care about easily reach their needs. But it is Amazon itself, which teaches customers to look for best price by offering the best price (Tuttle 2016, p.26).

Although the use of dash buttons is limited to today, this technology gives Amazon the chance to learn very valuable customer data and experience.[38]

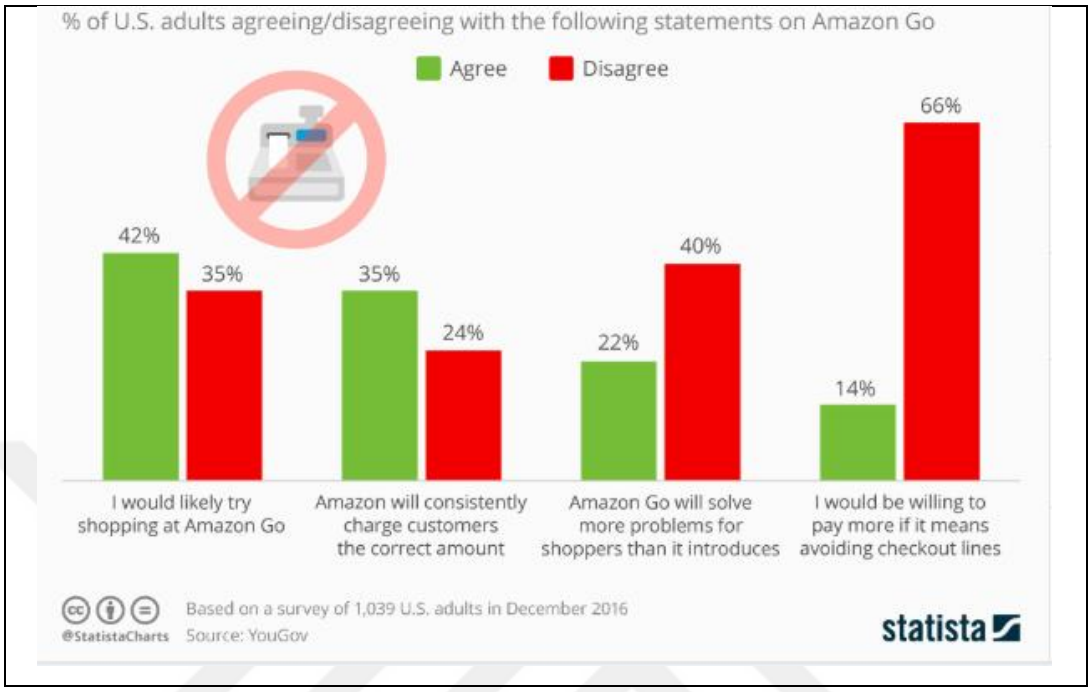
The first time was 1992 the customers met with the self checkout system in grocery stores, this model has become very popular and spread rapidly. According to a study, they preferred to have someone waiting to help when they experienced a problem, even though they liked this system in terms of being practical and comfortable (Polacco and Backes 2018; NCR,2014). Despite all the advantages of the selfcheck out system, some customers may not want to deal with the challenges of technology. Wallmart tested the Scan and Go application in 200 stores but it did not work because customers could not easily understand and use it. Thereupon to Wallmart decided not to continue the test (Polacco abd Backes, 2018; Anderson 2014).

Amazon Go concept that is introduced by December 2016, consumers are willingness to have a store experiment as it can be seen in Figure 5.5. However, consumers do not accept to pay more not to wait in the line.[39]

[38] https://www.digitalcommerce360.com/2017/01/29/what-amazons-dash-button-means-future-online-shoppin/ [Accessed 28 October 2018]

[39] https://www.statista.com/chart/7198/consumer-opinion-on-amazon-go/ [Accessed 28 October 2018]

Figure 5.5: What consumers think about Amazon Go in December 2016



Source: *https://www.statista.com/chart/7198/consumer-opinion-on-amazon-go/* [Accessed 28 October 2018]

First Amazon Go store is opened in January 2018 and initiated the frictionless check out era in shopping. Moreover there are other companies that are making progress on this issue. Microsoft Corporation is improving the technology of frictionless check out to be rival to Amazon's Just Walk Out Technology. Microsoft is introducing this technology to all retailers around the world, while it is being discussed that it is in the process of collaborating with Wallmart. According to Michael Jaszczyk, CEO of software company GK Software USA, customer is adopted this technology highly because it is integrated with mobile phones and most of the people can easily use smart phone today. Suswal of Standard Cognition agrees that, with competition in e-commerce and the challenge of the Amazon rivals to reorganize its stores, stores without cashiers expect to be a long-lasting technology (Lisanti 2018, pp. 40-41). According to Wiedmeyer, generation Xers and Zers may be the most powerful adopters of frictionless shopping, because they already share their some personal data on digital platforms to make their daily life easier.[40]

[40] https://csnews.com/frictionless-checkout-viable-all-customers [Accessed 18 November 2018]

In the near future, unmanned package delivery methods are expected to be financially and technically viable. With the technological development of the drones, they may be suitable as a delivery method (Shavarani and others 2017, p. 3141).

According to the Raconteur report, when that is asked to the public if they want their orders delivered with a drone, 16 percent of them mentioned that they would certainly use it, 35 percent of them probably use it, 19 percent of them would probably not use it, 14 percent of them would certainly not use it and 16 of them do not have an idea. In addition to that 70 percent of the consumers look for cheapest form of home delivery, 23 percent of them looks for same day delivery, 5 percent of them interested in reliability such as selecting time window and 2 percent of them prioritize insant delivery. Pharmaceutical and medical sectors would be the first benefit from drone delivery with 70 percent, non perishable consumer goods forecasted as 62 percent , food and beverage sector is 51 percent, fresh food and beverage would be effected in 43 percent.[41]

In Turkey, according to 2018 Digital Report prepared by We Are Social and Hootsuite, 56 percent of the internet users search the product or service that they plan to purchase by internet in the last 1 month, 60 percent of them visited an online retail store, , 43 of them purchased a product or service on the online platform, 30 percent of the online purchases done via laptop or desktop computers and 30 percent of them via mobile phones. According to 2018 e-commerce statistics, the most spending was in the electronic category. The lowest spending was made in the field of digital music while pursuing electronics, fashion and beauty products. The most growing e-commerce sector, compared to the previous year, was fashion and beauty with a 20 percent increase, while the least increase was reported as video games with a rate of 9 percent. In e-commerce, consumption expenditures increased by 8 percent and 31.7 million people realized the shopping of consumer goods via e-commerce. The share of all consumer goods in the e-commerce market increased 15 percent and reached to $5.7 billion (Demirdöğmez and others 2018, p. 2224; We Are Social, karaman.gsb.gov.tr).

Worldpay conducted by global research and recently shared with the public, in Turkey after the Netherlands and Italy show that Europe's fastest growing market. To show annual growth of 13 percent until 2021 according to the results of the study expected in

[41] https://www.raconteur.net/infographics/delivered-by-drone [Accessed 20 November 2018]

Turkey with only 1 percent is expected to lag behind the Netherlands and Italy. The e-commerce sector, which has been developing every year with the intensive contributions of young people and working women, aims to grow by 40 percent in 2018 (Demirdöğmez and others 2018, pp. 2227-2228).

In Turkey, self-checkout system is introduced by 1999 first grocery stores, consumers adopted quickly and currently 107 stores serve with self-checkout technology (Orel and Kara 2014, p. 118; NCR, 2001).

The automatic check out system is a system where consumers can scan, put into bag and pay products without the help of store employees. These systems provide retailers with advantages such as low cost and flexibility, more privacy and more control over purchasing (Bekoğlu and Ergen 2016, p. 64; Kraft and Mantrala 2006). This system by Migros in Turkey 'Jet Kasa' is implemented by name. However, this innovative application is not yet widely used in our country (Bekoğlu and Ergen 2016, p. 64).

In Turkey, Migros started to use the self-checkout system by 2009 and Kipa began in 2012. Starting with 16 stores, Migros used this system in 211 stores as of 2017 and the transaction volume increased from 12 percent to 37.53 percent (Migros Company Internal Report 2017). Kipa also increased the transaction volume of self-checkout systems 31 percent from 25 percent (Kipa Company Internal Report 2017). Although USA met this system in 1992, the highest utilization rate was 41 percent (Nielsen 2015). Transaction volumes are not low in Turkey even the system is in its infancy compared with USA (Kazançoğlu and Yarımoğlu 2017, p. 291).

In the research that is searching the main drivers of consumer adoptation to self-checkout system found that, perceived usefulness and perceived ease of use positively influence the intention to use self-checkout system. However technology anxiety negatively influences the intention to use self-checkout system. Beside to that, the need for interaction negatively influences the perceived ease of use of self-checkout system (Kazançoğlu and Yarımoğlu 2017, p. 300).

5.2 PROS and CONS of NEW SHOPPING BEHAVIOUR

On the one hand, societies and companies should seek ways to eliminate unemployment and increase income disparity while taking advantage of the technological advantages of artificial intelligence, developing new products and services and increasing productivity

(Makridakis 2017, p. 46). Nobody knows all the answers about the effect of artificial intelligence in future, but it is clear that those who cannot revise the traditional skills required in the new workplace environment and who cannot benefit from the value of artificial intelligence will experience a loss of market share and will be in a disadvantageous position in the face of their competitors and in employing the right talents (Toukalas 2018, p. 72).

Considering the advantages of e-commerce, it should be mentioned primarily that it saves time.

In our age, time is money and time should be very well evaluated. Thanks to e-commerce, customers are able to reach and evaluate many options without ever leaving the house and being negatively affected by traffic. In addition to that especially for the crowded families it is not practic to visit shopping malls because they need to spend too many time, so online shopping is a good alternative. Another advantage of e-commerce technology is being able to sell or buy 24 hour in a day of a year and from everywhere (Albinsaad 2016, p. 83).

The bots offer a great advantage to their users by making an automatic purchase for the tickets that are sold especially limited. Some bot users use this service only in good faith to buy tickets for themselves, some of them buy large quantities to resell maliciously. The undocumented ticketing method that is served by Ticketmaster is used by Delfont Mackintosh Theatres to prevent the bots. New York Times announced the mark up for tickets of the Broadway production of Hamilton, while the real price was $ 172, reseller price was $700. The Ticketmaster undocumented method restricts the life of customer because they have to bring the valuable documents with them and buy their real tickets immediately before the show starts. Also customers can not present these tickets if the person is not physically attending the show at the same time (Mathieson 2018, p. 21-22).

Thanks to the self check out system, customers are happier to spend less time in the lines. In this way, the labor cost of the retailer also decreases. According to the studies, 10% of the customers who left without buying anything, mentioned the reason of waiting time on the queue and what is worse moreover, when customers have to wait more than 4 minutes in the queue, satisfaction rates drop by 80 percent. Therefore self service shopping can be an experience that will make every customer happy. On the other hand, shoppers do not need to show what they bought. It is also a useful method for the retailer

as it is advantageous for customers. With self-check out, customers pay with the card, thus minimizing errors during cash payments (Muller 2008, p. 51-53).

Lisanti mentioned that (2018, p. 42), Suswal of Standard Cognition agrees,

> *It is inevitable for the survival of most retailers. Autonomous checkout technology will reduce labor costs, improve customer experience and improve profit margins for retailers," he said. "We believe customers will seek out, and demand, experiences like this. With autonomous checkout, shoppers will,in the very near future, no longer be required to open their laptops or even their smartphones. The technology creates an opportunity for brick-and-mortar retailers to develop an in-store experience worth closing your laptops over. Autonomous checkout is here to stay.*

In addition to that, Wiedmeyer thinks artificial intelligence cannot fully capture retail because customers want to communicate with people and people still be needed to solve problems and help customers (Lisanti 2018, p. 42).

The 4th phase of the industrial revolution refers to the new patterns of relations, including digital technologies, intelligent robots, cloud systems, big data, the internet of things and development elements such as 3D printers that dominate the relations of production.

Thanks to technological developments, this new production process is a positive aspect in terms of increasing productivity in every field and sector as a result of changing business processes. On the other hand, it is a fact that increasing automation and robotization will effect labor force and accelerate the increase in unemployment, which constitutes a significant risk to the individuals who live based on labor supply. In terms of the risk posed by the digital economy, Jack Ma, the founder of Alibaba, one of the world's largest electronics shopping sites, is very interesting in his speech at the conference. Jack Ma says that the possible effects of new technologies beyond the disruptive effects of electronic commerce on traditional retailing will have more serious consequences. In brief , Ma says that the internet will spoil the economy in the future. Emphasizing that the world will suffer more than happiness in the next 30 years and the social conflicts will affect all kinds of industry and life sector, Ma emphasizes that the dynamics of this process of change should be learned in order to soften the impact of automation and internet economy by changing the education systems of the world (Erdem 2017, pp. 18-19).

Although artificial intelligence is a complex concept, the development of artificial intelligence carries an even greater risk for humanity. Artificial intelligence can cause huge job losses, make decisions that people can not understand and manage , change the

distribution of wealth in the world and take the place of humankind (Siau and Wang 2018, p. 1). According to the findings of recent studies, it has been shown that artificial intelligence can produce speech-like sounds for algorithms (Siau and Wang 2018, p. 2; Carlini and Wagner 2017). This indicates that it is possible for artificial intelligence to reach personal information without the user's knowledge.

Artificial intelligence may not always be controlled and it can evolve without the knowledge and guidance of human due to the black box that people cannot intervene. This nontransparent situation may constitute misuse risks. In addition to that data privacy and security are other issues that need to be controlled. (Siau and Wang 2018, p. 2-3).

Although technological advances in digital assistants are designed to improve the lives of users, this service is not costless and smart assistants do not always act to gain favour for customer.

In this situation, the question is the smart speakers increase the life quality of people, is this actually true or not? Other question is if this cause the rise of only a few companies using this technology and create unfair competition? If yes, what are the possible social, political and economic problems? (Stucke and Ezrachi 2017, p. 1243).

The growing popularity of voice shopping assistants threaten brands that sell the largest household consumables. Amazon often directs customers to buy a single product and the seller has no effect on it. This could have been a big problem if sales volume with voice assistants were bigger than now. Sebastien Szczepaniak who worked for Amazon, says that half of all searches over the next 5 years will be made by voice. Capgemini, the consultancy company , says that over the next 3 years, voice purchases will account for 18 percent of total spending.

The brands that produce grocery and home care products have worked hard for decades to get shelf space from major retailers such as Walmart and Costco and to have international dominance and make their brands stick in the consumer mind. On the other hand, there is no future for a brand unfortunately if it is not recommended as first option in voice search also these brands can not pay Amazon to bring their products to the forefront for now (Saabira and Sharon 2018, p. 1).

Consumers who think about their privacy should be very alert about the power of data collection by digital assistants. The fact that a few companies that dominate the market and their digital assistants become very powerful means that information is collected in

one hand. This means that economic and political power is present in limited hands. They collect more information from larger platforms and this information becomes more valuable for 3rd parties. This situation can affect not only consumers but also economic and political discourse. Concerns about privacy, economy and politics will increase even more when digital assistants integrate with computers, security cameras, smartphones and even smart cars (Stucke and Ezrachi 2017, p. 1298).

As Stucke and Ezrachi mentioned (2017, p. 1241);

> *Such a reality may initially appear welcome and desirable. And yet, looking beyond the ease of online shopping, the super–dominant platforms that have emerged pose several growing threats, including algorithmic collusion, behavioral discrimination, and anticompetitive abuses. Thus, a more complex reality exists. As a result, rather than advancing overall welfare, a dominant digital assistant—if left to its own devices—can undermine our collective welfare. But the harm is not just economic. The potential anticompetitive consequences from a dominant assistant will likely take a toll on privacy, well–being, and democracy.*

As Stucke and Ezrachi stated (2017, p. 1299) "Regulators and legislators must take steps to minimize the risks and protect consumers interests and freedom. This is not a campaign against innovation, nor is it a call for unconstrained state intervention".

It is the reality that when customer used Echo or Google Home, Amazon and Google learning information about customers, their life style and needs by listening them. Also customers are helpless in the face of it and how much of this information is stored or shared is unknown. Till today even Amazon does not share voice records but Google shares it with developers by not giving the name of person (Pitsker 2017, pp. 68).

Amazon's latest technological product is dash button that is only available for Prime members. Through this device consumers can finalise the shopping procedure more simply thus enhancing the total perceived value by maintaining comfort to consumer. Consumers skip the steps of awareness, consideration and evaluation and purchase action occurs impulsively. As a matter of fact that, dash button purchase is a kind of impulse buying, in other words unplanned buying. According to the findings of the empirical study, consumers are more prone to behave impulsively when they have positive feelings towards the retailer. Since these devices are suitable for 24-hour shopping, customers have also stated that their requests for unplanned purchases have increased. Furthermore, dash buttons can cause customers to make uncontrollable purchases, for example too many customers complain that they are not aware of price changes unless specifically requested (Farah and Ramadan 2017, p. 59).

Another risk factor is mobile payments. Taylor stated that (2015 p. 161), “In essence, a “mobile payment” is any transaction in which a mobile device, such as a mobile phone, tablet, or personal digital assistant is used to initiate, authorise and/or confirm an exchange of financial value in return for goods and services (Au and Koffman 2008; Blochlinger, 2012).”

Research on the advantages of mobile payment methods to consumers, retailers and the government and even to society is increasing every day. But there is a lack of perspective on security vulnerabilities and risks. In December 2013, the Target a very large retailer's Mobile Point of Sale system was hijacked and over 40 million credit card and 70 million user's personal information were stolen. Target cost of this attack was $ 148 million, while customer trust and prestige were lost. Increasing security in mobile commerce is very necessary in terms of success. In addition, the perceived risk is a factor that negatively affects customer adaptation (Taylor 2015, p. 160; Moth, 2013; Shin et al., 2014; Wu and Wang 2005).

Regarding to impact of artificial intelligence to unemployement, critics say that even if artificial intelligence practices do not increase unemployment, they will destroy medium level jobs and increase low and high paid jobs. This situation will increase income inequality and social inequality. Because of that , country leaders, should work on practices such as raising taxes for the over-rich by setting a minimum wage level for the community to eliminate this problems (Makridakis 2017, p. 58).

Artificial intelligence and robot-aided automation technologies will make great progress in terms of users, businesses and economies. But with the advancement of these technologies, the replacement of the employees will be simultaneous (McKinsey & Company 2017).

McKinsey & Company forecasted that by 2030, 400 million or 800 million people could be lost their jobs in all over the world and need to find new jobs based on the midpoint and earliest automation adoption scenarios. As unemployed do not have the skills and trainings that are compatible with new technologies, they may not find work quickly due to cultural and demographic difficulties. There are few instances of medium-sized jobs being trained in masses, and labor markets do not support them too much to find new jobs.

If it takes too long for these people to evolve to make new technological jobs, unemployment will increase, resulting in a reduction in salaries.

For professions with a downward trend, salaries may be counted or decreased. According to the analyzes, it is observed that the biggest change and increase in USA and other developed countries will be in the highest paid wages. While the wages of low-wage professions will also increase, the biggest loss will be experienced in middle-income professions and this will lead to continued income inequality and polarization. The scenario is different in developing countries such as China and India, middle class will grow even more. Policymakers and business owners should also consider the transition to workforce while benefiting from the automation. It is very important to provide middle level education and to employ the people who will work in this field and of course, the current education system should be reviewed to by adopting these changes (McKinsey & Company, 2017, pp. 17-21).

6. RESEARCH ABOUT ARTIFICIAL INTELLIGENCE BASED E–COMMERCE AND CONSUMER'S REACTIONS

The following chapter is aimed at providing information about how the research is carried out. The aim, methodology and limitations of the study is mentioned and the findings and hypotheses of the study are interpreted in the last section.

6.1 AIM OF THE RESEARCH

The rapid spread of the internet in the world and in Turkey and it becomes increasingly more accessible, online shopping has become a part of human life. Brands are in a big competition in order to better understand their customers and provide them personalized services. On the other hand, we have unintentionally or willingfully incorporated new technologies such as artificial intelligence into our lives. New shopping methods using artificial intelligence algorithms in the world, especially in the United States and England, have already been presented to the customers and researches show that these methods have been quickly adopted by the customer.

The aim of this study is to measure the tendency of online shoppers to shop with tools supported by artificial intelligence and to understand the demand and interest of Turkish consumers for innovation. Since there have not been any research in this context, it can be accepted as a pioneer and, it is aimed to introduce this research at an international or domestic marketing conference.

6.2 METHOD OF THE RESEARCH

First of all a literature search was conducted in order to understand the subject in depth. Secondly, the primary data collection is based on an online survey that is structured on onlineanketler.com and published in Turkish. The questionnaire consists of 3 main sections and a total of 24 questions.

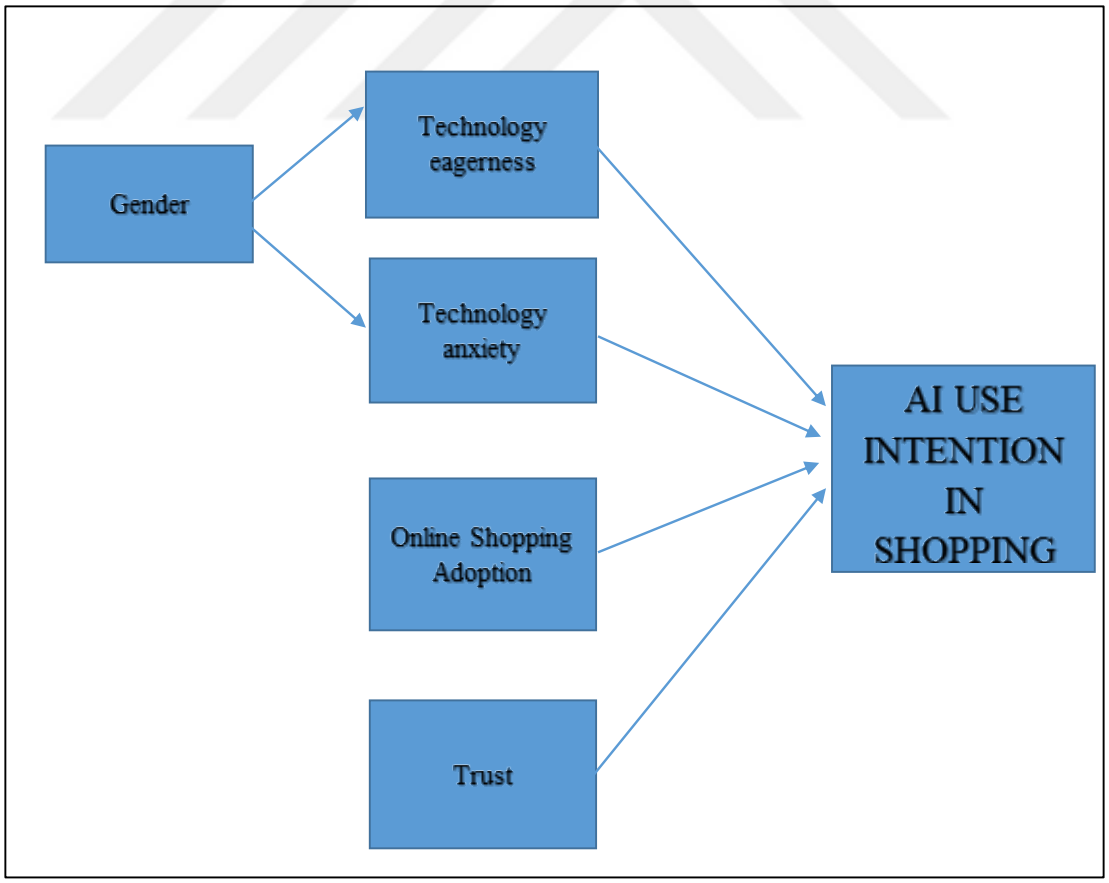
The questionnaire was published between 6-20 November and sent to individuals randomly. In the first question, the participants are asked whether they are shopping online or not and the survey is terminated for those who do not shop online. Since the aim of the study is to examine the behaviours of online shoppers, those who do not make online purchases are not included in the survey in order to obtain a clean data. In the first

5 questions of the survey, consumers' online shopping behaviors were investigated. The next 8 questions are designed using likerd scale and the general opinions of the participants about artificial intelligence are tried to be obtained. The third part of survey includes 6 questions and it is aimed to measure the tendencies of consumers related to artificial intelligence-based shopping methods. The last 5 questions are related with the demographic information of participants. In order to understand the real intention of the consumer, more open-ended questions are asked in the survey to provide in-depth analysis rather than closed-ended questions. The results of the survey were analyzed in Minitab statistics software with Chi-Square Test for Association and 2 proportion tools.

6.3 RESEARCH MODEL AND HYPOTHESES

As it can be seen in the Figure 6.1, the relationships between the use of artificial intelligence and shopping with various variables were examined in the research model.

Figure 6.1: Research Model



The following hypotheses have been developed in relation to the model seen above.

H1: There is a positive relationship between technology eagerness and A.I use intention in shopping.

H2: There is a negative relationship between technology anxiety and A.I use intention in shopping.

H3: There is a positive relationship between online shopping adoption and A.I use intention in shopping.

H4. There is a positive relationship between trust and A.I use intention in shopping.

H5. There is meaningful relationship between gender and technology eagerness.

H6. There is meaningful relationship between gender and technology anxiety.

6.4 SAMPLING OF THE RESEARCH

The questionnaire reached a total of 461 people by using snowball sampling method. 13 of them are eliminated because of not accomplished all the questions. Because of 55 of the 448 participants stated that they did not shop online, a total of 393 questionnaires are assessed for the study.

6.5 LIMITATIONS OF THE RESEARCH

The most important limitation of the research is related to the sample size selection and the scope of the research due to time and cost constraints. The research is a pilot study since there is a generalizability issue due to the sample size selection and homogenity.

6.6 FINDINGS OF THE RESEARCH

In this section, the results of the research survey and analyses are explained in detail.

6.6.1 Sample Profile

Of the 446 total number of the respondents who surveyed 393 of them stated that they shop online. The gender composition of the population who shop online composed by 65.9 percent female and 34.1 percent of male shoppers. The majority of the respondents (49.6%) were between the ages of 25 and 34. While the 23.41 percent of the respondents are between the ages of 35 and 44, 21.37 percent of them are between the ages of 18 and

25. Only the 5.1 percent of the online shoppers are between the ages of 45 and 54. When the respondents are examined by their job, the majority (55.98%) is executive or manager in private sector. The 18.58 percent of them are student, 8.1 percent of them are civil cervant and 6.9 percent of them are seld employed.

In addition to that, the majority of the online shoppers (93.89%) has a college degree or higher and 5.1 percent of them graduated from high school.

6.6.2 Channels of Online Shopping

The majority (48.9%) of 393 people who participated in the survey and declared that they shops online prefer to use mobile phone, 48.6 percent of them use computer, 2.5 percent of them preferred to use tablet. While the ratio of mobile phone and computer users is almost the same in online shopping, the rate of tablet use is very low.

According to age range analysis of online shoppers who prefer mobile phone; the majority of the participants (47.40%) are between the ages of 25 and 34. 23.44 percent of the online shoppers are between the ages of 18 and 25. While the 22.92 percent of them between the age 35 and 44, 5.73 percent of the age range 45-54 and 0.52 percent are between the age 55 and 64.

Similar results are found for the shoppers who prefer computer, the majority (51,31%) of them are between the ages of 25 and 34, 19.37 percent of them between the ages of 18 and 25. While the 24.61 percent of them between the ages of 35 and 44, 4.71 percent of them between the ages of 45 and 54.

While the 70.83 percent of the mobile shoppers are female, 29.17 percent of them are male. However, 61.78 percent of the shoppers who use computer are women and 38.22 percent of them are male. As it can be seen in Figure 6.2, sample 1 Event (136) represent females who use mobile phone in their online shopping and total number of female respondents is 259. Sample 2 Event represent male respondents (56) who use mobile phone in their online shopping. Since the p value is 0,042 means smaller than 0,05, it can be said that there is a significant difference between the genders. It is observed that female prefer mobile phones at a higher rate.

Figure 6.2: Females use mobile phone more than males in their online shopping

Test and CI for Two Proportions

Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Sample 1	259	136	0,525097
Sample 2	134	56	0,417910

Estimation for Difference

Difference	95% CI for Difference
0,107186	(0,003879; 0,210493)

CI based on normal approximation

Test

Null hypothesis	$H_0: p_1 - p_2 = 0$		
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$		
Method		Z-Value	P-Value
Normal approximation		2,03	0,042
Fisher's exact			0,055

When the mobile shoppers are examined by their job, the majority (53.65%) is executive or manager in private sector. The 20.83 percent of them are student, and 9.38 percent of them are civil cervant. In the case of those who prefer to use a computer, the majority (59.16%) is executive or manager in private sector. The 16.75 percent of them are student, and 7.33 percent of them are civil cervant.

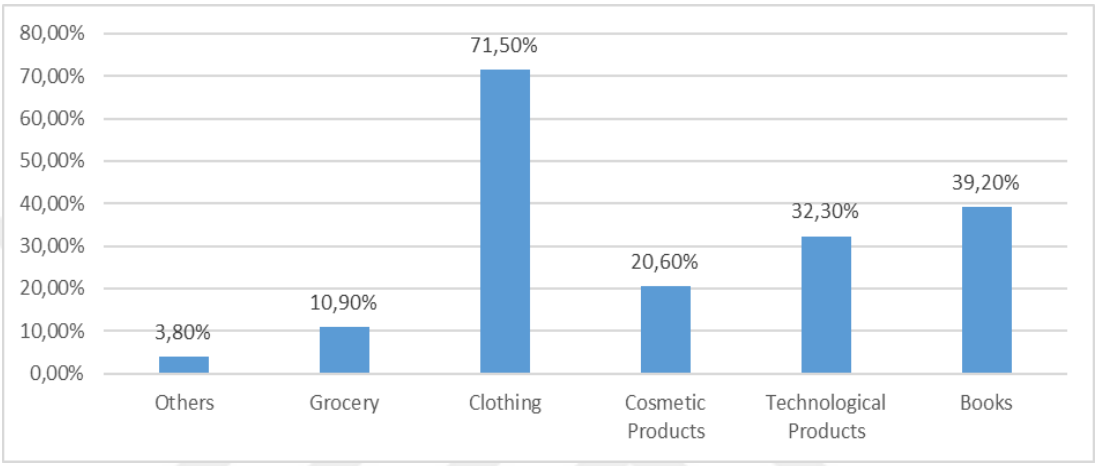
According to the results related with the educational background of the mobile shoppers, the majority (91.15%) of the online shoppers has a college degree or higher and 7.29 percent of them graduated from high school. The majority (96.86%) has a college degree or higher who use computer in their online shopping and 2.62 percent of them graduated from high school.

6.6.3 Most Demanded Products

As it can be shown in Figure 6.3, two most frequently purchased categories are clothing and books. The majority (71.5%) of the participants mostly buy clothing products, the

39.2 percent of them prefer to buy books online. 32.3 percent of them mostly buy technological products and while 20.6 percent of them purchase cosmetic products. One of the least purchased product category is grocery products with the percentage of 10.9. The category others contains, detergant, shoe, flight tickets, child products, furniture, entertainment tickets, automotive related products, home textile products.

Figure 6.3: Most demanded product categories



As it can be seen in Figure 6.4 , 213 out of 259 females prefer to buy clothing products (Sample 1) while 134 out of 134 men (Sample 2) do same .According to the 2 proportion test, P value is smaller than 0,05 so that can be said there is a meaningful difference between genders in reference to online clothing shopping. Females who represented with Sample 1, shop online more than males in clothing product category.

Another analysis is implemented about the online electric-electronic products shopping and gender relationship. Sample 1 represents females and sample 2 represents males and as it can be seen in Figure 6.5, P value is smaller than 0,05 so there is a meaningful difference between 2 variable. It is a fact that males buy more technological products than females in the online environment.

Figure 6.4: Females buy clothing products online more than males

Test and CI for Two Proportions Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Sample 1: Females	259	213	0,822394
Sample 2: Males	134	68	0,507463

Estimation for Difference

Difference	95% CI for Difference
0,314931	(0,218331; 0,411532)

CI based on normal approximation

Test

Null hypothesis	$H_0: p_1 - p_2 = 0$
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	6,39	0,000
Fisher's exact		0,000

Figure 6.5: Males shop electric electronic products online more than females

Test and CI for Two Proportions Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Sample 1: Females	259	43	0,166023
Sample 2: Males	134	84	0,626866

Estimation for Difference

Difference	95% CI for Difference
-0,460843	(-0,554433; -0,367252)

CI based on normal approximation

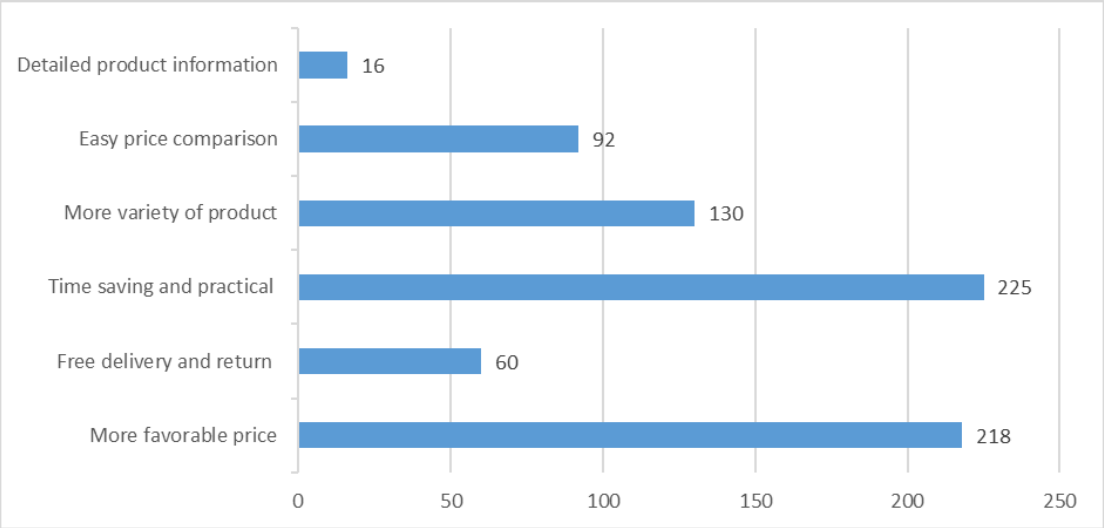
Null hypothesis	$H_0: p_1 - p_2 = 0$
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	-9,65	0,000
Fisher's exact		0,000

6.6.4 Reasons to Choose Online Shopping

As it can be seen in Figure 6.6 the majority of the respondents (57.3%), preferred online shopping because it saves time and practical. The 55.5 percent of respondents said they preferred online shopping because they could reach more favorable prices. Another reason to choose online shopping is to able to reach more variety of the products and 33.1 percent of the respondents choosed this option. The 23.4 percent of the participants stated that easy price comparison is the reason for them to shop online. Free delivery and return is another motive for online shopping and 15.3 percent of the respondents agree with it. In addition to these, 4.1 percent of the participants preferred online shopping to reach more detailed product information.

Figure 6.6: Reasons to shop online



The majority of the respondents prefer online shopping because of being time saving and practical. According to the 2 proportion test, as it can be seen in Figure 6.7 , sample 1 represent females who prefer online shopping because of above reason and sample 2 represent males.

The p value is smaller than 0,05 so it can be said that there is meaningful difference between females and males in reference to this topic. Females are more disposed than males to choose online shopping because of it is time saving and practical.

On the other hand, the survey result is analysed to see the approach of genders about more favorable price opportunity of online shopping. As it can be seen in Figure 6.8, the genders are compared in reference to more favorable price and price comparison opportunity. Sample 1 represent female and sample 2 represent male participants. The

obtained p value is smaller than 0,05 means there is a meaningful difference between to gender in terms of prefering online shopping for better price and price comparison, males prefer online shopping more than females because of getting better price opportunity.

Figure 6.7: Gender comparison in terms of practicility of online shopping

Test and CI for Two Proportions

Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Sample 1: Females	259	159	0,613900
Sample 2: Males	134	66	0,492537

Estimation for Difference

Difference	95% CI for Difference
0,121362	(0,018014; 0,224711)

CI based on normal approximation

Test

Null hypothesis $H_0: p_1 - p_2 = 0$

Alternative hypothesis $H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	2,30	0,021
Fisher's exact		0,024

Figure 6.8: Gender comparison in terms of price perception

Test and CI for Two Proportions Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Sample 1: Females	259	190	0,733591
Sample 2: Males	134	120	0,895522

Estimation for Difference

Difference	95% CI for Difference
-0,161932	(-0,236637; -0,087226)

CI based on normal approximation

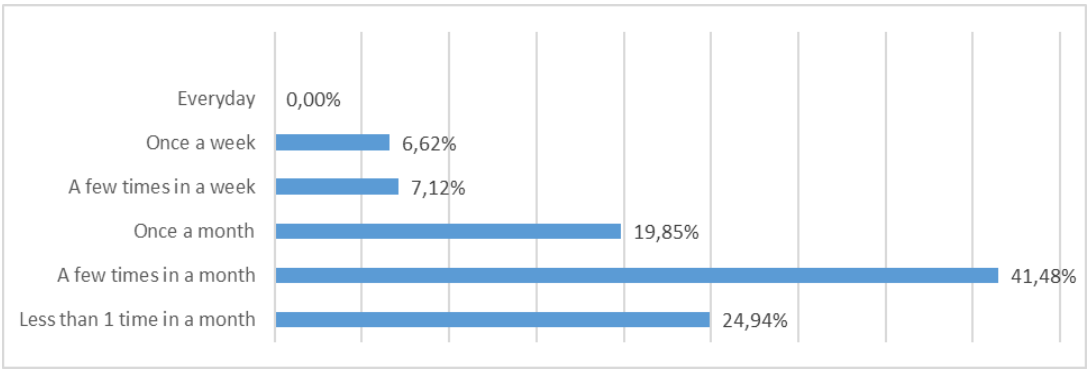
Test

Null hypothesis	$H_0: p_1 - p_2 = 0$	
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$	
Method	Z-Value	P-Value
Normal approximation	-4,25	0,000
Fisher's exact		0,000

6.6.5 The Frequency of Online Shopping

As it can be seen in Figure 6.9, while the majority (41.48%) stated that they shop online a few times a month, 24.94 percent of the participants shops online less than 1 time in a month, 19.85 percent prefer online shopping one a month and 6.62 percent shops online once a week. None of the participants shops online every day.

Figure 6.9: The frequency of online shopping



When the frequency of online shopping is examined according to gender, there is no significant difference between males and females. As it can be seen in Figure 6.10, the

obtained P value is bigger than 0,05 , that can said there is no meaningful relationship between gender and frequency of online shopping.

Figure 6.10: Frequency of online shopping and gender relationship

Chi-Square Test for Association: Worksheet rows; Worksheet columns
Rows: Worksheet rows Columns: Worksheet columns

	Less than 1 time in a month	A few times in a month	Once a month	A few times in a week	Once a week	All
Female	67	111	48	19	14	259
	64,59	107,42	51,40	18,45	17,13	
Male	31	52	30	9	12	134
	33,41	55,58	26,60	9,55	8,87	
All	98	163	78	28	26	393

Cell Contents
Count
Expected count

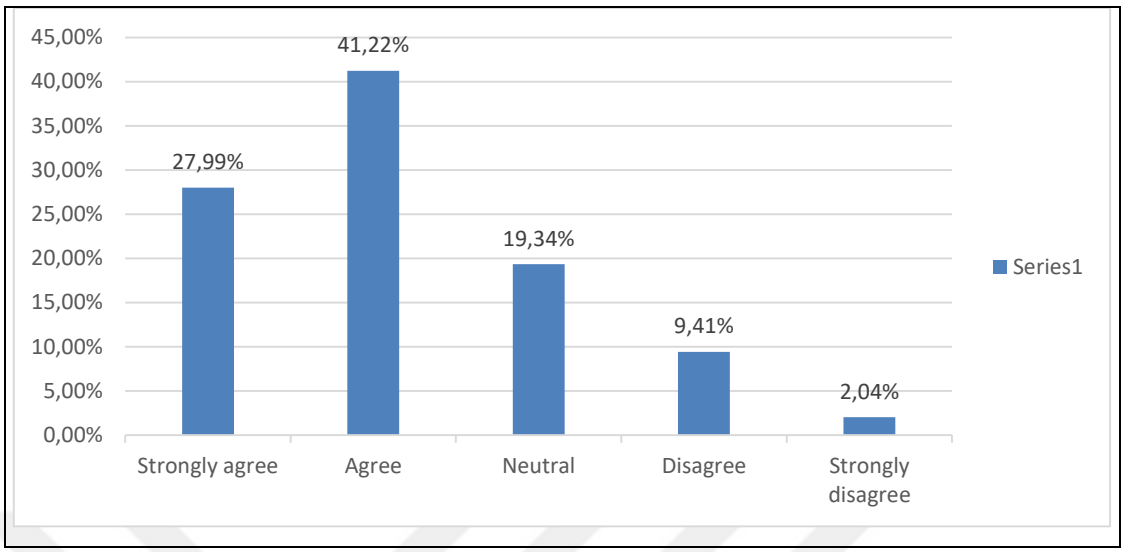
Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	3,005	4	0,557
Likelihood Ratio	2,927	4	0,570

6.6.6 Curiosity and Excitement About Artificial Intelligence

In the sixth question, the level of curiosity and enthusiasm of the participants in the studies related to artificial intelligence was questioned. As it can be seen in Figure 6.11, the highest population group (41.22%) consists of those who agree with the curiosity and excitement about the artificial intelligence and its implementations. When it is combined with those who strongly agree of the participants (27.99%), 69.21 percent of the participants have positive feelings in the sense of curiosity and exciment about the artificial intelligence and its implementations. The 19.34 percent of the participants are neutral, and 11.45 percent of them disagree and strongly disagree to the statement.

Figure 6.11: Response about curiosity and excitement about AI



The majority of those who agree and strongly agree (52.57%) are between the age 25 and 34, 20.59 percent consisted of individuals between the age of 18 and 25 years and the other 20.59 percent of them are between the age of 35 and 44. There is a similar results among the age groups who are neutral and disagree.

When the gender of those who are excited about the implementations related to artificial intelligence, it is seen that 62.50 percent of them is female and 37.50 percent of them is male. Of the neutral participants 73.68 percent of them is female , 26.32 percent of them is men, and 73.33 percent of them are female and 26.67 of them are men who are not curious and excited.

As it can be seen in Figure 6.13 the obtained P value is smaller than 0,05 so there is a meaningful relationship between gender and AI curiosity and excitement. In addition to that, 2 proportion test is applied to understand which gender is more curious and excited about AI. As it can be seen Figure 6.12, sample 1 reprensent females and sample 2 represent males, obtained P value is smaller than 0,05 and males are more curious and excited about AI implementations.

Figure 6.12: Relation between curiosity and excitement about AI and gender

Chi-Square Test for Association: Worksheet rows; Worksheet columns
Rows: Worksheet rows Columns: Worksheet columns

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	All
Female	60	110	56	27	6	259
	72,49	106,76	50,09	24,38	5,27	
Male	50	52	20	10	2	134
	37,51	55,24	25,91	12,62	2,73	
All	110	162	76	37	8	393

Cell Contents
Count
Expected count

Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	9,768	4	0,045
Likelihood Ratio	9,647	4	0,047

1 cell(s) with expected counts less than 5.

Figure 6.13: Males are more curious and excited than females about AI

Test and CI for Two Proportions

Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Sample 1: Females	259	170	0,656371
Sample 2: Males	134	102	0,761194

Estimation for Difference

Difference	95% CI for Difference
-0,104823	(-0,197324; -0,012322)

CI based on normal approximation

Test

Null hypothesis	$H_0: p_1 - p_2 = 0$
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$

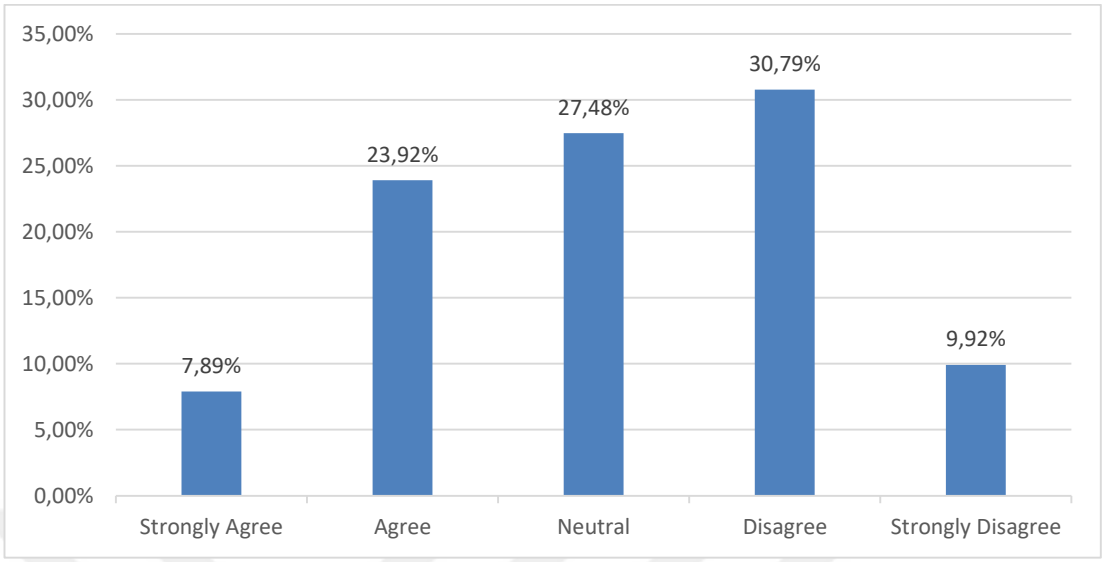
Method	Z-Value	P-Value
Normal approximation	-2,22	0,026
Fisher's exact		0,038

The educational background of participants are examined at the level of graduation degree, 97.27 percent of those who strongly agree with the statement have a college degree or above, 87.50 percent of those who say strongly disagree have a college degree or higher.

6.6.7 Anxiety About Artificial Intelligence

The sevent question is a statement that “Artificial intelligence and its implementations make me feel frighten and worry.” In question seven, the participants are asked whether the implementations related to artificial intelligence created concern and anxiety with them. As it can be seen in Figure 6.14 the majority (30.79%) of the population disagree with the statement that means they do not feel any anxiety about artificial intelligence implementations. In addition to that 9.92 percent of the population strongly disagree. 27.48 percent of them are neutral which should be considered carefully. However, 23.92 percent of the participants stated that they agree with the statement and 7.89 percent of them strongly feel worry and fear about artificial intelligence implementations.

Figure 6.14: Worry and fear about AI



When analyzed on the basis of age ranges, 20 percent of those who agree and strongly agree between the ages 18-25, 47.20 percent are between 25 and 34 years, 27.20 percent are between 35 and 44 years. For the neutral group and those who declare that they are disagree and strongly disagree distribution is very similar. The relationship between age and fear and worry about AI is analysed by Chi-Square Test for Association method in Figure 6.15 and P value is found bigger than 0,05 so it can be said that there could not be find any meaningful relation between age and worry and fear about AI.

Figure 6.15: The relation between age and fear and worry about AI

Chi-Square Test for Association: Worksheet rows; Worksheet columns Rows: Worksheet

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	All
18-25	6	19	23	25	11	84
	6,63	20,09	23,08	25,86	8,34	
25-34	14	45	53	65	18	195
	15,38	46,64	53,59	60,04	19,35	
35-44	10	24	25	24	9	92
	7,26	22,01	25,28	28,33	9,13	
45-64	1	6	7	7	1	22
	1,74	5,26	6,05	6,77	2,18	
All	31	94	108	121	39	393

Cell Contents
Count
Expected count

	Chi-Square	DF	P-Value
Pearson	4,789	12	0,965
Likelihood Ratio	4,839	12	0,963

2 cell(s) with expected counts less than 5.

According to the survey results, 76 percent of the the participants are female who agree and strongly agree with the statement, detailed analyze can be seen in Figure 6.16 as below.

Figure 6.16: Gender analyse of 7th statement

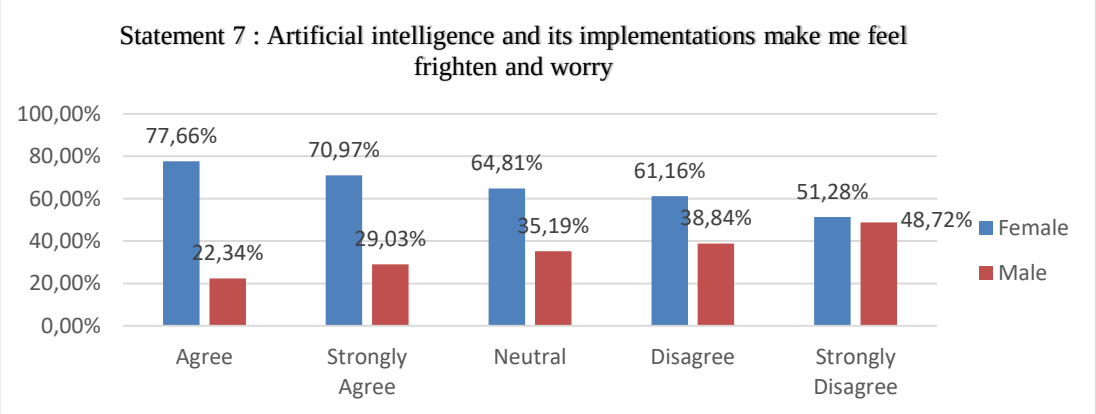


Figure 6.17: The relation between gender and fear and worry about AI

Chi-Square Test for Association: Worksheet rows; Worksheet columns

Rows: Worksheet rows Columns: Worksheet columns

	Agree	Neutral	Disagree	All
Female	95	70	94	259
	82,38	71,18	105,45	
Male	30	38	66	134
	42,62	36,82	54,55	
All	125	108	160	393

Cell Contents

Count

Expected count

Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	9,371	2	0,009
Likelihood Ratio	9,610	2	0,008

Figure 6.18: Females are more worried than males about AI

Test and CI for Two Proportions Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Sample 1: Females	259	95	0,366795
Sample 2: Males	134	30	0,223881

Estimation for Difference

Difference	95% CI for Difference
0,142915	(0,051121; 0,234708)

CI based on normal approximation

Test

Null hypothesis	$H_0: p_1 - p_2 = 0$
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	3,05	0,002
Fisher's exact		0,004

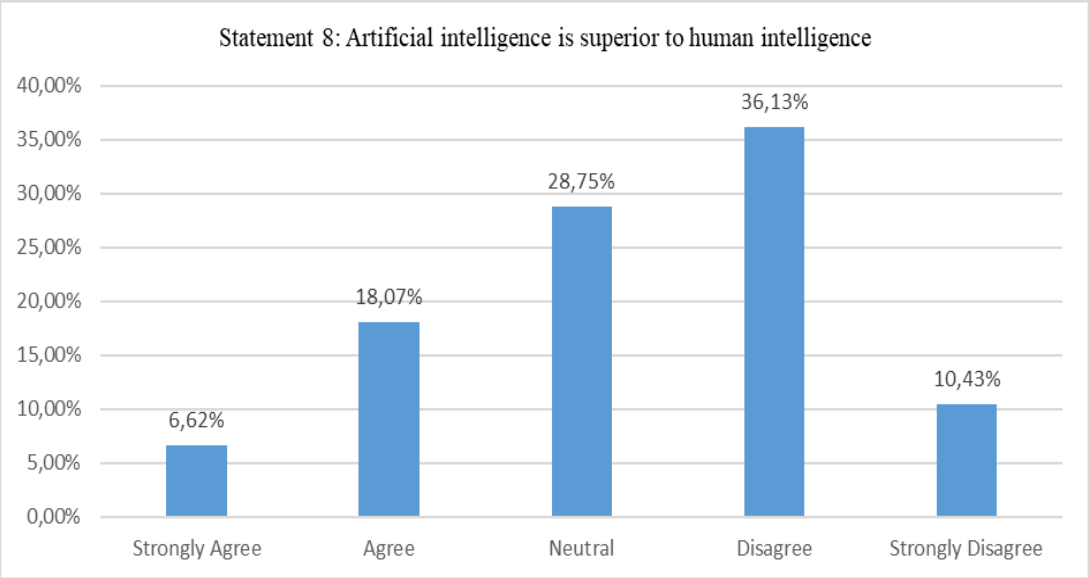
More precisely, as it can be seen in Figure 6.17, the obtained P value is smaller than 0,05 so there is a meaningful relationship between gender and fear and worry about AI. In addition to that, in Figure 6.18 sample 1 represent females and sample 2 represent males, that can be easily seen that females are more worried than males about AI also P value is smaller than 0,05.

The answers are examined according to the level of educational background and the 96.4 percent of the participants has a college degree or above who agree and strongly agree with the statement. The participants who have a college degree or above and state they disagree and strongly disagree with the statement consist 93.75 percent of the total participants.

6.6.8 Artificial Intelligence and Human Intelligence

The 8th question is a statement that artificial intelligence is superior to human intelligence. As it can be easily seen in Figure 6.19 the majority of the participants do not agree with the statement. Also undeniable quantity of respondents (28,75%) are neutral about the intelligence level of human and artificial intelligence.

Figure 6.19: Comparison of artificial intelligence and human intelligence



For this statement, gender relationship is analysed with Chi-Squared Test for Association in Figure 6.20 and there could not be find a meaningful relationship between these variables because the obtained P value is bigger than 0,05.

When the results are examined in terms of educational level, it is seen that there is a significant difference between university graduates and those who have masters and doctorate degrees. As it can be seen in Figure 6.21, according to the 2 proportion test, sample 1 represents university graduates and sample 2 represents who have masters and doctorate degrees. The obtained P value is smaller than 0,05 means difference is meaningful and compared to the sum of doctoral and postgraduate graduates, those who think that artificial intelligence is superior to human intelligence are predominantly university graduates.

Figure 6.20: Gender and human-AI intelligence comparison relationship

Chi-Square Test for Association: Worksheet rows; Worksheet columns
Rows: Worksheet rows Columns: Worksheet columns

	Agree	Neutral	Disagree	All
Female	66	78	115	259
	63,93	74,47	120,60	
Male	31	35	68	134
	33,07	38,53	62,40	
All	97	113	183	393

Cell Contents
Count
Expected count

Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	1,451	2	0,484
Likelihood Ratio	1,451	2	0,484

Figure 6.21: Relationship between education level and perception of human-AI intelligence

Test and CI for Two Proportions

Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Sample 1	272	136	0,500000
Sample 2	97	34	0,350515

Estimation for Difference

Difference	95% CI for Difference
0,149485	(0,037473; 0,261496)

CI based on normal approximation

Test

Null hypothesis $H_0: p_1 - p_2 = 0$

Alternative hypothesis $H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	2,62	0,009
Fisher's exact		0,013

6.6.9 Knowledge About Artificial Intelligence Implementation Fields

The 9th question is a statement that seek for the knowledge level of artificial intelligence implementation fields. The majority (47.3%) of the participants state that they agree with the statement, 6.1 percent of them strongly agree, 18.3 percent of them disagree and 0.5 percent of them strongly disagree with the statement. Significant numbers of participants (27,7%) are undecided about whether or not they have information about the use of artificial intelligence.

Figure 6.22: Relationship between knowledge about artificial intelligence implementation fields and gender

Test and CI for Two Proportions Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Sample 1: Females	259	122	0,471042
Sample 2: Males	134	88	0,656716

Estimation for Difference

Difference	95% CI for Difference
-0,185674	(-0,286463; -0,084885)

CI based on normal approximation

Test

Null hypothesis	$H_0: p_1 - p_2 = 0$
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	-3,61	0,000
Fisher's exact		0,001

The obtained P value is smaller than 0,05, it can be said that there is meaningful difference between females and males who think that they have knowledge about artificial intelligence implementation fields. Moreover, among the people who think that they have knowledge about artificial intelligence implementation fields, the ratio of male participants is higher than females.

6.6.10 Using Artificial Intelligence Applications Willingly

The 10th question is a statement that seek for willingness degree of using artificial intelligence applications like smartphones (Iphone Siri voice assistant, face recognition technology), telephone banking voice response systems. The majority (45.8%), agree with the statement while the 15 percent of the participants strongly agree. The neutrals consist 14.8 percent of them and 23.4 percent of the participants state they disagree and strongly disagree with the statement.

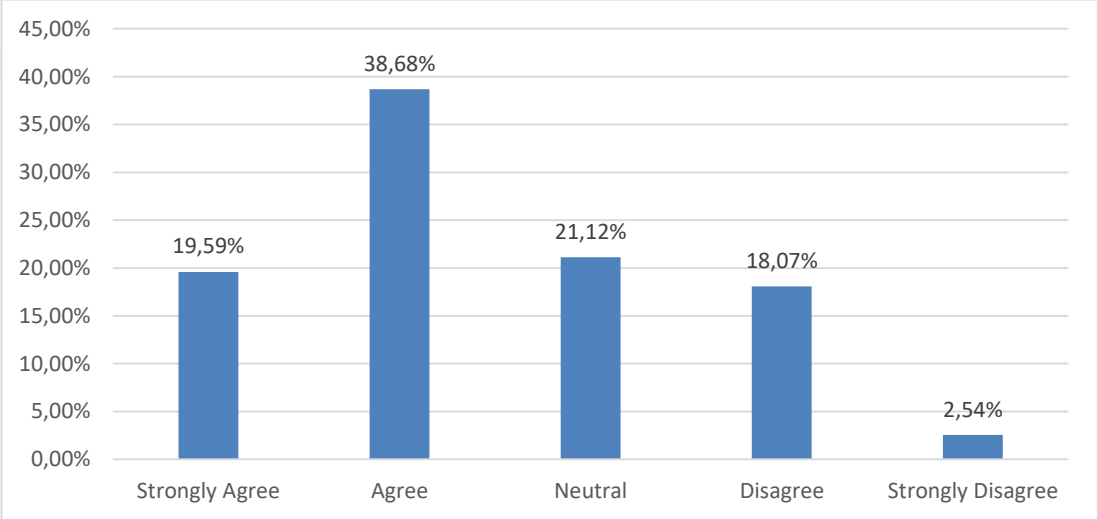
This statement is analysed in reference to gender and age groups but there is not a meaningful difference between these variables.

6.6.11 Artificial Intelligence and Feeling of Trust

The 11th question is a statement that seeks for the feeling of trust about artificial intelligence applications. The participants declared their opinions for the statement "Artificial intelligence stores a lot of data about the habits, preferences and lifestyles of users, constantly learns and never forgets what have learned, and this creates a negative feeling for me in terms of trust."

As it can be easily seen in Figure 6.23, the majority (58,27%) of the participants agree and strongly agree with the statement.

Figure 6.23: Feeling confidence in AI



On this statement, female and male participants are examined, 67.50 percent of the participants who agree and strongly agree with the statement is female and 32.50 percent of participants are

male. On the other hand, there could not be found a reasonable difference between female and male participants according to the evaluation of 2 proportion test.

As it can be seen Figure 6.24 since the obtained p value is greater than 0.05, there is no significant difference between male and female participants in reference to selected source.

Figure 6.24 Relationship between gender and feeling of trust to AI

Test and CI for Two Proportions

Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Sample 1	259	154	0,594595
Sample 2	134	75	0,559701

Estimation for Difference

Difference	95% CI for Difference
0,0348931	(-0,068257; 0,138043)

CI based on normal approximation

Test

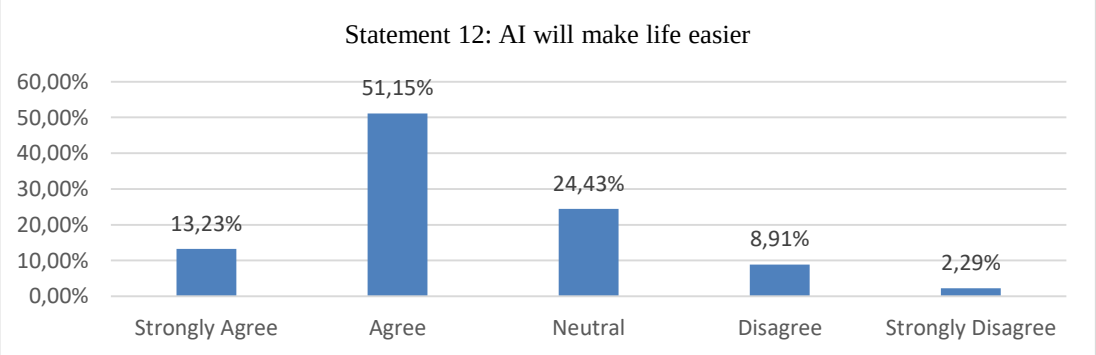
Null hypothesis	$H_0: p_1 - p_2 = 0$
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	0,66	0,507
Fisher's exact		0,519

6.6.12 Artificial Intelligence and Simplifying Life

Question 12 asks participants what they think about artificial intelligence to make life easier in the future. As it can be seen in Figure 6.25, more than half of the participants (51,1%) agree and the 13.2 percent of them strongly agree with the statement. On the other hand, 8,9 percent of them do not think that artificial intelligence will make their life easier and 2.3 percent of them strongly disagree with the statement.

Figure 6.25: Opinions about if artificial intelligence will facilitate life



As it can be seen in Figure 6.26 there is a meaningful difference between gender and this statement. Sample 1 represent female and sample 2 represent male participants and the obtained P value is smaller than 0,05. As a result, in the future, males have higher belief than females that artificial intelligence will make life easier.

Figure 6.26: Relationship between gender and positive thoughts about artificial intelligence will facilitate life

Test and CI for Two Proportions

Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Sample 1: Females	259	153	0,590734
Sample 2: Males	134	100	0,746269

Estimation for Difference

Difference	95% CI for Difference
-0,155535	(-0,250478; -0,060592)

CI based on normal approximation

Test

Null hypothesis	H_0: $p_1 - p_2 = 0$	
Alternative hypothesis	H_1: $p_1 - p_2 \neq 0$	
Method	Z-Value	P-Value
Normal approximation	-3,21	0,001
Fisher's exact		0, 003

In addition to that, the population, which should not be underestimated (24,4%) , is undecided about this issue. In Figure 6.27 sample 1 represent females and sample 2 represent male participants. According to the 2 proportion test, P value 0.022 <0.05, there is a meaningful difference in relation to the genders, females instability is higher than males regarding to ideas about that artificial intelligence will make life easier in the future.

Figure 6.27: Relationship between gender and neutral thought about artificial intelligence will facilitate life

Test and CI for Two Proportions

Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Sample 1: Females	259	72	0,277992
Sample 2:Males	134	24	0,179104

Estimation for Difference

Difference	95% CI for Difference
0,0988878	(0,014083; 0,183692)

CI based on normal approximation

Test

Null hypothesis	$H_0: p_1 - p_2 = 0$
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	2,29	0,022
Fisher's exact		0,035

6.6.13 Unemployement and AI

The question 13 asks participants if they agree or disagree that with robots and automation working with artificial intelligence, some professions will disappear and unemployment will increase. As it can be seen in Figure 6.28 most of the participants (77,61%) agree and strongly agree about increasement of unemployement because of artificial intelligence and automation.

Figure 6.28: Opinions about unemployement and AI implementations

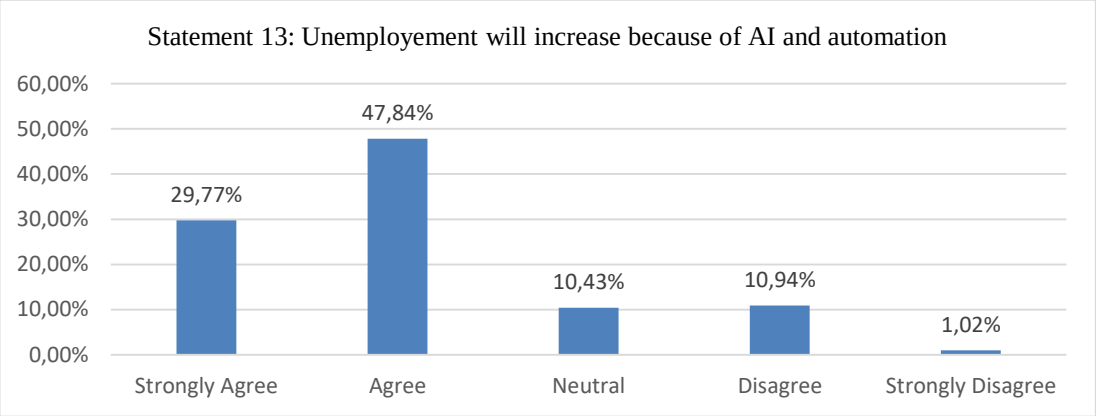


Figure 6.29: Relationship between age and the idea that unemployment will increase

Chi-Square Test for Association: Worksheet rows; Worksheet columns

	Agree and Strongly Agree	Disagree and Strongly Disagree	All
18-34	227	22	249
	223,82	25,18	
45-64	13	5	18
	16,18	1,82	
All	240	27	267

Cell Contents
Count
Expected count

Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	6,626	1	0,010
Likelihood Ratio	4,880	1	0,027

1 cell(s) with expected counts less than 5.

As it can be seen in Figure 6.29, age variable and the idea that unemployment will increase variables are analysed with Chi-Square Test for Association and obtained P value is smaller than 0,05 so there is a relation between 2 variables.

Another analyse is applied with 2 proportion test to make the result even more meaningful. In the Figure 6.30 the responses of two groups between the ages of 18-34

and 45-64 in terms of artificial intelligence to increase unemployment are examined. The obtained P value is smaller than 0,05 means there is significant difference between 2 variables. The idea of disappearing some professions and increasement of unemployment because of artificial intelligence and automation is more powerful for the ages between 18 and 34 than the ages between 45 and 64.

Figure 6.30: Comparison of age groups in reference to the idea that unemployment will increase

Test and CI for Two Proportions Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
18-34	279	227	0,813620
45-64	22	13	0,590909

Estimation for Difference

Difference	95% CI for Difference
0,222711	(0,012241; 0,433181)

CI based on normal approximation

Test

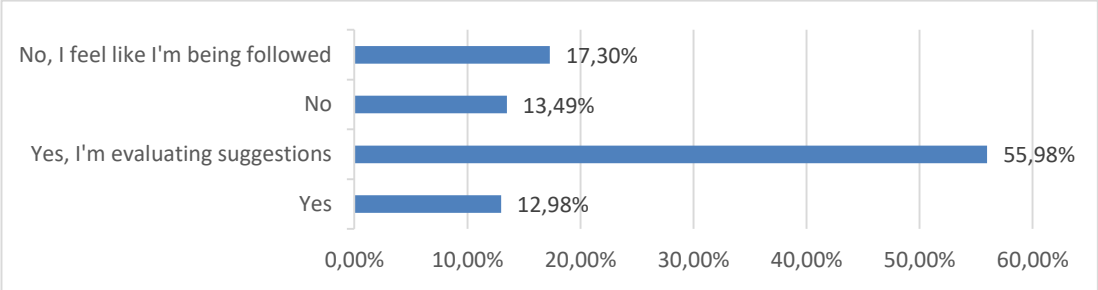
Null hypothesis	H_0: $p_1 - p_2 = 0$
Alternative hypothesis	H_1: $p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	2,07	0,038
Fisher's exact		0,023

6.6.14 Online Shopping and Product Suggestions of Artificial Intelligence

In the 14th question, participants are asked "Artificial intelligence began to be used in many online shopping applications. Are you interested in the fact that artificial intelligence offers new recommendations for your previous searches and choices while shopping online?" In the Figure 6.31 results are shown, the majority of the participants (55,98%) likes this implementation also they are open for the suggestions. Another 12,98 percent of the participants agree, while 13,49 percent of them do not interested in this, 17,30 percent of them feel like under surveillance of someone.

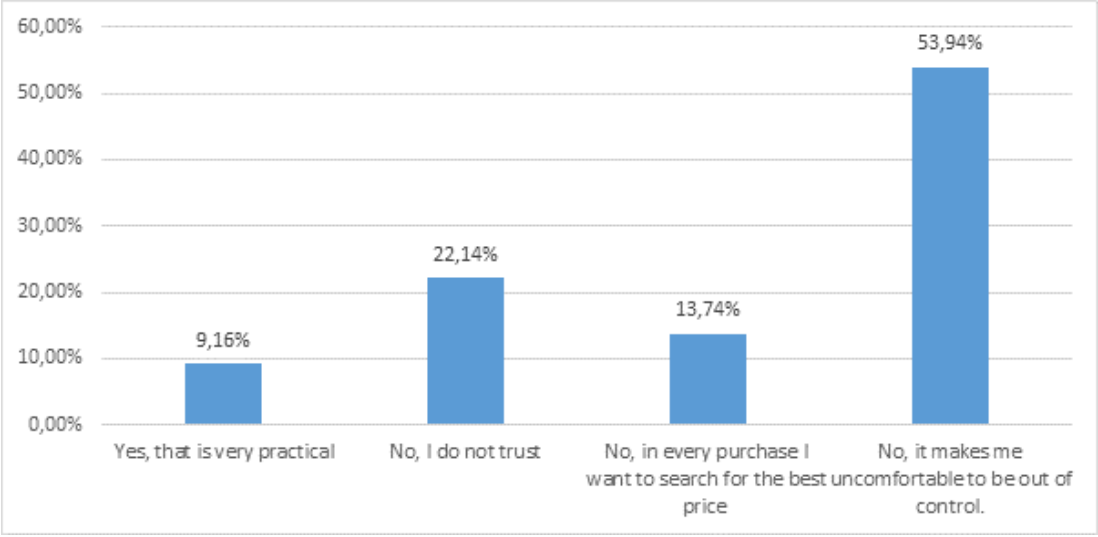
Figure 6.31: Response for the intention to product suggestions of artificial intelligence



6.6.15 Artificial Intelligence and Autonomous Online Shopping

In the 15th question particpants are asked "Do you prefer that artificial intelligence applications shop autonomously out of your control for the products that you shop online routinely?". As it can be seen in Figure 6.32 the majority (53,94%) of the participants do not want to use this feature of AI because of it is out of their control. The 22,14 percent of them do not trust such an application , 13,74 percent of them do not prefer to sent products automatically because in every purchase they want to search for the best price. Only the 9,16 percent of the participants prefer to use such a feature because it is practical.

Figure 6.32: Response for the 15th question of the survey



As it can be seen in Figure 6.33 it has been examined whether there is a significant relationship between the answers to the question 15 and genders according to Chi-square test. The obtained P value is smaller than 0,05, there is a significant difference between the answers to the question and genders.

Moreover, the majority of the responses heaped together in the option which related with out of control problem. When the responses are examined for this option in terms of gender, results can be seen in Figure 6.34. The obtained P value is smaller than 0,05 so there is meaningful difference between females and males for this topic. Females are more disturbed than males because automatic orders are out of control.

Figure 6.33: 15th question and gender relationship

Chi-Square Test for Association: Worksheet rows; Worksheet columns
Rows: Worksheet rows Columns: Worksheet columns

	Yes, very practical	No,I do not trust	No, need to search best price	No, because out of my control	All
Female	18	58	30	152	258
	23,88	57,70	35,81	140,61	
Male	18	29	24	60	131
	12,12	29,30	18,19	71,39	
All	36	87	54	212	389

Cell Contents
Count
Expected count

Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	9,844	3	0,020
Likelihood Ratio	9,572	3	0,023

Figure 6.34: Gender comparison for the option "No, because out of my control"

Test and CI for Two ProportionsMethod

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Female	259	152	0,586873
Male	134	60	0,447761

Estimation for Difference

Difference	95% CI for Difference
0,139111	(0,035745; 0,242478)

CI based on normal approximation

Null hypothesis $H_0: p_1 - p_2 = 0$

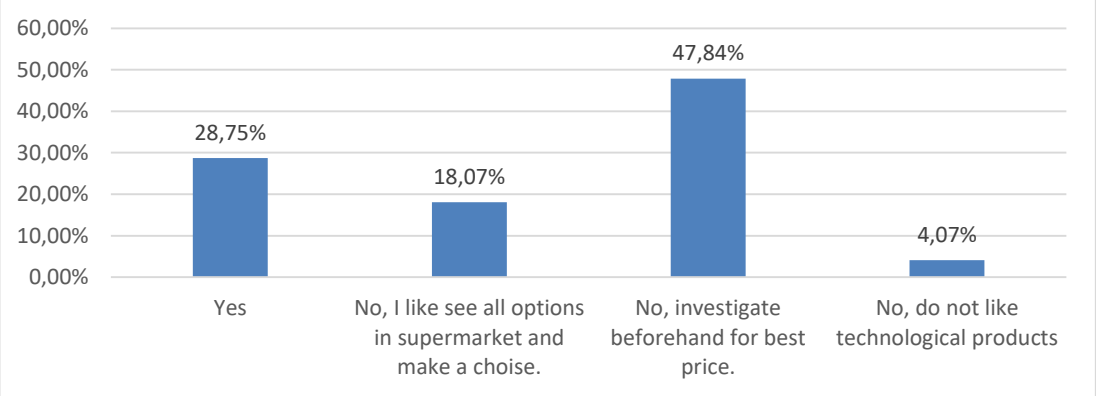
Alternative hypothesis $H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	2,64	0,008
Fisher's exact		0,010

6.6.16 Intention to Voice Shopping

In the 16th question the participants are asked "Would you like to order and shop with a single command with personal voice assistants (voice-controlled wireless speakers, eg Apple Siri, Amazon Echo, Google Home)?. As it can be seen in Figure 6.35, the majority of the participants do not want to use voice because they want to search for the prices beforehand and be sure they found the best price.

Figure 6.35: Intention to use voice shopping



On the other hand, there is an undeniable population (28.8%) who has an intention to use personal voice assistants. There could not be find any meaningful difference between the genders who want to use voice assistants.

This group is analysed under the age groups and as it can be seen in Figure 6.36 there is a meaningful difference between the age of 18 and 25 and between the age of 35 and 44. According to the 2 proportion test, those aged 18-25 are more likely to use a personal voice assistant than those aged 35-44.

Moreover, marial status of this group is analysed and results are shown in Figure 6.37. According to 2 proportion test results, P value is smaller than 0,05 so there is meaningful difference between married and single participants in reference to intention to use voice assistants for shopping. Single participants are more intented to shop with smart voice assistants. This may be due to the fact that the needs of single and possibly live alone persons have simplier needscthan those who are married.

Figure 6.36: Age group comparison for intention to use voice assistant

Test and CI for Two Proportions Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
18-25	84	28	0,333333
35-44	92	17	0,184783

Estimation for Difference

Difference	95% CI for Difference
0,148551	(0,020284; 0,276818)

CI based on normal approximation

Test

Null hypothesis	$H_0: p_1 - p_2 = 0$
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	2,27	0,023
Fisher's exact		0,026

Figure 6.37: Marital status comparison for intention to use voice assistant

Test and CI for Two Proportions Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Married	183	43	0,234973
Single	210	70	0,333333

Estimation for Difference

Difference	95% CI for Difference
-0,0983607	(-0,186896; -0,009825)

CI based on normal approximation

Test

Null hypothesis $H_0: p_1 - p_2 = 0$

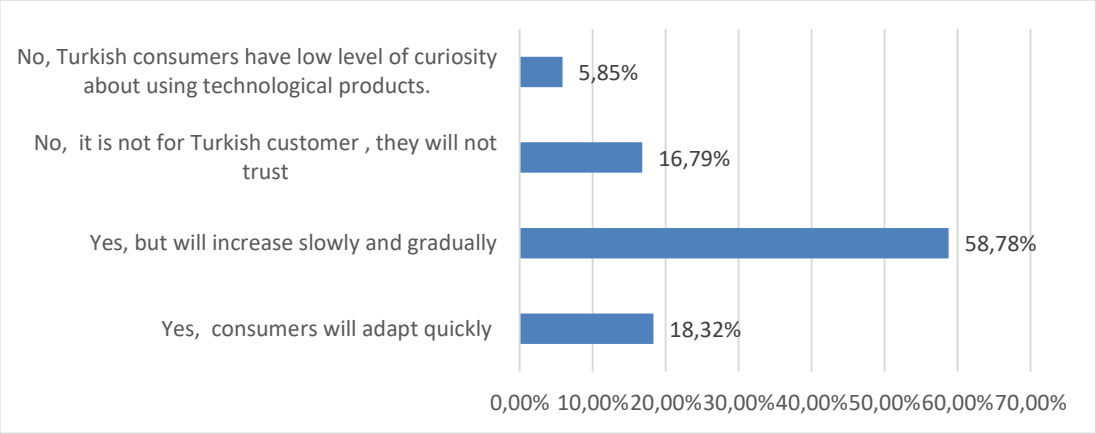
Alternative hypothesis $H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	-2,18	0,029
Fisher's exact		0,034

6.6.17 Thoughts About Voice Assistants

In the 17th question participants are asked “According to research, it is estimated that purchases with personal assistants assisted by artificial intelligence will reach $ 40 billion in America in 2022 and $ 5 billion in Britain. Do you think that such an increasement will be seen in Turkey about shopping with voice assistants ?”. As it can be seen in Figure 6.38, the majority of the participants (58,78%) think that Turkish customer will adapt voice assisted shopping slowly and gradually. According to the 18,32 percent of them, consumers will adapt quickly. Totally 16,79 percent of the respondents state that voice assisted shopping do not fit with Turkish customer habits, and Turkish customer will not trust it. The small percentage of respondents (5,85%), mentioned that Turkish consumer have low level of curiosity about using technological products.

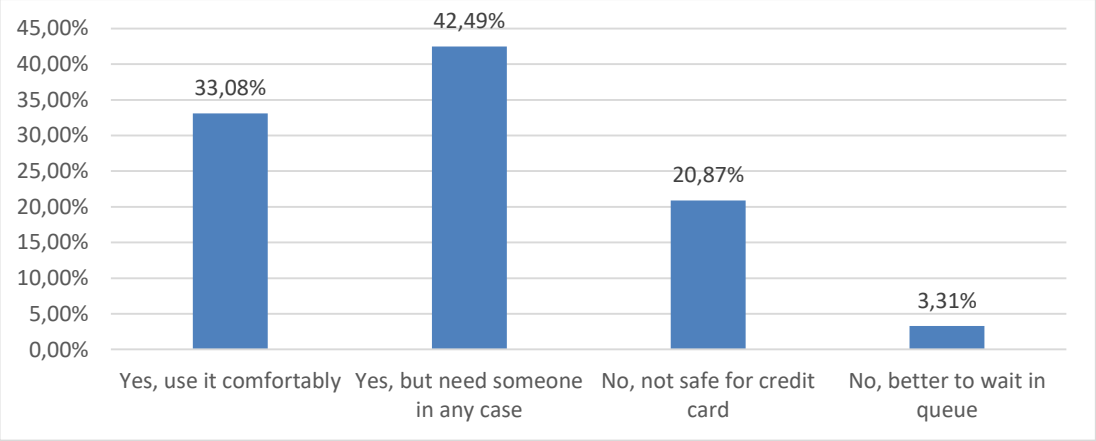
Figure 6.38: Thoughts about voice assistants expansion in Turkey



6.6.18 Intention to Use Cashierless Store for Shopping

In the 18th question the participants are asked "Do you want to shop at a convenience store where the products you bought added to your virtual shopping cart and the invoice is sent to your e-mail address without waiting in queue for payment ,with an application you have downloaded to your phone and entered your credit card information ?".The results can be seen in Figure 6.39 the vast majority of respondents (75.57%) have positive thoughts about using a cashierless store. The 20.87 percent of them do not trust it and they are unwilling to share credit card information. Only the 3.31 percent of them prefer to wait in the queue instead of facing a technological problem. The vast majority of respondents (42.5%) who report that they will use a cashierless store but there should be an employee in the store waiting for help even if they have any problems, indicating that customers are hesitant about using technological applications.

Figure 6.39: Response about intention to use cashierless store



The intention to use cashierless store and gender relationship is analysed with the 2 proportion test. The results shown in Figure 6.40 , P value is smaller than 0,05 so there is a meaninful difference between females and males in reference to use cashierless store. Males are more intented to use this technology than females.

Figure 6.40: Gender and intention to use cashierless store relationship

Test and CI for Two Proportions Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Female	259	177	0,683398
Male	134	120	0,895522

Estimation for Difference

Difference	95% CI for Difference
-0,212125	(-0,288880; -0,135370)

CI based on normal approximation

Test

Null hypothesis	$H_0: p_1 - p_2 = 0$	
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$	
Method	Z-Value	P-Value
Normal approximation	-5,42	0,000
Fisher's exact		0,000

In addition to that it has been examined whether there is a relationship between marital status and intention to use a cashierless store. As it can be seen in Figure 6.41, there is a significant difference between marital status and intention to use cashierless store as obtained P value is smaller than 0,05. Single participants are more intented to use a cashierless store compared to married participants. The reason for this may be the needs of married people are more complicated than singles, and they may be hesitant about that they can not meet all their needs in such a store.

Figure 6.41: Marital status comparison of participants who willing to use cashierless store

Test and CI for Two Proportions

Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Yes	Sample p
Married	183	123	0,672131
Single	210	174	0,828571

Estimation for Difference

Difference	95% CI for Difference
-0,156440	(-0,241436; -0,071445)

CI based on normal approximation

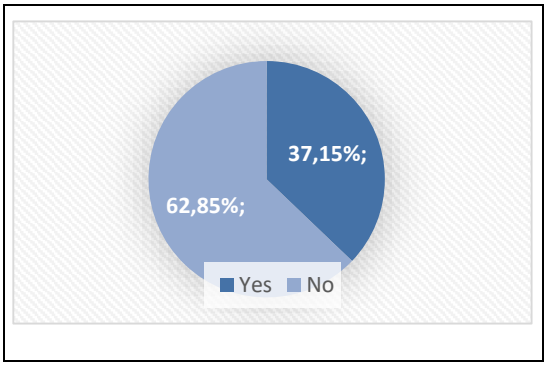
Test

Null hypothesis	$H_0: p_1 - p_2 = 0$	
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$	
Method	Z-Value	P-Value
Normal approximation	-3,61	0,000
Fisher's exact		0,000

6.6.19 Intention to Use "Ship and Shop" Shopping

In the 19th question particpants are asked "Amazon has patented an application through artificial intelligence that estimate which customers will buy which product in which frequency. Amazon will send products to their homes without ordering, and consumers decide at the door whether to buy the or not. In the future, would you like to shop the products you consume often come to your doorsteps without ordering?" As it can be seen in Figure 6.42 the majority of the respondents do not prefer to use ship and shop application. On the other hand 37.15 percent of the participants have an intention to shop in this way.

Figure 6.42: Response for "Ship and Shop" Shopping



In the Figure 6.43, gender and intention to use ship and shop relationship is analysed with Chi-Square test. The obtained P value is bigger than 0,05 , there is no significant difference between 2 variables.

Figure 6.43: Relationship between gender and "Ship and Shop" intention

Chi-Square Test for Association: Worksheet rows; Worksheet columns Rows: Worksheet

	Yes	No	All
Female	91	168	259
	96,22	162,78	
Male	55	79	134
	49,78	84,22	
All	146	247	393

Cell Contents
Count
Expected count

Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	1,321	1	0, 250
Likelihood Ratio	1,313	1	0,252

6.6.20 Statistical Hypothesis Testing

In this study, 6 hypotheses are statistically tested with Minitab 18 software and all hypotheses are confirmed.

H1: There is a positive relationship between technology eagerness and A.I use intention in shopping.

In order to be able to test this hypothesis, the 6th question that measures the curiosity and enthusiasm of the consumers for artificial intelligence and 15,16,18 and 19th questions that measure the AI use of intention in online shopping is used.

Figure 6.44: Chi-Square test results for relationship between technology eagerness and AI use intention in online shopping

Chi-Square Test for Association: Worksheet rows; Worksheet columns
Rows: Worksheet rows Columns: Worksheet columns

	Yes it is Very practical	No I Dont trust	No, search Best price	No, it feels me uncomfortable	All
Agree and Strongly Agree	34	59	43	132	268
	24,80	59,94	37,20	146,06	
Neutral	1	19	6	50	76
	7,03	17,00	10,55	41,42	
Disagree and Strongly Disagree	1	9	5	30	45
	4,16	10,06	6,25	24,52	
All	36	87	54	212	389

2. *Cell Contents*
   Count
   Expected count

Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	18,822	6	0,004
Likelihood Ratio	22,714	6	0, 001

3. *1 cell(s) with expected counts less than 5.*

As it can be seen in Figure 6.44, since P value is 0.004 <0.05, it shows that there is a significant relationship between the three responses in reference to selected source.

Figure 6.45: Chi-Square test results for relationship between technology eagerness and smart voice assistant use intention in online shopping

Chi-Square Test for Association: Worksheet rows; Worksheet columns
Rows: Worksheet rows Columns: Worksheet columns

	Yes	No	No I Search for best price	No I Do not like technology	All
Agree and Strongly Agree	94	42	128	6	270
	78,84	49,53	130,47	11,16	
Neutral	11	19	41	4	75
	21,90	13,76	36,24	3,10	
Disagree and Strongly Disagree	8	10	18	6	42
	12,26	7,71	20,29	1,74	
All	113	71	187	16	387

Cell Contents
Count
Expected count

Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	27,697	6	0,000
Likelihood Ratio	25,085	6	0,000

2 cell(s) with expected counts less than 5.

As it can be seen in Figure 6.45 since the obtained P value is 0.000 <0.05, it shows a significant relationship between the three responses in reference to selected source. In other words, there are meaningful differences in the tendency of shop with smart voice assistants between the people who are interested in artificial intelligence studies and who do not interested in.

Figure 6.46: 2 proportion test results for technology eagerness and smart voice assistant use intention in online shopping

Test and CI for Two Proportions

Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Agree and Strongly Agree	272	94	0,345588
Disagree and Strongly Disagree	45	8	0,177778

Estimation for Difference

Difference	95% CI for Difference
0,167810	(0,042622; 0,292999)

CI based on normal approximation

Test

Null hypothesis H_0: $p_1 - p_2 = 0$

Alternative hypothesis H_1: $p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	2,63	0,009
Fisher's exact		0,026

Event: Participants who disposed to use smart assistant in their online shopping

As it can be seen in Figure 6.46 the obtained P value is smaller than 0,05, technology eagerness effects the smart assistant use intention in online shopping positively. The participants who are curious and excited about AI implementations have more intention to use smart voice assistants than who are not curious and excited about AI implementations.

Figure 6.47: 2 proportion test results for technology eagerness and cashierless store use intention

Test and CI for Two Proportions

Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Agree and Strongly Agree	272	218	0,801471
Disagree and Strongly Disagree	45	26	0,577778

Estimation for Difference

Difference	95% CI for Difference
0,223693	(0,071797; 0,375588)

CI based on normal approximation

Test

Null hypothesis	$H_0: p_1 - p_2 = 0$
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	2,89	0,004
Fisher's exact		0,002

Event: **Participants who disposed to use cashierless store**

As it can be seen in Figure 6.47, the obtained P value is smaller than 0,05 participant who have more curiosity and excitement about AI implementations, are more disposed to use a cashierless store who do not curious about AI implementations. That is to say, there is a positive relationship between technology eagerness and A.I use intention in shopping.

Figure 6.48: 2 proportion test results for technology eagerness and "Ship and Shop" shopping use intention

Test and CI for Two Proportions Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Agree and Strongly Agree	272	121	0,444853
Disagree and Strongly Disagree	45	9	0,200000

Estimation for Difference

Difference	95% CI for Difference
0,244853	(0,113909; 0,375797)

CI based on normal approximation

Test

Null hypothesis	$H_0: p_1 - p_2 = 0$
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	3,66	0,000
Fisher's exact		0,002

Event: **Participants who disposed to use "Ship and Shop" Shopping**

As it can be seen in Figure 6.48, the obtained P value is smaller than 0,05, the participants who have more curiosity and excitement about AI implementations, are more disposed to use "ship and shop" shopping who do not curious about AI implementations. That is to say, there is a positive relationship between technology eagerness and A.I use intention in shopping.

As a result, it can be said that people who are curious and excited about artificial intelligence applications are more curious about technological issues and therefore use of artificial intelligence-based shopping methods more than those who are not curious.

H2: There is a negative relationship between technology anxiety and A.I use intention in shopping. In the 2nd hypothesis, it is tested that as technology anxiety increases, whether or not the tendency to use AI decreases in shopping. To be able to test the hypothesis, the

relationships between the 7th question and the answers given to questions 16,18 and 19 are examined.

Figure 6.49: 2 proportion test results for technology anxiety and smart voice assistant use intention in online shopping

Test and CI for Two Proportions

Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Agree and Strongly Agree	125	28	0,224000
Disagree and Strongly Disagree	160	58	0,362500

Estimation for Difference

Difference	95% CI for Difference
-0,1385	(-0,242856; -0,034144)

CI based on normal approximation

Test

Null hypothesis	H_0: $p_1 - p_2 = 0$
Alternative hypothesis	H_1: $p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	-2,60	0, 009
Fisher's exact		0,013

Event: Particpants who disposed to use smart voice assistants in online shopping

As it can be seen in Figure 6.49, the obtained P value is smaller than 0,05 there is a meaningful relationship between the participants who have technology anxiety and do not have. The participants who are not worried about AI implementations more disposed to use smart voice assistants in their shopping when compared with the who feels worry and fear about AI implementations.

Figure 6.50: 2 proportion test results for technology anxiety and cashierless store use intention

Test and CI for Two Proportions

Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Agree and Strongly Agree	125	82	0,656000
Disagree and Strongly Disagree	160	132	0,825000

Estimation for Difference

Difference	95% CI for Difference
-0,169	(-0,270987; -0,067013)

CI based on normal approximation

Test

Null hypothesis $H_0: p_1 - p_2 = 0$

Alternative hypothesis $H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	-3,25	0,001
Fisher's exact		0,001

Event: **Particpants who disposed to use cashierless store**

As it can be seen in Figure 6.50, the obtained P value is smaller than 0,05 , it can be said that there is a meaningful relationship with feeling anxiety about technology and willingness to use a cashierless store. The participants who are worried about AI implementation are less disposed to use a cashierless store than who do not feel fear and worry about AI implementations.

Figure 6.51: 2 proportion test results for technology anxiety and "Ship and Shop" use intention

Test and CI for Two Proportions Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Agree and Strongly Agree	125	101	0,808000
Disagree and Strongly Disagree	160	81	0,506250

Estimation for Difference

Difference	95% CI for Difference
0,30175	(0,197977; 0,405523)

CI based on normal approximation

Test

Null hypothesis $H_0: p_1 - p_2 = 0$

Alternative hypothesis $H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	5,70	0,000
Fisher's exact		0,000

Event: **Participants who <u>are not</u> disposed to use "Ship and Shop" shopping**

As it can be seen in Figure 6.51, the obtained P value is smaller than 0,05 there is a meaningful relationship between feeling anxiety about technology and willingness to use ship and shop shopping. The participants who are worried about AI implementation are less disposed to use ship and shop shopping than who do not feel fear and worry about AI implementations.

As a result, it can be said that people who are concerned about applications of artificial intelligence are more anxious about technological issues and therefore less use of artificial intelligence-based shopping methods than who are not worried about AI implementations.

H3: There is a positive relationship between online shopping adoption and A.I use intention in shopping.

Figure 6.52: Chi-Square test for relationship between frequency of online shopping and intention to use autonomous online shopping

Chi-Square Test for Association: Worksheet rows; Worksheet
Columns Rows: Worksheet rows Columns: Worksheet columns

	Yes	No	All
Less than 1 time in a month	5	91	96
	8,88	87,12	
A few times in a month	12	150	162
	14,99	147,01	
Once a month	8	70	78
	7,22	70,78	
A few times in a week	6	22	28
	2,59	25,41	
Once a week	5	20	25
	2,31	22,69	
All	36	353	389

Cell Contents
Count
Expected count

Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	11,002	4	0,027
Likelihood Ratio	9,385	4	0,052

As it can be see in Figure 6.52 the obtained P value is smaller than 0,05, there is a meaningful relationship between frequency of online shopping and intention to use autonomous online shopping through artificial intelligence based methods.

Figure 6.53: 2 proportion test for frequency of online shopping and intention to use smart voice assistants for online shopping

Test and CI for Two Proportions

Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Sample 1	176	40	0,227273
Sample 2	217	73	0,336406

Estimation for Difference

Difference	95% CI for Difference
-0,109133	(-0,197366; -0,020900)

CI based on normal approximation

Test

Null hypothesis $H_0: p_1 - p_2 = 0$

Alternative hypothesis $H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	-2,42	0, 015
Fisher's exact		0,019

Event: Participants who are disposed to use smart voice assistants in shopping

Sample 2: A few times in a week, Once a week, A few times in a month

Sample 1: Once a month, Less than 1 time in a month

As it can be seen in Figure 6.53 the obtained P value is smaller than 0,05, it can be said that people who shop more often are more likely to shop with their personal voice assistant than those who shop less frequently.

Figure 6.54: 2 proportion test for frequency of online shopping and intention to use "Ship and Shop" shopping

Test and CI for Two Proportions

Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Sample 1	176	55	0,312500
Sample 2	217	91	0,419355

Estimation for Difference

Difference	95% CI for Difference
-0,106855	(-0,201722; -0,011988)

CI based on normal approximation

Test

Null hypothesis $H_0: p_1 - p_2 = 0$

Alternative hypothesis $H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	-2,21	0, 027
Fisher's exact		0,036

Event: Participants who are disposed to use smart voice assistants in shopping

Sample 2: A few times in a week, Once a week, A few times in a month

Sample 1: Once a month, Less than 1 time in a month

The obtained P value is smaller than 0,05 as it be seen in Figure 6.54, , it can be said that people who shop more often are more likely to ship and shop than those who shop less frequently.

Consequently, tested and approved in many respects people who are adapted to online shopping are more likely to use artificial intelligence-based applications in their purchases, therefore there is a positive relationship between online shopping adoption and AI use intention.

H4. There is a positive relationship between trust and A.I use intention in shopping.

To test the relationship between trust and the tendency to use artificial intelligence in shopping, the 11th question and the relations between the 16th and 19th questions are examined.

Figure 6.55: 2 proportion test for trust and smart voice assistant use intention in

Test and CI for Two Proportions

Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Agree and Strongly Agree	229	55	0,240175
Disagree and Strongly Disagree	81	32	0,395062

Estimation for Difference

Difference	95% CI for Difference
-0,154887	(-0,274868; -0,034906)

CI based on normal approximation

Test

Null hypothesis	$H_0: p_1 - p_2 = 0$
Alternative hypothesis	$H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	-2,53	0,011
Fisher's exact		0,010

Event: Participants who disposed to use smart voice assistant in online shopping

The obtained P value is smaller than 0,05 as it can be seen in Figure 6.55, people who say that they don't trust artificial intelligence applications are less likely to use smart voice assistants in shopping than those who trust them. Therefore it can be said that there is a positive relationship between trust and AI use intention.

Figure 6.56: 2 proportion test for trust and "ship and shop" use intention

Test and CI for Two Proportions

Method

p_1: proportion where Sample 1 = Event

p_2: proportion where Sample 2 = Event

Difference: $p_1 - p_2$

Descriptive Statistics

Sample	N	Event	Sample p
Agree and Strongly Agree	229	72	0,314410
Disagree and Strongly Disagree	81	39	0,481481

Estimation for Difference

Difference	95% CI for Difference
-0,167071	(-0,291393; -0,042749)

CI based on normal approximation

Test

Null hypothesis $H_0: p_1 - p_2 = 0$

Alternative hypothesis $H_1: p_1 - p_2 \neq 0$

Method	Z-Value	P-Value
Normal approximation	-2,63	0, 008
Fisher's exact		0,010

Event: Participant who disposed to use ship and shop shopping

The obtained P value is smaller than 0,05 as it can be seen in Figure 6.56, those who trust to artificial intelligence and who do not trust are different in tendency about ship and shop shopping.

Consequently, tested and approved in many respects people who trust to artificial intelligence are more likely to use artificial intelligence-based applications in their purchases, therefore there is a positive relationship between trust and AI use intention.

H5. There is meaningful relationship between gender and technology eagerness.

It is investigated whether there is a significant relationship between the participants who have curiosity and enthusiasm about AI implementations and the gender. Chi square test is applied to the question 6 and as it can be seen in Figure 6.57 there is a meaningful relationship between gender and technology eagerness as the P value is smaller than 0,05.

Figure 6.57: Chi-square test for gender and technology eagerness relationship

Chi-Square Test for Association: Worksheet rows; Worksheet columns

Rows: Worksheet rows Columns: Worksheet columns

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	All
Female	60	110	56	27	6	259
	72,49	106,76	50,09	24,38	5,27	
Male	50	52	20	10	2	134
	37,51	55,24	25,91	12,62	2,73	
All	110	162	76	37	8	393

Cell Contents

Count

Expected count

Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	9,768	4	0,045
Likelihood Ratio	9,647	4	0,047

1 cell(s) with expected counts less than 5.

For this reason H5 is approved so there is meaningful relationship between gender and technology eagerness.

H6. There is meaningful relationship between gender and technology anxiety.

It is investigated whether there is a significant relationship between the participants who have fear and worry about AI implementations and the gender. Chi square test is applied to the question 7 and as it can be seen in Figure 6.58 there is a meaningful relationship between gender and technology anxiety as the P value is smaller than 0,05.

Figure 6.58: Chi-square test for gender and technology anxiety relationship

Chi-Square Test for Association: Worksheet rows; Worksheet columns
Rows: Worksheet rows Columns: Worksheet columns

	Agree	Neutral	Disagree	All
Female	95	70	94	259
	82,38	71,18	105,45	
Male	30	38	66	134
	42,62	36,82	54,55	
All	125	108	160	393

Cell Contents
Count
Expected count

Chi-Square Test

	Chi-Square	DF	P-Value
Pearson	9,371	2	0,009
Likelihood Ratio	9,610	2	0,008

For this reason H6 is approved so There is meaningful relationship between gender and technology anxiety.

7. CONCLUSION AND SUGGESTIONS

The purpose of this study is to analyze the behavior of consumers about the artificial intelligence based e-commerce types. This study focused on the factors; such as technology eagerness, technology anxiety, online shopping adoption, trust, demographical factors and their effect to intention to use artificial intelligence based e-commerce tools. 393 questionnaires with snowball sampling method have been collected and tested the hypotheses. The survey consists of 24 questions that measure online shopping behaviour , attitude towards artificial intelligence and intention to use artificial intelligence based e-commerce tools besides the demographic questions like age, gender and educational background.

In Turkey, the volume of e-commerce is expanding day by day. The fact that the population is young and sensitive to technological innovations play a significant role in this growth. Consumers are interested technology more than they used to , and they want to see innovations and reach to new technologies faster than ever. Especially for the new generations, experience and deep meaning is more important than the price, therefore offering a shopping experience is more valuable for them than traditional shopping.

According to the analyse of survey it was detected that females prefer mobile phone more than males in their online shopping. Especially in the brands and products that females are targeted, mobile phone application will be effective in attracting female customers as well as the website and will provide a strategic advantage.

Similar to literature search , females prefer to buy clothing products in online shopping more than males, while males purchase more electric-electronic products than females.

As the literature search supports, the most important factor for consumers to prefer online shopping is convenience. While females prefer online shopping more than males because it is practical and time saving, males prefer online shopping more than females because products are cheaper in online channel. Nowadays, women are more involved in business life. Therefore, it needs practical solutions to meet household needs to save time. Chatbots can be added to the applications to make the shopping more practical and time-saving for females , and applications can be developed to give order with text messages for the brands who target female consumers.

The majority of the respondents (41,5%) stated that a few times a month they shop online, only 7,1% shop online several times a week. However the e-commerce volume in Turkey expanding each year, but this rate is still below the developed countries and the frequency of online shopping is not as high as expected even the 76,3 percent of the household connect to the internet in Turkey since 2017. The reason is that security, product and service quality and logistics problems are the most important obstacles. In this regard, vendors need to develop security infrastructures and provide confidence to the customer to make them more accustomed to online shopping. On the other hand as it is tested and approved in H3, people who are adapted to online shopping are more likely to use artificial intelligence-based applications like voice shopping and cashierless stores in their purchases, therefore there is a positive relationship between online shopping frequency and AI use intention.

In the second part of the survey consumers attitude's towards artificial intelligence is analysed.

It is revealed that the majority of the participants (69,2%) are curious and excited about the artificial intelligence implementations and males are more curious and excited than females.

Also there is a positive relationship with technology eagerness and intention to use AI based e-commerce tools like voice shopping and cashierless store as it is tested and approved in H1. It can be said that people who are curious and excited about artificial intelligence applications are more curious about technological issues and therefore has more intention to use of artificial intelligence-based shopping methods more than those who are less curious and excited.

Beside to that, the majority 40,7 percent of the participants mentioned that they do not feel fear and worry about artificial intelligence implementations while females are more worried than male participants. Also a significant number of participants (27,5%) are undecided about this issue. As it is tested and approved in H2, the participants who are not worried about AI implementations are more disposed to use smart voice assistants, cashierless store and "ship ans shop" in their shopping when compared with the who feels worry and fear about AI implementations.

The vast majority of respondents (46.5%) think that artificial intelligence is not superior to human intelligence, while 28.8% are undecided. The relationship between university

graduates and doctoral and master graduates, university graduates are more likely to agree that artificial intelligence is superior to human intelligence than the other group. As the level of education increases, the rate of believing that artificial intelligence is superior to human intelligence is increasing.

The majority of respondents (53.4%) stated that they have knowledge about the artificial intelligence implementation fields and males are more assertive than females in this topic. While 60.8 percent of the respondents stated that they use artificial intelligence in areas such as Siri, face recognition technology and telephone banking by enjoying , the rate of people who said that they did not trust the AI is 58.3%. On the other hand, 64.3% of respondents think that artificial intelligence will make life easier in the future. Males are more likely to think that artificial intelligence will make life easier in the future than females , and females are more uncertain about this issue.

As it is tested and approved in H4 , there is a positive relationship between trust and intention to use AI based e-commerce tools. The participants who do not have doubts about trust to AI , have more disposed to use smart voice assistants or “ship and shop” application.

As a result, participants have doubts in terms of trust even they are satisfied with using artificial intelligence and making life easier. As it can be seen from the results, male’s attitude to artificial intelligence is more positive than females. From this point of view, it can be effective to increase the awareness in shopping with artificial intelligence tools, it will be more useful to develop products, services or applications that appeals male consumers in the early adoption stage of technology.

The vast majority of the participants (77.6%) think that unemployment will increase and some occupations will disappear by robots and automation, and the 18-34 age group believes more that unemployment will increase compared to the 45-64 age group.

In the last part of the questionnaire, the participants' intention to artificial intelligence-based online shopping methods are analysed. During online shopping, 69 percent of the participants are interested when artificial intelligence offered personal recommendations according to learnings from the search history. Only the 17.3 percent of those mentioned that they feel like watched. Participants stated that they evaluated these suggestions and

it can be said that this gave some kind of comfort to the consumer without creating a problem of trust and therefore their attitude is positive to this statement.

Participants are asked whether they would like to have an automatic ordering of artificial intelligence applications when the products finished that they had bought online routinely and 53.9% stated that they would not want it because it is out of their control. The proportion of females who want to have control is higher than male participants. The other majority (22,1%) stated that they did not prefer because it is not safe. The consumer chooses to be in safe side and have control of shopping even if the application provides convenience.

Regarding to smart assistants and voice shopping, the majority of the participants (69%) rejected to use a smart assistant in online shopping. The main reason is, consumers want to search for other alternatives and be sure about to catch the best price.

The 18-25 age group has a higher tendency to use smart assistants than the 35-44 age group for online shopping. Similarly, singles are more inclined to use them than married. The reason may be that the routine needs of married people are more complicated, and the simple shopping needs of singles can be met with smart assistants . Singles may tend to consume more packed food that can be order with smart assistants easily. Since it can also be seen as a type of friend for single people, it would be beneficial to select the target group as people who live alone while preparing a marketing plan. The research that is conducted in USA and US show that voice shopping volume and consumer adoption is increasing rapidly. Amazon and Google is the biggest competitors and 85 percent of the purchasings with voice are under the $100 because less risky. Even though hands free shopping and fast returns attract customers, privacy still constitutes a major obstacle to customer adaptation. The majority of smart assistant owners use them to play music, set an alarm , open the lights and to asks for weather condition.

Although the participants are not disposed to shop with smart assistants , 58,8 percent of them think that shopping with smart assistants will increase gradually and will be adopted like USA and US. Indeed , consumers are not against the idea, while the technology in early adoption level in USA and US , it is at the stage of the innovation in Turkey and consumer need to wait and see to get used to the idea. For the pioneer of voice commerce Amazon, voice shopping is not a source of income, Amazon has reached a very valuable

customer data who is obsessed with customer satisfaction. Also Amazon entered to Turkey market and started selling operation in 2018 through its website. Amazon's voice assistant has not yet supported the Turkish language, but Amazon has started to work on it and soon Alexa will start to speak Turkish. This situation shows that there is a potential consumer that will use smart assistants in Turkey. On the other hand, Arçelik smart assistant Asista is in the market since 2016 and Turkcell announced that they work on a smart assistant project and will be presented to the public by 2019.

In the same way, dash button is not a meaningful source of revenue for Amazon, it is a good platform where it collects customer data. By identifying how often customers shops and what they shop it improves its artificial intelligence and continues to prepare the ground for "ship and shop" application.

As a result, this technology will be the most challenging one for retailers , so retailers should be developing products and strategy to able to be a part of it.

According to the result of survey, 75,6 percent of the participants are disposed to use a cashierless store. Males and single participants have more intention to use it than females and married participants. According to the literature search, cashierless stores will be a long lasting technology by providing cost advantage to companies and offer a better shopping experince to consumers. Amazon Go will reach to 3000 stores till 2021 and Microsoft is developing same technology for Wallmart to become a rival to Amazon. Through this technology, Amazon may plan to collect consumer data with hundred of cameras in the stores because artificial intelligence interfaces can identify and interpret the facial, auditory and biometric clues, and identify the immediate feelings, reactions, and mentalities of shoppers, and provide to offer appropriate products, recommendations and support.

As it can be seen in research results, there is young and technology sensitive population in Turkey so positive results can be achieved.

On the other hand, discount markets like A101 and BIM that is very succesful with their business plan, should develop new strategies to keep pace with it. Beside that, when this technology is involved, it will be very important for payment platforms to develop the appropriate infrastructure accordingly.

It is revealed that, 62,8 percent of the consumers do not prefer to ship and shop instead of shop and ship. Amazon has patented an application through artificial intelligence that

estimate which customers will buy which product in which frequency and send them to their homes without ordering, and consumers decide at the door whether to buy the products or not. When artificial intelligence can make very precise predictions, it is said that Amazon will start this implementation. However, artificial intelligence is not so good at this time, and the transportation costs of non-purchased products can be a big cost.

After the industrial revolution, we can say that the world has experienced a new revolution with artificial intelligence named as AI revolution. From art to health, production to education and law, we are faced with the use of artificial intelligence.

After the industrial revolution, the world's largest companies were manufacturing companies but today hi-tech, informatic companies and big retailers have taken their places. Productivity and revenue per employee ratios in these companies are much higher than industrial companies. They increased the productivity of workers with artificial intelligence and minimised labor costs. Artificial intelligence implementations are being used in many areas of retailing from production to CRM. In the literature there are also 2 different perspectives on this issue. Some says that they produce more new jobs than it destroyed , others claim that 800 million people may be unemployed due to artificial intelligence and income inequality will arise because all power will be collected in 1 or 2 hi-tech company that will cause unfair competition.

It is inevitable that there will be a change and transformation. While employment in predictable tasks related jobs will be reduced, employment will increase in jobs requiring people management, communication, perceptual ,social and emotional skills.

It will be very important to categorize and manage the data and this will be a new area of expertise. The system of education should be revised and departments should be added in universities who educate experts in the fields of artificial intelligence engineering, data science and coding. The negative effects of increase in unemployment for the nations, who do not educate young people on this subject, will be felt more and more. Governments and educational institutions have great responsibilities in this regard.

For further researches, consumer tendencies can be measured at certain periods with more extensive questions or in depth interviews to understand consumers better. Also research can be conducted on how the retail sector and other subsidiary sectors will be affected by the AI revolution, the threats and opportunities that may arise.

The results of this study provide many guidelines for the managers to adapt AI based online shopping in Turkey and this research is important in terms of reflecting the tendencies of Turkish consumers related to artificial intelligence-based shopping methods and contributing to the literature.

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APPENDICES

APPENDIX 1 : Survey of The Effect of Artificial Intelligence Based E-commerce Applications on Customer Behavior in Online Shopping

1.Do you shop online ?

a. Yes

b. No

2.Which channel do you prefer for online shopping?

a. Mobile Phone

b. Computer

c. Tablet

3.Choose the 2 most frequently purchased products in your online shopping.

a. Book

b. Technological Products

c. Cosmetic Products

d. Clothing

e. Grocery

f. Others

4.What are the two most important reasons to choose online shopping?

a. More favorable price

b. Free delivery and return

c. Time saving and practical

d. More variety of product

e. Easy price comparison

f. Detailed product information

g. Others

5.How often do you shop online?

a. Everyday

b. Less than 1 time in a month

c. A few times in a month

d. Once a month

e. A few times in a week

f. Once a week

6.I am very curious and excited about artificial intelligence and its implementations.

a. Strongly Agree
b. Agree
c. Neutral
d. Disagree
e. Strongly Disagree

7.I am worried and frightened about artificial intelligence and its implementations.

a. Strongly Agree
b. Agree
c. Neutral
d. Disagree
e. Strongly Disagree

8. I think artificial intelligence is superior than human intelligence.

a. Strongly Agree
b. Agree
c. Neutral
d. Disagree
e. Strongly Disagree

9.I have knowledge about the artificial intelligence implementation fields.

a. Strongly Agree
b. Agree
c. Neutral
d. Disagree
e. Strongly Disagree

10.I use artificial intelligence willingfully in applications like smartphones (Iphone Siri voice assistant,face recognition technology), telephone banking voice response systems.

a. Strongly Agree
b. Agree
c. Neutral
d. Disagree
e. Strongly Disagree

11.Artificial intelligence stores a lot of data about the habits, preferences and lifestyles of users, constantly learns and never forgets what have learned, and this creates a negative feeling for me in terms of trust.

a. Strongly Agree
b. Agree
c. Neutral
d. Disagree
e. Strongly Disagree

12.I think the artificial intelligence will make my life much easier in the future.

a. Strongly Agree
b. Agree
c. Neutral
d. Disagree
e. Strongly Disagree

13.I think that some professions will disappear and unemployment will increase throught robots and automation working with artificial intelligence.

a. Strongly Agree
b. Agree
c. Neutral
d. Disagree
e. Strongly Disagree

14.Artificial intelligence began to be used in many online shopping applications. Are you interested in the fact that artificial intelligence offers new recommendations for your previous searches and choices while shopping online?

a. Yes
b. Yes, I am evaluating suggestions
c. No
d. No, I feel like I am being followed

15.Do you prefer that artificial intelligence applications shop autonomously out of your control for the products that you shop online routinely?

a. Yes, that is very practical
b. No, I do not trust
c. No, in every purchase I want to search for the best price
d. No, it makes me uncomfortable to be out of control

16.Would you like to order and shop with a single command with personal voice assistants (voice-controlled wireless speakers, eg Apple Siri, Amazon Echo, Google Home)?

a. Yes
b. No, I like see all options in supermarket and make a choise
c. No, investigate beforehand for best price
d. No, do not like technological products

17.According to research, it is estimated that purchases with personal assistants assisted by artificial intelligence will reach $ 40 billion in America in 2022 and $ 5 billion in Britain. Do you think that such an increasement will be seen in Turkey about shopping with voice assistants ?

a. Yes, consumers will adapt quickly
b. Yes, but will increase slowly and gradually
c. No, it is not for Turkish customer , they will not trust
d. No, Turkish consumers have low level of curiosity about using technological products.

18.Do you want to shop at a convenience store where the products you bought added to your virtual shopping cart and the invoice is sent to your e-mail address without waiting in queue for payment ,with an application you have downloaded to your phone and entered your credit card information ?

a. Yes, use it comfortably
b. Yes, but need someone in any case
c. No, not safe for credit card
d. No, better to wait in queue

19.Amazon has patented an application through artificial intelligence that estimate which customers will buy which product in which frequency and send them to their homes without ordering, and consumers decide at the door whether to buy the or not. In the future, would you like to see the products you consume often come to your doorsteps without ordering?

a. Yes
b. No

20.What is your age?

a. 18-25
b. 25-34
c. 35-44
d. 45-54
e. 55-64
f. Over 65 years

21.What is your gender?

a. Female
b. Male

22.What is your marital status?

a. Single
b. Married

23.What is your proffession?

a. Student
b. Freelancer
c. Executive in private sector
d. Manager in private sector
e. Civil cervant
f. Academician
g. Retired
h. Unemployed

24.What is your graduation level?

a. Primary or secondary school
b. High school
c. College
d. Master Degree
e. Doctorate