THE EFFECT OF AFTER-SALES SERVICES ON CUSTOMER RETENTION: THE CASE OF THE TURKISH SMARTPHONE MARKET

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The Effect of After-Sales Services on Customer Retention:

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DECLARATION OF ORIGINALITY

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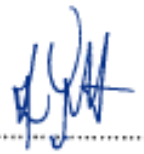
Signature 

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ABSTRACT

The Effect of After-Sales Services on Customer Retention:

The Case of the Turkish Smartphone Market

Customer retention success affects continuity and operational strategies of companies. Since the competition increases in global markets, companies diversify their services to keep longer customer engagements. There are several customer retention tools, including post sale services. The purpose of this thesis is to examine the effect of after-sales services on customer retention in the smartphone market while contributing to the literature by providing a theoretical framework related to the discussion of the use of after-sales services as a customer retention strategy. The after-sales services in Turkish smartphone market is analyzed as a case to explore and explain the findings of the thesis. Servqual model is adopted to investigate the antecedents, behaviors and outcomes associated with consumer interaction at certain technical service centers. In order to test the model, paper and online-based survey method were used. A questionnaire was applied to 300 people residing in Kadıköy, Istanbul aged above 15, distributed homogeneously in terms of gender. Questionnaires were selected among those who used a smartphone and previously sent their smartphones to a technical service for repair. The service quality impact on intention of repurchasing the same brand was investigated in terms of Servqual model. The findings reveal that previous after-sales services quality in terms of reliability, responsiveness, empathy and tangibles dimensions are valid and meaningfully affect the repurchasing the same brand smartphone decision. A final report is developed with the set of recommendations to guide manufacturers in adjusting their business strategy for after-sales service portfolio.

ÖZET

Satış Sonrası Hizmetlerin Müşteriyi Elde Tutmaya Etkisi: Türkiye Akıllı Telefon Pazarı Vakası

Şirketlerin müşteriyi elde tutabilme başarısı, şirketlerin devamlılığını ve operasyonel stratejilerini doğrudan etkilemektedir. Global pazarda rekabet arttıkça, önceki müşterilerin tekrar alışveriş yapmaları için şirketler hizmette farklılaşmaktadır. Satış sonrası hizmetler, müşteriyi elde tutma stratejileri içinde değerlendirilmelidir. Bu tez, müşteriyi elde tutma stratejilerinde satış sonrası hizmetlerin etkisini akıllı telefon pazarında incelemektedir. Türkiye'deki akıllı telefon pazarı analiz edilerek satış sonrası hizmetlerin müşteriyi elde tutma etkisi araştırılmıştır. Servqual hizmet modeli kullanılarak, deneyimlenen teknik servis hizmet algısı ve tekrar satın alma kararına etkileri incelenmiştir. Model uygulaması için yazılı ve online soru seti uygulanmıştır. İstanbul Kadıköy'de yaşayan, 15 yaş üzeri 300 kişiden geçerli anket sonucu oluşturulmuş, cinsiyet dağılımında eşitlik için kontrol sağlanmıştır. Ankete başlamak için daha önce akıllı telefon kullanmış ve teknik servise göndermiş olmak eleyici soru olarak sorulmuştur. Anket soruları sonucunda, müşterinin teknik servisten aldığı hizmetin tekrar aynı marka akıllı cihaz alımına etkisi beş ölçekli Servqual model ile incelenmiştir. Anket sonuçları analiz edilerek, bir önceki teknik servis hizmet kalitesinin güvenilirlik, duyarlılık, empati ve fiziki durum ölçeklerinde aynı markayı tekrar satın alma kararına anlamlı bir etkisi olduğu gözlemlenmiştir. Sonuç raporunda üretici firmaların satış sonrası hizmetler için uygulayabilecekleri iş stratejileri hakkında önerilere yer verilmiştir.

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CHAPTER 1

INTRODUCTION

Over the last twenty years, the market of smart devices, which are capable of multifunctional applications, have been significantly expanded. Smartphones are the most popular form of handheld devices. Number of smartphone manufacturers are increasing in general. However, they have to have high competitiveness in order to survive in a profitable business model. In this competitive environment, the cost of finding new customers is higher than the cost of keeping the existing customers' loyalty. In a highly competitive environment, businesses are trying to keep their potential customers to survive while they conduct marketing activities for new customers. In order to sustain successful customer retention, being customer-oriented and offering not only superior product design but also expected after-sales services and beyond is crucial. Easy access to technological developments via different ways such as reverse engineering led to enhancing qualifications of the smartphones with lower qualitative diversity between the similar products. Now, customers are also demanding for the provision of after-sales services while purchasing goods or services. Therefore, after-sales services are gaining increasing importance in strategies of attaining competitive advantage for enterprises. In particular, where similar products meet customer needs, the quality of after-sales services plays an important role in increasing customer satisfaction from that product. Smartphone device manufacturers face increasing local and global competition. Therefore, quality of after-sales services would be differentiate for manufacturers. The growing market sentiment of pushing new devices every time in the hands of a user means the after-sales service is potentially neglected. Therefore, a business opportunity exists for

companies that understand lifecycle management concepts and recombine them with marketing and customer loyalty principles to retain consumers and business.

1.1 Problem statement

Companies are established for a common purpose, which is sustaining profitability. On the other hand, customers' lifetime relationship with a company is limited with the success rate of using customer retention tools. Researches show that there is a strong positive relationship between customer retention rate and profitability. Bain and Company's research by Reichheld (2001) indicated five percent increase in customer retention improves profitability 25%. Retained customers build a deeper connection with the company and increase purchasing habits. There are common customer retention tools for companies; however, they are distinguished on strategy applications. Quality of after-sales services has positive and meaningful relationship with customer's retention (Masoudinezhad, 2018). The main motivation of this thesis is to measure after-sales services impact on customer retention in a more price sensitive environment than a developed economy since most of the studies covers. In order to detect direct effect, global vendors with the same product and high penetration, smartphone market is examined.

The global median of smartphones is close to 43%, which is defined as a device that can access internet and apps. Smartphones have a short lifespan with the average lifespan less than two years in most developed countries (Sarath, Bonda, Mohanty, & Nayak, 2015). Smartphones are fragile and break easily – every one in ten consumers has experienced shattered touchscreen or display or other cosmetic damages within one year of purchase (Schaub, et al., 2014). As the mobile electronics markets is flooded with newer products with improved characteristics,

consumers can change smartphones relatively easily instead of seeking other options such as repair or replacement. Yet, the smartphone repair market is growing concurrent with new smartphone purchase rates. Existing literature is unable to provide insights into smartphone repair surveys. Indeed, companies of after-sales services stations license any such consumer-generated data depicting user satisfaction. The lack of research on a critical link in the device lifecycle on mining, manufacturing, using, refurbishing and wasting poses a question to the companies that produces or market smartphones. Consumers who receive smartphone related service when they seek help with their personal smartphones may choose, in future, to either switch from company outlets to free market repair shops offering the same service at a lower price or to jump to a new smartphone manufacturer due to past bad experience at the after-sales service point. Although smartphone repair may be seen as an invaluable point-of-exchange from a marketing and relationship development view, in an increasingly competitive global smartphone market, businesses can hardly afford to lose customer base due to poor satisfaction level.

Turkey is among the richer economies in the list of developing nations. It has a 59% smartphone ownership rate that is close to other developing countries such as Malaysia, Chile and China (Poushter, 2016). Market actors, self-owned or company owned licensed outlets that repair broken devices such as smartphones experience as growing consumer base as smartphone market penetration and ownership rates skyrocket in Turkey. Guvensssu of Vestel is an example for self-owned technical service point, and KVK's authorized by Apple service point is for licensed outlets.

The thesis aims to explore the relation between consumer and the quality of after-sales services. To this aim, the proactive after-sales services provided by

smartphone manufacturers in Turkey is studied as an exploratory and explanatory case.

The thesis looks closely into the existing smartphone market in Turkey and collect evidence from smartphone users. The data collected from users are tested against a consumer retention model where multiple secondary research assumptions are analyzed to support the thesis statement. In the study, the following objectives are laid out:

- Developing appropriate methods to capture user data on smartphone usage characteristics and experience.
- Comparing and analyzing processes and mechanisms developed by manufacturers to engage with users from entering a service or repair center to delivery of the repaired device.
- Deriving a model for consumer retention derived from existing models on consumer satisfaction, relationship effect and consumer loyalty.
- Providing evidence on how well the model fits with the assumptions laid out in the initial phase of the research.

1.2 Organization of the thesis

Each section of this thesis is divided into distinct parts made up of literature review, methodology, findings, discussion and conclusion. The literature review chapter is an insight into customer retention in perspective of after-sales operations. The model is presented upon smartphone market industry in Turkey and how well it has shaped in the recent years. Considering the fact that smartphone is still a new concept for many developing economies, it holds tremendous potential to bring users on a digital platform, connected anywhere at the touch of a button. Smartphone is one of the

most widely researched category in consumer electronics and its market share is one of the highest among all consumer electronics products. The literature reviewed in the course of this thesis will target smartphone characteristics that engage users with after-sales service centers for smartphone physical damage or software malfunction both of which require technical assistance.

Based on the literature, a model that best suits to address the problem and question at large as how consumer retention is affected by user engagement at after-sales service centers is developed. The objective of designing a new model is to capture the processes lying underneath every service center and develop a holistic view of the impact of after-sales service centers on consumer satisfaction and retention. Using the model, an appropriate survey strategy is selected and data is sampled from multiple points in the country. The research set the inclusion and exclusion criterion out and acknowledge the limitations presented to the study.

Conclusions regarding the sample set are drawn using proper data analysis techniques after processing the data. SPSS, 23 program is run to offer qualitative analysis of the data. The primary assumptions of the study are tested for its correctness. Once the secondary questions answered from the data analysis techniques, the study presents cross-related debate and discussion covering views of authors from the literature.

The conclusion part summarizes the key insights of the study aiming to obtain the most pertinent findings from the research. Directions for future research in the different fields related consumer retention strategies, after-sales services and specifically smartphone technical service industry in Turkey are also discussed.

CHAPTER 2

LITERATURE REVIEW

In this chapter, the definitions in the related literature and the expressions of the terms that will be included in the study are given. The focus of this chapter is to review the studies on after-sales services as a part of consumer retention strategies. Specifically, the smartphone market is studied, and a closer look at the business models in the smartphone sector is presented. The chapter covers green business model and circular business model to conduct a review of service quality, after-sales service and product lifecycle management. Because the case of after-sales services in Turkey's smartphone market is analyzed in the thesis, the literature review chapter also introduces the Turkish smartphone market comparatively.

2.1 Customer retention

Customer retention has a major impact on profit generation from market share. Economies of scale and other variables should be taken into account in order to provide a competitive advantage to the firm.

The ability to retain the customer is a real scale for financial success. Winning a new customer or regaining a lost customer leads to a cost that includes advertising, promotional and sales costs. Gaining a new customer in a competitive business environment requires a larger amount of service and investment than keeping a current customer (Becker, Berry, & Parasuraman, 1992). Customer Service Institute estimates that acquiring a new customer is five times costlier than serving a current customer (Guiltinan & Paul, 1994).

Ene and Özkaya (2016) highlighted that to sustain high profitability, it is important to maintain the number of existing customers. An average level of 10% loss in the number of customers is observed every year. New customers to replace lost customers require at least five times more time, energy and money. However, an increase of two percent in retaining customers means a 10% decrease in overheads pointing a positive profit effect of customer retention. A well-designed customer database is a sine qua non of successful customer retention strategies. The company's current customers, purchasing behavior, the revenue they provide, the cost, preferences and market segmentation information to serve these customers are at the heart of a customer database. Information on customers who have completed their business relationship should also be included in the database. Unfortunately, the vast majority of businesses, even those who claim to be marketing-oriented, do not have a database about existing customers, past customers or potential customers. In the modern marketing era, the customer database is a strategic asset for businesses.

It is very important for businesses to measure customer retention strategies as they help to develop criteria and improve performance in line with these criteria. Management of this process is not possible without measuring the retention of the customer. Relatively, a small percentage increase in the retention rate of its customers has been demonstrated in several studies, which can lead to a significant increase in the value of existing customers. In addition, lifetime value is a very useful concept that can be used to measure customer retention. The lifetime value of a customer indicates to the vendor actual values of other customers in the market today. However, life time is a very difficult concept to make the value ready for use. What is important for companies is to understand why customers are changing business. Some of these reasons can be listed as price, discomfort, defect in service

base, failures of employee response, ethical problems, reluctance, existence of competition and failures in all activities in the service delivery process. Understanding the underlying causes of business change will help companies build barriers that prevent possible destructive effects of the change. Negotiating with old customers is another way to understand the change in the consumer behavior. In this way, useful, clear and applicable information will be provided to the business (Coyles and Gokey, 2005).

Nowadays, it is not enough to satisfy the customers only. While differentiating the products and services, presenting them with the new marketing tactics, trying to win the loyalty of the customers through the same means can provide customer loyalty only in the short term. After a period of time, it is difficult to connect the customers to the business especially if there is a noticeable reduction in their income. Using the customer database that was created within the process of the sale, each business should focus a policy of keeping a customer that differentiates from its competitors' policies. While the customer needs are unlimited and the expectation of service quality is so high, enterprises should assimilate the retention models and implement the most accurate model with the aim of gaining their lifetime. Some of the ways in which businesses in the service sector can track their customers are listed as follows:

- Constantly recognizing special privileges to customers
- Sending thank you cards
- Rewarding customers for their loyalty
- Creating accessible service systems
- Trying to be fair and consistent
- Being aware of the cost of losing customers

- Competing in the field of service with competitors
- Asking customers what they want
- Taking care to address customers with their names

Customer retention is beneficial for both business and customer. The customer maintains the relationship as long as it is different from the one he / she received. The customer obtains quality, satisfaction and benefit in return for financial and non-financial costs. On the other hand, establishing relationships is a kind of investment. The customer wants to benefit from this investment in the long term. The time spent in a well-established long-term relationship is an important mean. The enterprise can play a consultative and supportive role for the customer, both technically and socially. Creation of loyal customers and the maintenance of this loyalty provide many benefits for businesses. It has been revealed in many studies that customers tend to spend more on their products each year than they did on the previous year. When customers are familiar with businesses, and they are satisfied with the quality of their services, they develop a desire to do more with the organization. In addition, as the relations with customers grow, develop and spread over many years, they feel more and more attached to the business. One of the other benefits is perhaps the most important costs. In order to attract customers and keep them as loyal customers in the enterprise, it is necessary to make certain expenses and allow their costs. Once an investment is made for customers, maintaining the established relationship allows for the provision of expenses. On the other hand, the creation of loyal customers via customer retention provides the opportunity to make the promotion of the product in an effective way that no promotion tool can achieve. The mouth-to-mouth communication, with positive suggestions to help new customers get into the business. Therefore, expenditures for getting new customers will be less.

Customer retention has an important role in knowing who is serving the customer. Especially, after-sales services are very important activities in order to keep the customer (Saeed, Grover, & Hwang, 2005).

2.2 Definition of after-sales services

After-sales services is used to describe the services that are provided to a customer after the product has been delivered (Vitasek, 2005). Alternatively, it is also called as field service, technical support or services when products are located at the customer's site. In the literature, after-sales service is also called as after-sales support, or technical support (Agnihotri , Sivasubramaniam, & Simmons 2002). According to Lele and Karmakar (1983), after-sales service is referred as product support activities or customer support elements; meaning that the product is available to consumers during the complete product lifespan and trouble-free use. After-sales services could be examined in two possibly distinct ways. First as a supplementary service element and second as an operative activity for some or all members of the distribution chain is stated (Gaiardelli, Saccani, & Songini, 2007). After-sales services have significant impact on perception and selection of the products by customers. Hence, after-sales services plays strategic role in gaining competitive advantage. The returns provided by the after-sales services to the companies are generally higher than those obtained from the product sales are. These gains might be tripled over the period of product sale (Wise & Baumgartner, 1999). After the completion of the sale process, all activities including the transportation, delivery, installation, use of the purchased product, maintenance, repair and supply of spare parts, taking care of customer complaints in order to ensure the continuity of the sale process are all after-sales customer services (Aydın, 2008). This thesis focuses on

perceived center service quality and its impact on customer retention. Thus, repair related processes are mainly in focus.

Implementing right strategies at the right time with high level of service understanding affects customer satisfaction and retention, positively. In the classical management approach, the relationship with the customer is limited to the issue of receiving. In the modern management approach, customers are at the focal point of all activities. Businesses are obliged to take advantage of their competitors in the period that customers buy and use the product, and to meet the demands of the consumers correctly and quickly. Cohen & Lee (1990) defined after-sales service as the required help that a company provides after a consumer purchases their brand product. According to Fitzgerald & Moon (1996), after-sales service is a critical part of supply chain management. After-sales services strategy is mostly neglected by organizations under performance measurement and improvement. Designing an after-sales service network requires selection of distribution channels and vertical integration. Supply chain management literature identifies the issues of performance management by addressing after-sales service (Cohen & Lee, 1990). Mathe and Shapiro (1993) have pointed to design and management of an organization that would help in delivering after-sales service.

Businesses have to rely on distributor network to support the after-sales services. However, distributors lack much of the product information and market expertise required to do an effective job such as store selling or after-sales service. Revolutionizing after-sales service network and quality, Haier, China's leading consumer appliance company provides a good example of how distribution networks can be used as an important business strategy. Haier built its own after-sales service network in the 1990 to compete with its rivals in the Chinese market. While Haier's

competitors took the traditional approach to outsourcing its product service needs to third party technicians, Haier's customers only needed to call toll-free hotline, which is the first in China, with service requests. The technician would attend and fix the problem within 24 hours of reporting the incident by the customer. A follow-up call on the next day confirming the service quality would complete the transaction. Chinese consumers have praised the benchmark set by Haier in after-sales services for not only in consumer electronics but also in mobile phones and automobiles (Cohen & Lee, 1990).

Providing high level of customer service in product driven companies might be challenging. It requires coordination across distribution centers, retail outlets, logistics chain to supply parts, and a sophisticated IT backbone to coordinate. Such strategy can pay off for companies such as Haier because after-sales services proved to be a competitive advantage in this sector. However, for smaller products that can be easily transported to service centers, a different business model would be needed to sustain competitive advantage. According to Gaiardelli, Saccani and Songini (2007), after-sales activities are acknowledged as a viable source of revenue, profit and competitive advantage in several manufacturing industries. In order to measure supply chain performance, a multi-layered performance measurement framework is proposed. The framework links strategies used by each actor in the after-sales service and their performance levels. According to Christopher (2016), resource measures can help a company to reach high levels of efficiency whereas output measures help in achieving customer satisfaction. At the process level, performance can be measured in terms of customer satisafaction, flexibility and productivity. Any metrics used to measure customer satisfaciton can identify the existing gap between customer expectations and performance level of the firm in terms of the

characteristics of the output delivered. For instance, a systematic, process-oriented, cost-effective and timely delivery of repaired products influence customer satisfaction. After-sales processes can be augmented with business models that allow customers to return, upgrade or enhance their smartphones with ease thus improving market share by a positive effect on revenue and, at last, on profit.

According to Rigopoulou, Chaniotakis, Lymperopoulos, and Siomkos (2008), after-sales services appear to have the potential to offer multiple benefits to buyers and sellers by its existence and their level in terms of quality. After-sales services play a pivotal role in improving the relationship between customers and sellers; thus helping the company gain sustainable competitive advantage.

2.2.1 Outsourcing versus manufacturer owned service centers

Several industries use outsourcing to reduce costs and improve revenues (Christopher, 2016). Indeed, by outsourcing the business processes, smartphone companies aim to take advantage of already existing workflows and the knowledge of employees in the third-party organizations (Goffin & New, 2001). According to Contractor, Kumar, Kundu, and Pederson (2010), outsourcing in the telecommunications industry is sought primarily to manage resources, control business processes that are not critical and take advantage of location facilities available in target markets. Outsourcing decisions are related to business strategy, specific to products and driven by costs. However, Oshri, Kotlarsky, and Willcocks (2015) warn that outsourcing should be carefully planned.

Apple's outsourcing practice provides a complete systematic guide to address the issues discussed above. For example, choosing the right iPhone service option, service costs and times are available on manufacturer's website (Apple, 2017). Apple

provides customer service support number for all Apple products related queries along with useful links to find authorized service centers. The manufacturer also advertises its standard repair time along with details about warranty coverage. Useful information provided for customers having out-of-warranty products along with an outline of process during service and repair at any authorized Apple service provider. In Turkey, Apple outsources first step technical service both for retail and telco channels, however runs in-house for second grade services. The reason of using two different service system helps Apple to reach out walking customers in many locations with expanded coverage within country, as well as to preserve service knowledge to detect any fraud actions, such as cloning.

2.2.2 Smartphone insurance plan

In the recent years, mobile phone insurance ecosystem, commercial warranty, has developed. It is expected to account for nearly 20 billion USD in revenue by 2018. The project growth rate of the smartphone insurance industry is estimated at 12% for the next four years (Natanson, 2016). Given the growing insurance market in travel, automobiles, assets, health and products in transit among others, mobile phones and smartphones in particular are no exception to this phenomenon. The mobile phone insurance industry covers damage from theft, loss, malfunctions and other cosmetic damage at varying interest levels and insurance coverage rates. However, several insurance plans cease to exist in the event of liquid spills, use of spurious parts sourced outside manufacturer's knowledge and limited insurance coverage in the event of damaged displays. Insurance plans vary from model to model. Replacement phones are often downgraded versions of the current smartphone. For example, Apple has its special AppleCare plan for users at 99 USD covering most of the

protection except loss from theft. Similarly, a user has two months to take this plan from the date of purchase of the product and the insurance plan covers the smartphone for two years.

2.2.3 Turkish legislation for after-sales services

Legislation for after-sales services has been formed in general at 6502 Consumer Protection Law. Regulations has been defined within this act. The Ministry of Customs and Trade has the authority to regulate and audit the market with support of Ministry of Transportation and Infrastructure's affiliate BTK, Information Technology and Communication Institution. There are two main regulations in practice as after-sales services and warranty certifications.

After-sales services and warranty regulation define the parties on repairing processes and their responsibilities within certain period, including reporting. According to Resmi Gazete numbered 29029 (2014), manufacturer, distributor and retailer is responsible from after-sales services providing as much as technical service centers. It means that, not only manufacturers but also intermediaries, who distribute or sell the products to the end user, is responsible from the quality and compliance to regulations. Otherwise, consumers easily report to Consumer Arbitration Committee and gain consumer elective right. Most of the time, Arbitration Committee sentenced to point of sale, retailers by checking the receipt of goods or services which causes unjust results against retailers.

Consumer elective rights are defined as,

- Free of charge repair
- Replacement with equal product
- Discount proportioned relatively with defect

- Termination of contact

Consumers tend to choose replacement or termination within elective rights. Consumer elective rights become entitled to take in certain conditions such as;

- Whether a replacement device is offered and provided for repairs which took more than ten business days
- Exceeding total repairing time allowed by law as twenty business days,
- Recurring malfunction within warranty or after repair within six months.

According to the regulations, smartphones are under warranty within two years of purchase. In addition, it is highlighted that co-responsible parties should maintain repairing processes until the end of the product lifetime, which is five years for consumer electronics including smartphones.

Turkish economy struggles with high inflation and devaluation from Turkish Lira since the third quarter of 2018. Government arranged new regulations to decrease foreign trade deficit. The Ministry of Trade released regulation changes on the principle rules to be applied on retail trade on Resmi Gazete numbered 30659 (2019). The new regulations limits installment plan for smartphone 12 months for products priced up to 3500₺; six months for above.

2.3 Smartphone concept

Smartphone is the ultimate version of telephone invention over years. Agar (2013) stated that Lars Magnus Ericsson worked in the iron, mining and railway sectors in the beginning of 1870 before working with a telegraph manufacturer. Then, he worked in Switzerland and Germany. In 1876, he established his own company in Stockholm. Graham Bell, the company that sells and repairs telegraph devices, has been shocked by the invention of the phone. The most important features that

distinguish smartphone from other mobile devices are as more advanced processing capability, advanced connectivity, mobile application download and run feature (Meral, 2017). Although Martin Cooper discovers the first mobile phone in 1973, it is Richard Frenkiel and Joel Engel in the late 1940s, which introduced the idea of mobile telephones for the first time (Yan, 2017).

While initial smartphone technology dates back to the 1970, it is not until 1992 that IBM developed a prototype mobile phone that incorporated Personal Device Assistant (PDA) features. In 1994, Bell South came up with Simon Personal Communicator, a refined version of the prototype. Simon is considered the world's first smartphone. Although the design is similar to the first Motorola phone, its features are quite surprising. The features that appear in front of the period are listed as touch screen, screen stylus, calendar, email, world time, notebook, games and text correction software (Agar, 2013). This would be the first real device that is considered categorically as a smartphone. The communicator is capable of making calls and receiving calls, send fax and emails among other trivial jobs. In the mid-nineties, many people became used to carrying a PDA device. Earliest manufacturers of PDA devices in the market are Blackberry OS, Palm OS and Nokia. In the same year, Qualcomm also launched its flagship smartphone featured internet connectivity services combined with features of a PDA. Smartphone technology has continued to advance at an exponential rate in the next millennial. However, companies such as iPhone, Windows, have brought recent advances and Android based platforms exploiting the increased hardware processing capability (Sarwar & Soomro, 2013).

Smartphone differentiates from other mobile phones with internet connection. A smartphone is not only connected via GSM operator but also to a local network and internet, which the various mobile applications downloaded (Yan, 2017).

Smartphones are mobile communication devices that offer connectivity options such as Bluetooth, 4.5G, Wi-Fi, and GPS. The race for smartphone market acquisition started in 2007 when Apple launched iPhone followed by Microsoft's Windows mobile and Google offering a free version of Android operating system. During the next three years, manufacturers of consumer electronics such as Samsung, LG, Alcatel, Motorola and Nokia among others started competing for market share. Every product had its own unique characteristics and platform connectivity that is created to support brand loyalty via using network externality between users. For example, BlackBerry Messenger (BBM) is a proprietary web-based instant messaging service allowing messaging and voice calls between two users. Before internet based instant messaging services were launched, Blackberry was the dominant market shareholder and most of its sales were driven due to its proprietary technology bundled into the device. Users purchased Blackberry devices to take advantage of its unique features that no competitor could deliver. It was only after May, 2013 that its CEO Thorsten Heins announced that BBM services will be available for iOS and Android users (Jain, Raj, & Buksh, 2016). Thus, companies that are ahead in technology and have expertise of creating and capturing value through innovative services often rule market forces.

The mobile Operating System (OS) platforms are dominated by Android and iOS with a decreasing number of Windows Phone users (Scott & Weaver, 2014). While the number of smartphone users in developed and developing countries are significantly different, the gap is decreasing due to increasing sales of smartphones in middle income developing countries such as Turkey. The abundant market opportunities coupled with affordable processor technology, evolution of hardware

and globalization has created an unprecedented market of low-cost electronic devices.

Each smartphone is a combination of complex technology with an adaptive software OS that integrates and allows users to access web technologies in a mobile environment. Current smartphones are operated through touchscreens to constitute a large part of the smartphone panel. Bigger smartphone display area can increase the risk of damage to the surface when smartphones are dropped. According to Riisgaard, Moosgaard, and Zacho (2016) nearly 37% of the cases of surface damages happens in the first three months of use. While a large number of people continue to use mobile phones with damaged displays, the main cause of this persistence is high repair and replacement costs. On average, smartphone display replacement costed from 150 to 600 USD depending on the model. Damaged displays were found to impact user's interaction with the smartphone whereas scratches, cracks and display faults further deteriorate user experience. There is limited evidence on user experience, satisfaction and retention effects regarding the engagement with damaged or malfunctioning devices. In the literature, there is insufficient study related to the use of services and repair shops as a business strategy that aims to improve customer loyalty by providing cost effective yet excellent product after service (Lee, 2011). Companies have failed to capture value from after-sales services that complement their products. Indeed, catering the existing products' after-sales services is a good strategy to increase brand loyalty and trust of consumers in smartphones that they purchase.

Since product design, capabilities, service methodology is similar and penetration is high globally, smartphone business is among the top businesses worldwide and could be used to measure the most consistent categories of customer

satisfaction (Natanson, 2016). Smartphone users are more demanding as newer models with better configurations and security improvements from external threats are available in the market every year (Poushter, 2016). The availability of improved designs and diversity of products warrants high levels of after-sales service support (Pakdil, Işın, & Genç 2012). Smartphones are durable products and unless they are acted upon by an external threat, they are expected to be operational for a considerable period of time (Scott & Weaver, 2014). From a financial perspective, smartphones are becoming more and more economical which warrants newer marketing techniques to push innovative products in the market while collecting unused devices from the consumer so that they could be passed on to the next level under circular lifecycle management (Sarath et al., 2015).

2.3.1 Smartphone market shares

The statistical and information-providing institutions such as International Data Corporation (IDC), Gartner and Statcounter publish global and local market share rates of smartphone brands.

2.3.1.1 Global smartphone market

To evaluate global market shares of smartphone manufacturer companies, data from IDC and Gartner are referenced. Since not all the smartphone companies prefer to explain detailed sales report, data accuracy is dependent to global market share researches. Therefore, there are no exact accuracy in figures from each research company. The difference is derived in numbers and type of resources as well as elaboration ability of projection.

According to quarterly surveys, in the first quarter of 2017, 344.3 million smartphones were placed on the market by distributors. Although the momentum of the demand seems to be declining, the intense interest in smartphones continues. Smartphone shipments increased by 3.4% compared to the first quarter of the previous year (IDC, 2017).

In the first quarter of 2017, despite an increase in average phone prices, 380 million smartphones were sold, reflecting 9.1% expansion compared to the first quarter of the previous year (Gartner, 2017).

The two big players of the market, Samsung and Apple entered the first quarter of 2017 with a decline compared to the first quarter of the previous year (IDC, 2017). In addition, the Chinese brands Oppo and Vivo have increased their market share, especially in the Chinese smartphone market, which posed a major threat to Samsung and Apple (Gartner, 2017).

Market shares from the first quarter of 2016 to the first quarter of 2017 are shown in Table 1. According to data, Apple closed the fourth quarter of 2016 as a sector leader but lost the seat to Samsung in the first quarter of 2017. Also, it would not be wrong to declare that 2017 is the year of new Chinese smartphone companies such as Xiaomi, Oppo, Vivo and others to stand out among other small producers in the market.

Table 1. IDC World Smartphone Market Shares 2017 First Quarter

Market Shares	Samsung	Apple	Huawei	Oppo	Vivo	Others
2016 First Quarter	23.8%	15.4%	8.4%	5.9%	4.4%	42.1%
2016 Second Quarter	22.7%	11.7%	9.3%	6.6%	4.8%	45.0%
2016 Third Quarter	20.9%	12.5%	9.3%	7.1%	5.9%	44.3%
2016 Fourth Quarter	18.0%	18.2%	10.5%	7.3%	5.7%	40.2%
2017 First Quarter	23.3%	14.7%	10.0%	7.5%	5.5%	39.0%

Source: IDC.

At the first quarter of 2017, P9 and P9 Plus models made Huawei the third brand following Apple in the market with sales of 34 million units in the first quarter.

Chinese brands such as Huawei, Oppo and Vivo listed as smartphones with affordable prices. Market share comparisons by research company Gartner for the first quarters of 2016 and 2017 are shown in Table 2.

Table 2. Gartner World Smartphone Market Shares 2017 First Quarter

Market Shares	Samsung	Apple	Huawei	Oppo	Vivo	Others
2016 First Quarter	23.3%	14.8%	8.3%	4.6%	4.0%	45.0%
2017 First Quarter	20.7%	13.7%	9.0%	8.1%	6.8%	41.7%

Source: Gartner.

As seen in the data in Table 3, Apple closed the fourth quarter of 2016 as a sector leader but lost the seat to Samsung in the first quarter of 2017. In the last quarter of 2017, Samsung closed the last quarter of the year 2017 as the market leader.

Table 3. IDC World Smartphone Market Shares 2017 Fourth Quarter

Market Shares	Apple	Samsung	Huawei	Xiaomi	OPPO	Others
2016 Fourth Quarter	18.2%	18.0%	10.6%	3.3%	7.3%	42.5%
2017 First Quarter	14.7%	23.3%	10.0%	4.3%	7.5%	40.2%
2017 Second Quarter	11.8%	22.9%	11.1%	6.2%	8.0%	40.0%
2017 Third Quarter	12.4%	22.1%	10.4%	7.5%	8.1%	39.5%
2017 Fourth Quarter	19.7%	18.9%	10.7%	7.2%	6.9%	36.6%

Source: IDC.

2.3.1.2 Turkish smartphone market

Total smartphone sales in Turkey increased to 12.5 million from 2015 to 2016. In the world market, smartphone sales amounted to 1.4 billion for 2016. Although the smartphone market was growing in 2016 with a slowdown compared to the previous years, smartphones continued to be one of the most popular technology products. Because smartphones released to the market at the beginning of 2016 were already compatible with 4.5G technology, 4.5G introductions in April 2016 did not affect the smartphone sales significantly. In 2016, smartphones with large screen and high storage area were preferred more than the previous year (Gfk, 2017).

According to 2016 data, smartphones accounted for 95% of total mobile phone sales. In 2016, the amount of smartphone sales, which is 12 million units, decreased by 2.5 million units compared to the previous year. Apple and General

Mobile (GM) followed Samsung with a market share of 41%. Table 4 shows the distribution of Turkish smartphone market share for 2016.

Table 4. Turkey Smartphone Market Share 2016

Market Shares	Samsung	Apple	GM	Vestel	Casper	Others
2016	41%	19%	11%	5%	4%	20%

Source: Yeniova.

Table 5 shows smartphones market shares in Turkey between October 2017 and March 2018. Apple preserved and slightly increased its market share, while Samsung has dominated the market with share of 50.34%.

Table 5. Turkey Smartphone Market Shares November 2017 - March 2018

Market Shares	Samsung	Apple	LG	GM	Others
October 2017	51.32%	17.84%	6.40%	5.81%	18.63%
November 2017	51.07%	17.82%	6.49%	5.77%	18.85%
December 2017	51.24%	17.41%	6.42%	5.76%	19.17%
January 2018	50.64%	18.50%	6.27%	5.58%	19.01%
February 2018	50.39%	19.62%	6.01%	5.41%	18.57%
March 2018	50.34%	19.14%	5.93%	5.41%	19.18%

Source: Statcounter.

2.4 Business models

A business model is an abstract representation of a firm's strategy outlining the essential details one needs to know about how a firm can successfully deliver value to its customers (Seddon & Lewis, 2003). Business model is recognized globally during the e-commerce revolution. The business model definition is highly debated as it does not fit into any specific domain and has its roots in multiple disciplines. According to Aho (2013), a business model is how a business creates, delivers and captures value. However, many scholars have defined a business model as a part of business strategies in creating a sustainable competitive advantage (Brege, Stehn & Nord, 2013).

According to Teece (2010), a business strategy enables an organization to achieve its long-term goals. A business strategy is different from a business model according to Sommer (2011). A business strategy is a principle plan for successful future of a business in a dynamic and competitive environment. However, a business model is a blueprint of the business strategy to be implemented using organizational structures, processes, and systems that create and capture value. Therefore, a business model is a realized strategy of a firm.

The businesses for environmental sustainability through supply chain management techniques is aimed to increase corporate economic value by environmental and social measures (Schaltegger, Ludeke-Freund, & Hansen, 2012). For example, Apple has one of the biggest demand for electricity and despite that the major part of its manufacturing is done offshore; it runs significant electricity costs in the United States (Cardwell, 2016). In that sense, repairs are of an increasing importance in shaping business models of companies. According to Watson et al. (2017), MyTrendyPhone is one of the e-commerce retailers that is operational over seven countries. Technical services for smartphones have been grown by 30% to 40% and it is expected to increase in future. The company sells tailor made repair packages providing necessary parts and tools. Similarly, Telenor runs an upgrade service called as swap where the user pays off a new mobile phone over the next two years. However, after 12 months of payment post purchase, the customer can obtain an upgraded version or model of the mobile phone with a new two years payoff agreement. While this business model increases the average rate of mobile upgrades, the operator can regain ownership of the previous model, refurbish it and eventually sell it to a new user.

2.4.1 Business models and actors in smartphone industry

The current focus on business models in telecommunication industry is to find out how the companies optimize the resource use and value gained from the sales through business model, supply chain and product lifecycle (Sommer, 2012). Under the circular business model, the activities related to repair and reuse are design phase actions, extended support, repairing services, recirculation of used phones to new users, refurbishing activities, voluntary buy-back, leasing and sale of accessories. The key actors or groups of actors relevant to circular business model are mobile phone producers, electronic retailers, mobile phone repairers, second-hand sellers and network service providers. A service provider provides voice, messaging and data services. A manufacturer is responsible for providing only the hardware. Yet, some manufacturers may provide integrated services of hardware and software. For a sustainable environmental management, each business should plan end-to-end material usage in details. Circular economy is often a public good problem where environmental impacts are social problem and consumption of goods is private (Sauve, Bernard & Sloan, 2016). An important aspect related to smartphone repair and reuse is that private consumers have greater economic incentives to get their phones repaired and reused. According to Quariguasi and Bloemhof (2012), remanufacturing of smartphones can be eco-efficient and economically advantageous than manufacturing of new smartphones. Smartphones are so much demanded that shorter lifespans means frequent replacements and greater electronic components. With lifecycle approach, smartphone manufacturers produce high quality products and reduce the amount of electronic component generation. Research shows that extending the useful lifetimes of small electronics can lead to lower environmental impacts from lifecycle phases of materials, extraction, production, distribution and

end of life (Sarath et al., 2015). However, newer models should strive for better energy efficiency performances and lifetime extension of products (Riisgaard, Moosgaard, & Zacho, 2016). The fundamental steps and key actors of the circular business model is presented in Figure 1.

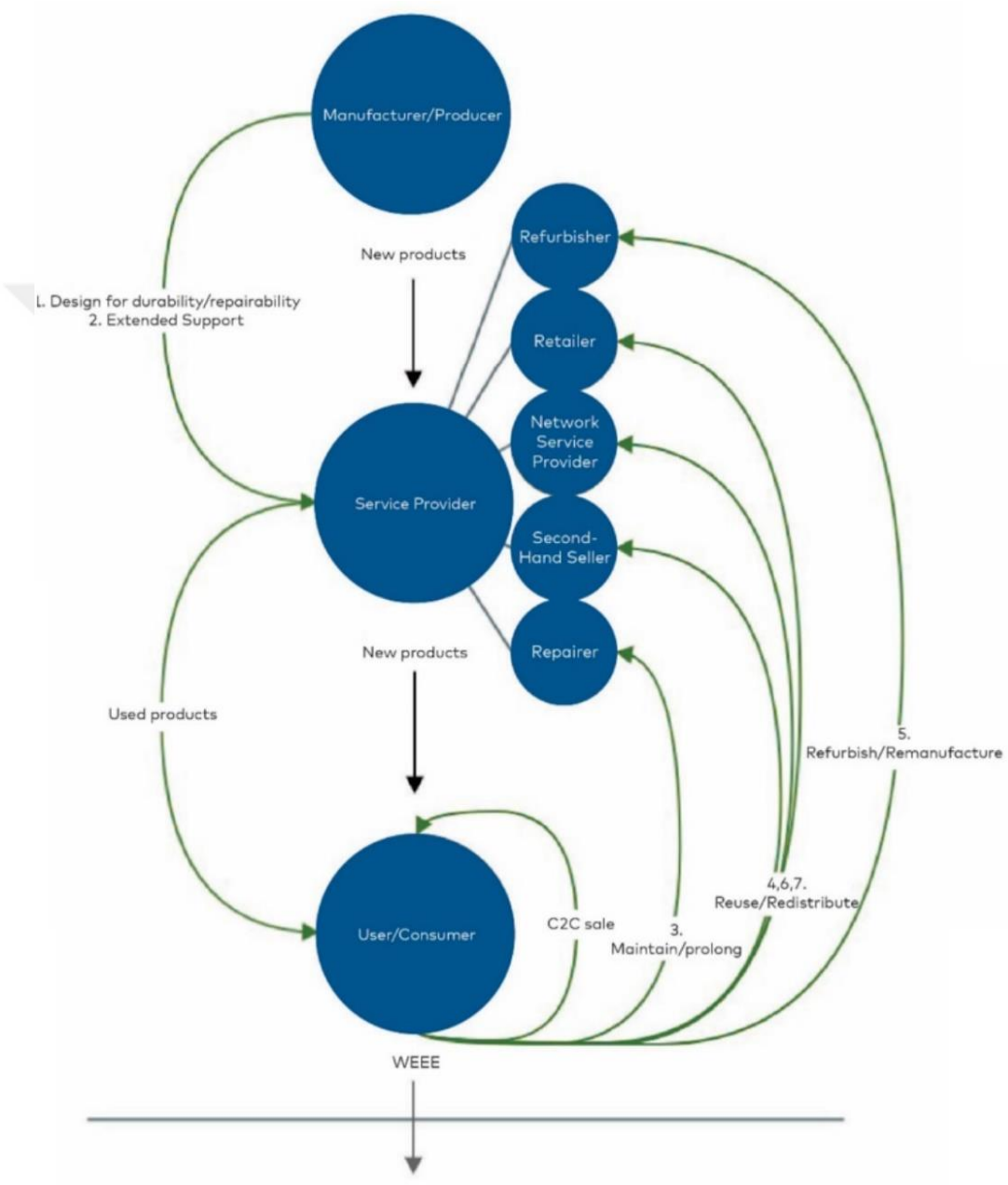

Figure 1. Circular business models in the smartphone industry
Source: Watson et al., 2017.

The repair industry is slowly emerging, as repair shops are visible in every town in Turkey (Çalışır, Atahan, & Saraçoğlu, 2013). There are also mail order repairs available for customers. According to Christopher (2016), Hewlett-Packard provides

repair services for its products through mail order technical assistance in agreement with united postal services. The market is yet to become more streamlined as a large number of smartphone retailers are increasingly demanding that repair shops to be certified so that they can activate product warranties. However, a large number of unauthorized shops and above board repairers as well as grey market actors still exist in the smartphone repair sector.

The share of used smartphone sales in total is highly variable across manufacturers according to their specialization and it is hard to deduce any general trends (Hexter & Woetzel, 2007). There is diversity in smartphone design, usage, and quality that sets boundaries among manufacturers. In terms of revenue figures for Sony and Samsung, smartphone sales can constitute over 80% of their total revenue whereas for Microsoft, smartphone sales may constitute only a small portion of their earnings (Christopher, 2016). While the sales of new mobile phones are growing steadily, smartphone repair, reuse and refurbishment related activities are largely unexplored. Any smartphone that is damaged, old or in need of repair in any form can be a resource in green business models. For example, sensors coming out from smartphone recycling can be used in emerging sustainable business applications such as CO_2 monitoring, traffic noise measurements, and rainforest preservation (Cardwell, 2016). Every smartphone consists of hundreds of completely working reusable components that can be placed in other refurbished smartphones, or used to create a completely new product in some other industry. Green business models have the potential to consume electronic by-products and provide a steady flow of revenue for retailers and after-sales repair shops.

According to Natanson (2016), smartphone repairs constitute 95% of repair business. In a recent study, the top four smartphone manufacturers listed in Turkey

were Samsung (40.35%), Apple (18.35%), LG (11.30%) and HTC (8.43%) among others such as Huawei, Sony, and Lenovo (Euromonitor, 2018). Bundling new mobile phones to a binding subscription package could be an important means for service providers to attract and retain customers (Hexter & Woetzel, 2007). While service providers wish to equip consumers with the latest smartphones, there is pressure from consumer groups to provide contracted services and reduce binding contracts.

2.4.2 Business model adaptations

Businesses are responding to increasing sales in smartphone sector by developing new business models to create and capture value (Aho, 2013). Lifecycle management is important to capture value. The most responsive activity in the smartphone lifecycle management is to engage consumers in buy-back or take-in of smartphones in order to gain value out of them and thus affect consumer behavior (Watson, et al., 2017). Other activities can be reported as leasing phones, using greener materials, extended warranty period, designing more durable phones and focus on selling components. While network service providers have interests to enter second-hand smartphone market, they point the difficulties of high refurbishment costs and low market prices for used phones. Cardwell (2016) suggests that several smaller business companies use viable business models exist in smartphone repair, second hand sales and purchase. New businesses can earn revenue by direct engagement, for example by selling and repairing phones. There is a bigger incentive for mobile phone producers to engage in trade-in. Apple has started a global take-back system for iPhones and other equipment's (Cardwell, 2016). Apple manufactured smartphones can be returned in prepaid envelopes or directly at the store, which

could be used or recycled depending on quality of product. The business strategy in terms of returning old or damaged smartphones in lieu of discounts or deals on next smartphone purchase is an area most smartphone manufacturers are not willing to enter. According to Lee (2011), large-scale smartphone manufacturers aimed to profit from technological innovation rather than making money from the same technology. The focus were on technological advancements rather than engaging in second-hand markets or product lifecycle management. The instances of creating value from old, discarded or damaged products and capturing that value by producing new innovative products in other domains were limited at the beginning of millennium.

2.4.3 Service quality aspects

While there is a significant literature on the topic of service quality, the subject remains open to additional contributions. The after-sales services has a pivotal role in sustaining competitive advantage for the companies as indicated in Haier's case in China (Cohen & Lee, 1990). In the literature, there are different definitions of service quality and the types of service quality and different measures to evaluate the quality (Jain, Raj, & Buksh, 2016). The common agreement among most of the scholars is that service quality is a multidimensional construct. Service quality deals with the service that the customers actually receive and the process of delivery of the service. According to McDougall and Levesque (1994), service quality comprises of three dimensions as personnel-related, offering-related and service scape related. Service quality or Servqual model aimed to view and treat quality as a construct of different encounter characteristics (Parasuraman , Zeithaml, & Berry, 1988). The three-component model proposed by Rust and Oliver (1994) found that after-sales services

were related to both service product and service delivery dimension of quality. The third component is defined as service environment.

Although there are several categories of service quality in literature, there is no conclusive evidence on the definition, meaning, boundaries and limitations on overall service quality in multi-dimensional constructs. According to Gustafsson, Johnson, and Roos (2005), service quality refers to the technical service and the receiving of customers. Similarly, functional service is defined in terms of the process of delivery of the service while focusing on the quality component. However, Oshri, Kotlarsky, and Willcocks (2015), argue that service quality component is made up of three broad sub-dimensions that are personnel-related, physical product offering and service-related. Scholars have argued the number of dimensions that exist in service quality model as well as its nature (Dabholkar, Thorpe, & Rentz, 1996). Service quality is described as a service-scape related dimension that operates along with main service and adds value to the central service offered. However, this approach should not affect or restrict their independent evaluations in order to maximize its potential.

After-sales services contributes to the technical quality of the overall service that can be measured in terms of what the customers are receiving and how service is being delivered on after-sales service dimensions theory. Agnihotri, Sivasubramaniam, and Simmons (2002) have forwarded similar views with Parasuraman, where after-sales services have been placed closely to service product and service delivery dimensions of quality.

A positive recognition and appreciation of customers towards quality-elements offered by a firm leads to attraction of new customers from word-of-mouth advertising and enhancement of current relationships between company and

customers from increasing loyalty and commitment (Pakdil, Isin, & Genc, 2012). In other words, the findings are consistent in literature based on the findings which claims that overall service quality beliefs are influenced from word-of-mouth communication, recommendations and loyalty. Therefore, customer satisfaction has been covered substantially across literature due to its ability to influence customer behavior and attitudes (Cohen & Lee, 1990). Favorable behavioral intentions are mainly in the form of customer referrals and recommendations as well as willingness to repurchase or spend money with the particular company or pay for further services and products developed by the company. A significant amount of literature has been devoted to repurchase intentions.

According to Rosen (2002), positive interpersonal communication is achieved from referral and recommendations. This type of communication is informal, spontaneous and effective in creating strong desirability in marketing the output. The desirability of products or services based on experience is beneficial to both the referrer and the receiver (Silverman, 2011). It means that a company can be proud when it receives referrals because it originates from the personal and end-satisfaction of the referrer. Similarly, Bughin, Doogan and Vetvik (2010) extend this view by mentioning that customer loyalty is the by-product of customer satisfaction. Drawing on the positive correlations between customer loyalty, commitment and satisfaction, new customers are at lesser risk that acts as strong motives for buying products and services (Kozinets, Valck, Wojnicki, & Wilner, 2010). Therefore, referrals in general are among the most effective marketing tools and form a part of valuable intangible assets.

In summary, mentioned previous studies have focused on customer satisfaction relating to the construct along with its antecedents or generalized effects.

A majority of studies focused on customer retentions from service quality try to estimate customer behavior from the core services provided by the firm. The links between service quality and the main product or service are yet to be understood. Further researches are required to explore the impacts of service quality on customer retention especially in the smartphone market.

2.4.4 Servqual model

Every manufacturer promises quality of goods for which customers have paid a predetermined value. However, customers require physical and non-physical services during the product lifecycle for all types of industrial goods, capital goods, consumer products and household appliances. According to Murali, Pugazhendhi and Muralidharan (2016), after-sales services are concerned with the activities conducted after the sale of a product and has the following five objectives: The first one is the guaranteeing a continuous availability of goods. This objective encompasses recovery from faults that affect the functionality of the product. Guaranteeing availability of goods requires maintenance of adequate repair parts, repair technician and exchange stores such as authorized support centers. The second one is fixing troubleshoot problems experienced by end-users. This dimension requires service supports in familiarizing the customer with products, providing on-site technical solutions that address customer grievances. The third one is supporting customers in designing activities and processes related to product use. The fourth is to provide services at the end of product life to a customer. The last objective is to increase levels of customer satisfaction and contribute in the creation of competitive advantage.

Servqual model examines the relationship between after-sales services and customer satisfaction. Servqual model shows that service quality is highly influential on customer satisfaction levels (Pakdil, Isin, & Genc, 2012). Customer satisfaction is also linked to customer retention with a strong positive relationship (Gable, Fiorito, & Topol, 2008). Similarly, customer loyalty is highly correlated and a by-product of customer satisfaction (Yi & La, 2004). In a typical scenario, a customer visits a service center, or get in touch with the seller, for hardware or software problems related to product. Once the product is received, the after-sales service department provides service and supports the process with effective communication, timely delivery and feedback mechanisms. In this way, service centers create potential sustainable relationships with customers, which contribute significantly to customer satisfaction. Providing after-sales service in the early stages of the product lifecycle may create fruitful relationship between the customer and the service provider so that the manufacturer can ensure product functionality, which directly affects customer satisfaction (Mittal & Kamakura, 2001).

2.4.5 Service quality dimensions

Service providers want to find out what customers care about and how they can improve their experience and engagement with the customer. According to Zeithaml, Berry, and Parasuraman (1996), customers seek good service quality, which is evaluated by five dimensions such as tangibles, reliability, responsiveness, assurance and empathy. All the five dimensions are critical from service quality perspective but some have more weightage than others. A review of service quality studies has explicitly shown the significant importance of studying service quality dimensions. Service quality dimensions have been widely used in literature but it has been subject

to criticism (Parasuraman , Zeithaml, & Berry, 1988). Some of the criticisms include using different scores, dimensionality, applicability and lack of validity in the Servqual model itself (Quester, Romaniuk, & Wilkinson, 2015). The major obstacle in use of service quality dimensions is widen focus on service delivery process and not on service-encounter outcomes. Service quality model does not include any measure of technical quality dimension, which leads to a neglect in studying, and measuring service quality (Collier & Bienstock, 2014).

2.4.5.1 Reliability

The customers define quality as reliability of the products and continuation of after-sales services. According to many researches, the continuation of service offerings after the sale stands out as an important factor (Gaiardelli, Saccani, & Songini, 2007). Reliability is dependent on handling problems encountered during customer service (Shi, Prentice, & He, 2014). Also, performing service in the right way in the first round and providing services at the promised time with an error-free record. Therefore, reliability is a crucial factor in providing conventional services (Orel & Kara, 2014). According to Shi et al. (2014), reliability consists of accurate order fulfillment, record keeping, billing and calculation of commissions. It is also crucial to keep service promise. Yang, Tian, and Zhang (2004) mentioned that reliability is the most important factor in banking related services, too. Therefore, reliability is made of two core components as dependability and accuracy (Izogo & Ogba, 2015).

2.4.5.2 Responsiveness

According to Parasuraman et al. (1988), responsiveness is the willingness of employees to provide services to customers. Responsiveness dimension includes

timeliness of service and understanding the needs and wants of customers. According to Saleh and Ryan (1991), responsiveness requires convenient operating hours, personalized attention by staff and attending to customers and improving customer's safety at the time of transaction. Similarly, responsiveness is defined as responding quickly, promptly, rapidly and immediately to customer needs (Abari, Yarmohammadian, & Esteki, 2011). It is important for customers to feel that service providers are responsive to their needs even if the customer is slow in responding to the service provider.

2.4.5.3 Assurance

Assurance is the knowledge and courtesy of employees to inspire trust and confidence (Parasuraman, Zeithaml, & Berry, 1988). According to Shi et al. (2014), customers feel assured through polite and friendly staff, ability of the company to provision sound advice, creating interior comfort and providing access to knowledgeable and experienced management team (Abari, Yarmohammadian, & Esteki, 2011). Service providers need to sound knowledgeable and expert in the services they are delivering. It is important for service providers to communicate that expertise to customers. Service providers need to make the customers feel that they are highly skilled otherwise customer confidence will be lower.

2.4.5.4 Empathy

According to Parasuraman et al. (1988), empathy provides individualized attention to users. It is related to whether the organization cares for its users and assists them in an individualized manner. Empathy refers to the interest and personal attention (Abari, Yarmohammadian, & Esteki, 2011). Empathy is also reflected in

accessibility, sensitivity and efforts taken by the firm in understanding the needs of the users. Therefore, empathy in service quality dimension requires understanding customers' specific needs.

2.4.5.5 Tangibles

Parasuraman et al. (1988) defined tangibility in terms of physical appearance of facilities, equipment, human capital and materials. According to Abari et al. (2011), tangibility is what a customer sees as modern equipment, physical facilities and employees as well as materials that are visually appealing. Therefore, tangibility dimension is the representation of all physical goods that are required by a manufacturer, business or firm to satisfy the customer.

2.5 Conclusion

This chapter reviewed the business models responsible for processes involved in smartphone industry. Business models demonstrate how a firm creates, captures and delivers value to its customers. Smartphone industry typically employs a circular business model that starts from collection of materials for product development to its manufacture, sale, use and end of life treatment while applying innovative processes in reuse and refurbishment activities to increase value proposition. Repair activities in smartphones are found to be higher than conventional phones due to the complexity of components. Customers needed after-sales service and repair regularly, which created the need to assess customer satisfaction with smartphone repair, and service centers point of contact. The service quality model is an ideal tool to assess customer retention based on customer engagement with repair centers.

CHAPTER 3

METHODOLOGY

This chapter presents the model designed for evaluating the impact of after-sales service on consumer retention in Turkey after the review of research papers, journals and articles on the subject of choice. The thesis aims to fulfill the knowledge gap regarding the consumer retention assessments providing evidence from after-sales services as a standalone factor. Research methodology is a planned way to gather information on the factors that enhance or limit consumer retention from after-sales services provided by a smartphone manufacturer.

The meaning and definition of research is often referred to search for knowledge (Creswell & Creswell, 2018). Research is a systematic and scientific quest for knowledge by critically evaluating a particular topic (Mcmillan & Schumacher, 2014). Therefore, research is an academic activity used in technical sense. According to Neuman and Robson (2014), research entails defining and redefining the same problem, creating hypothesis and suggesting probable outcomes and solutions. According to Hoy and Adams (2015), systematic research requires collecting, organizing and evaluating data while trying to make deductions in order to reach informed conclusions. According to Kothari (2004), the purpose of research is to find answers to problems by applying scientific procedures. Therefore, main aim of a research is to uncover the truth that is hidden or has not been discovered, yet. A systematic research brings clarity and familiarity on the phenomenon by leading to new insights (Kumar, 2014). According to Brannen (2017), a research could be used to portray the characteristics of individuals, determine the frequencies at which events occur and test relationship of variables through defined hypothesis.

Descriptive studies such as surveys and questionnaires can describe the state of affairs, for example effect of after-sales service on consumer retention in the Turkish smartphone market. Research in descriptive domains have limited control over variables and can make deductions based on reported data only (Kumar, 2014).

Both qualitative and quantitative methods have their own merits and demerits. While qualitative approach promises deeper insights, opinions and views on the subject, quantitative data can assert better understanding on opinions taken from large samples of population (Brannen, 2017). Quantitative approach is strict and formalized, which is useful for inferential, experimental and simulation-based problems (Kothari, 2004). The role of systematic research in social sciences has increased in the past decade due to advancements in modern technologies in scientific and non-scientific disciplines. Hoy and Adams (2015) points that businesses use researches to encounter several operational and planning based problems. According to McCusker and Gunaydin (2015), research methodology is equally important for researchers studying social, behavioral and attitudinal relationships and seeking answers to social problems.

Research methodology is the systematic solution of the research problem and the scientific inquiry behind conducting a research using scientific terms (Creswell & Creswell, 2018). Research methodology covers research methods adopted and logic behind those methods as well as viewing them from the context of research design and explaining use of variables so that results are generated with high degree of relevance (Hoy & Adams, 2015). Determining the research methods and designing the research is important besides collecting data, sampling procedures, filtering and sorting data to apply data evaluation techniques for preparing a strong and informed conclusion of the research problem.

Use of empirical methods are based on the observation of service quality dimensions as indicated in literature and measuring those quality factors to understand and derive knowledge depending on actual experiences of consumers (Kumar, 2014). Research problem presented some specific questions and statements to smartphone users and defined the groups of participants in order to study their behavior attitudes and beliefs. The selection criterion is based on number of months of smartphone ownership, number of visits to repair centers for the same smartphone, and customer's satisfaction with previous brands using measurement scales apart from customer demographics such as age, earnings and number of smartphones currently owned. The controls used in the study were aimed to improve quality of data collection and selection of appropriate testing instruments for example surveys and questionnaires.

3.1 Research design

Research design is a fundamental component used in a methodological framework (Saunders, 2011). A research design is essential for investigating the service quality dimensions namely tangibles, reliability, responsiveness, assurance and empathy (Brannen, 2017). From the review of academic literature over the last ten years, Servqual dimensions can accurately measure independent variables using the current research design. According to Creswell & Clark (2007), selection of appropriate data analysis technique is a crucial part of research design methodology. Selection of appropriate research design is necessary for implementing overall research strategy by integrating different components in a logical and coherent way. According to Brannen (2017), research design is the blueprint for collecting, measuring and analyzing data presented. This chapter reveals the research design and definition of

the independent and dependent variables. For investigation purposes, various dimensions that are used to measure service quality are defined as independent variables. Smartphone users overall experience and probability of retention, as known as continued use of service, are defined as dependent variables. The research design seeks answers from customers on independent and dependent variables to check for validity, reliability and goodness of fit test.

According to Denscombe (2014), function of research design is to collect evidence systematically and address research problems with minimum ambiguity. In consumer sciences, obtaining the information relating to research problem requires test of theory and accurately describing the meaning associated with observational phenomenon (Creswell & Poth, 2017). Following the approach by (Kumar, 2014), this thesis uses a cross-sectional research design and strategy to provide a snapshot of outcomes by involving people, their behaviors and attitudes instead of studying the process of change. As the study seeks answers from Turkish market, the research is designed in order to study factors only relating to local residents of Turkey. The cross-sectional research design is dependent on present views and differences, absence of a time dimension and selection of participants based on previous smartphone ownership and technical service encountering elimination questions before survey instead of random allocation. The research used in this thesis, which is designed for assessing consumer retention is based on the following five Servqual dimensions.

According to Krishnamurthy, Sivakumar, and Sellamuthu (2010), measuring consumer retention is possible by assessing customer satisfaction from service received at smartphone technical service centers. According to McDougall and Levesque (1994), consumer satisfaction is an important parameter to retention and

satisfaction could be measured using the Servqual model in repair services offered by smartphone manufacturers. The research design will measure and predict the quality of services received by the customer and their intentions to continue with the same manufacturer for their personal needs. The control variables are the demographic variables for investigating the favorability of consumers to stick with the manufacturers, regarding primarily on after-sales services received. Conceptual framework is developed in Figure 2.

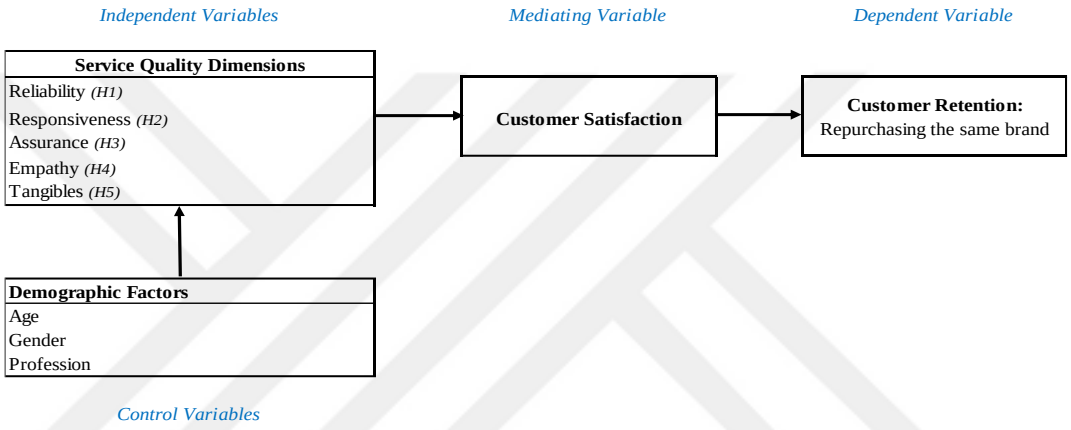

Figure 2. Conceptual framework

Hypotheses are built corresponding to the five dimensions of Servqual model. The five main hypotheses of this thesis are presented below:

H_1 – Reliability with after-sales services has a positive impact on consumer retention.

H_2 – Responsiveness to customer's needs has a positive impact on customer retention.

H_3 – Inculcating a sense of assurance by after-sales services representatives have a positive impact on customer retention.

H_4 – Providing care and empathy to customer's need have a positive impact on customer retention.

H_5 – A well-defined and customer friendly layout of equipment, facilities, employees and materials has a positive effect on customer retention.

3.2 Research methods

Quantitative methods for investigating a phenomenon is widely accepted in consumer behavior studies. In the literature, the relationship between consumer satisfaction, loyalty and retention is studied dominantly through Servqual models (Barroso, Carrion, & Roldan, 2010). Indeed, quantitative research method is one of the most widely adopted research method for clear and precise investigations (Robson & McCartan, 2016). Quantitative methods are supportive in analyzing and comparing strengths of internal factors that affect consumer behavior and thus, retention in the smartphone usage market (Calisir et al., 2013).

Cross-sectional design is used for gathering information from multiple participants especially when it is not possible to use other methods of enquiry (Creswell & Creswell, 2018). Survey based research methods are beneficial for analyzing common views of the entire population through a small random sample of the population (Flick, 2013). Cross-sectional designs often employ survey-based methods for gathering data, which is inexpensive and takes less time to conduct (Brannen, 2017). The use of cross-sectional data for measuring consumer retentions i.e. repurchase intentions based on after-sales service among smartphone users are enquired in this thesis. Although it is possible to perform the same survey periodically along with the same set of participants for testing the process of change, the purpose of this thesis is to test the relations between variables. Thus, a single round of surveys is planned to conduct with the selected participants. The survey is designed in order to analyze consumer repurchase intentions in smartphone market.

The cross-sectional design is expected to estimate the importance of after-sales service channels in creating long-term relationships with customers. In this plan, participants are contacted first at the time of engagement with service center and then, after they have received service from the point-of-contact.

In order to improve the credibility of existing research, the ethical principles were taken into consideration. Primary research leads to first-hand engagement with customer, which raises various ethical concerns. The existing research is aimed to attract smartphone users while keeping and upholding ethical principles. First, privacy and confidentiality of research participants would be kept at highest priority. Their contact information such as email and contact numbers will be discarded post development of results. The participants must write their names and accept the consent question in order to participate in this research. The research questionnaire is developed keeping previous studies and literature review into consideration. The latest information available on the topic is used for formulating the research problem, aims and objectives of this study.

3.3 Sampling

Usage of internet and communication technologies has made it easier to study target groups. This research is based on a survey conducted among 300 participants who has previous experience with after-sales services and resides in Kadıköy, Istanbul. The most important selection criteria is whether the customer has smartphone and send his/her smartphone to technical service center ever. An after-sales services questionnaire that captures their experience, attitudes of employees, quality of service and overall satisfaction levels provided to participants. Basic questions about their demographics obtained are:

- Age, Gender, Profession.
- Number of smartphones owned previously
- How many times have you repaired your latest smartphone
- Have you been to more than one service centers of the same company

The study has aimed to balance the number of male and female participants to reduce gender bias. In order to eliminate the possible time effects on variables, collecting data was restricted to four months. The questionnaire as seen in Appendix has been given to participants was valid for one week until the end of the data collection period after which no further responses were included. After the responses were collected, the data was filtered and sorted for missing and incorrect entries. A final sample set was generated; including only which all information was correctly filled and provided on time.

In this thesis, the research design, selection of participants based on inclusion and exclusion criterions, sampling methods and reduction of bias is performed using the methodological frameworks supported by the related literature. The dependent factor is consumers' engagement with the same manufacturer as repurchasing the same brand smartphone again after technical service encountering. The independent factors were the questions on five dimensions of Servqual model. As control factors, customer demographics were included in the study. All the research questions were designed to investigate and test research hypothesis, and quantitative data was generated.

3.4 Data analysis

Data were analyzed with SPSS 23 program and 95% confidence level is used. The process for examining scale scores for normal distribution is calculation of skewness

and kurtosis values. The accuracy and skewness values obtained from the scales between +3 and -3 are considered sufficient for the normal distribution (Groeneveld & Meeden, 1984; Hopkins & Weeks, 1990). Accordingly, it is accepted that the scale scores and the effect level were normally distributed. Parametric methods were used in the analyzes.

Pearson correlation test, Regression test, independent groups' t test, and ANOVA test were used in the study. Pearson correlation test is used to determine the direction and strength of the linear relationship between two independent quantitative variables. The regression test determines whether the dependent variable are significantly explained by the independent variables. Independent groups t test is used to compare two independent groups in terms of a quantitative variable. One-way ANOVA is used to compare k (k> 2) independent groups in terms of a quantitative variable (Özdamar, 2004).

In this study, the relationship between scale scores and level of repurchase of the brand after the technical service is analyzed with Pearson correlation test. After the technical service, the level of repurchasing the brand and the scale scores were measured with independent group t tests and ANOVA tests.

CHAPTER 4

RESULTS

4.1 Descriptive statistics

This part is devoted to describe the basic characteristics of data collected from 300 participants. Descriptive research is conducted to evaluate the overall perceived service quality, customer satisfaction and retention in Turkish smartphone market. Primary data is collected and analyzed via the survey designed in the framework provided by Servqual model introduced by Parasuraman, Zeithaml, and Berry in 1988. Distribution of respondents' demographics is shown in Table 6.

Table 6. Distribution of Demographics

n = 300		frequency	%
Age	15-24	98	32.7
	25-34	160	53.3
	35 and above	42	14.0
Gender	female	154	51.3
	male	146	48.7
Profession	student	81	27.0
	worker	108	36.0
	officer	60	20.0
	retired	17	5.7
	business owner	11	3.7
	unemployed/housewife	23	7.7

In terms of age, participants between 15 and 24 are 32.7%, between 25 and 34 are 53.3%, 35 and above are 14% of total respondents. The majority of this study covers young generation participants.

In terms of gender, female participants constitute 51.3%, and male constitute 48.7% reflecting no significant gender difference among participants.

Who works within a certain business agreement with employer besides public sector is defined as a worker. 59.7% of participants are working actively, while 40.3% is not working within a business contract. Table 6 provides the details of classification. Students are 27%, private sector employees are 36%, public sector

employees are 20%, business owners are 3.7%, retired persons are 5.7%, unemployed or housewives are 7.7% of the total participants. The reason of dividing active worker group into three subgroups as private sector employee, public sector employee, and business owners is to test if there is a difference of their consumption behavior.

The first question was whether the participant ever had a smartphone or not. Participant candidates who have never had smartphones were eliminated to sustain data focused only on smartphone users. Hence, 12 participants out of 401 participants were excluded from the data. Four percent of participants were using their first smartphone, 20.3% of participants were using their second smartphone. 46% of participants were using more than fifth smartphone. Considering that the majority of the participants are between ages 24 and 34, the numbers might indicate that smartphone users in Istanbul follow updates in smartphone models.

The second question in the survey was whether the participant has ever had a previous technical service experience. Since the study focuses on the impact of previous technical service experiences of smartphone repurchasing decision, responses of 89 participant candidates were excluded from the data. According to survey, 52.7% of participants did not send their current smartphone to the technical service so far, while 1.3% sent more than two times. 65.7% of participants stated that they would choose the same technical service again. Preferring the same technical service again might be interpreted as customer satisfaction is succeeded on the previous encountering.

According to survey results, 61.3% of participants do not use the same smartphone sent to technical service. It could be rewieved as whether the overall service quality satisfied participants, majority tends to change afterwards. The

distribution of participants' current smartphone brand and the brand sent to the technical service is shown in Table 7.

Table 7. Distribution of the Smartphone Brands Sent to the Latest Technical Service by Current Smartphone Brand

		Smartphone brand sent to the latest technical service								
		Apple	Samsung	Alcatel	Huawei	GM	Lenovo	LG	Vestel	Other
Current Smart-phone brand	Apple	60.7%	9.6%	100%	0.0%	42.9%	0.0%	80%	0.0%	66.7%
	Samsung	0.0%	71.9%	0.0%	44.1%	7.1%	0.0%	0.0%	0.0%	0.0%
	Alcatel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Huawei	16.1%	5.5%	0.0%	11.8%	21.4%	83.3%	0.0%	0.0%	0.0%
	GM	5.4%	4.1%	0.0%	23.5%	0.0%	0.0%	0.0%	0.0%	0.0%
	Lenovo	0.0%	1.4%	0.0%	0.0%	0.0%	16.7%	0.0%	14.3%	0.0%
	LG	5.4%	1.4%	0.0%	2.9%	7.1%	0.0%	20%	0.0%	0.0%
	Vestel	1.8%	1.4%	0.0%	14.7%	0.0%	0.0%	0.0%	85.7%	0.0%
	Other	0.0%	0.7%	0.0%	0.0%	7.1%	0.0%	0.0%	0.0%	0.0%

The distribution of the smartphone brand sent by the participants to the latest technical service demonstrates the customers' perception of the relative technical service quality and overall customer acquisition impact on brand usage. According to survey, 71.9% customers who sent their Samsung smartphones to a technical service are currently using Samsung again. 44.1% of Huawei users switched to Samsung after their latest technical service experience. Samsung lost 9.6% of previous users to Apple, 5.5% of them to Huawei. On the other hand, Apple lost 16.1% of previous smartphone technical experienced participants to Huawei, however acquired 100% of Alcatel, 42.9% of General Mobile, and 80% of LG technical service experienced participants.

The participation level of whether the previous technical service experience is effected the next smartphone decision is shown in Table 8.

Table 8. Effect of Technical Service on Customer Retention Perception

	Mean	SD	%	Distortion	Stickiness
Service quality impact on intention of repurchasing the same brand	5.35	1.43	76.38	-0.801	-0.611

According to data collected, the impact of previous technical service quality to repurchasing the same brand is scored as 5.35 ± 1.43 over 7 which is significantly

high enough to consider the technical service quality as a consumer retention strategy.

Participation levels of Servqual questions to identify perceived quality for previous technical service experience is shown in Table 9.

Table 9. Levels of Participation in Scale Expressions

	Mean	SD	%	Distortion	Stickiness
The service center is able to understand and solve my problem.	5.32	1.56	76.00	-0.65	-0.85
The service center billed my service order correctly.	5.19	1.69	74.14	-0.87	-0.53
The order is fulfilled on time.	5.53	1.45	79.05	-0.71	-0.35
I could depend on the staff and service center for my smartphone repair/service needs.	5.12	1.67	73.10	-0.38	-1.10
The staff understood my problem accurately and provided appropriate response.	5.25	1.58	75.05	-0.64	-0.37
The staff and its management is willing to respond to my problem and questions that I put forward.	5.10	1.36	72.86	-0.31	-0.86
The response to my problem is quick and appropriate.	5.34	1.47	76.33	-0.64	-0.29
Personalized attention is given.	4.60	1.86	65.67	-0.62	-0.51
The service center is able to inspire trust and confidence through their workmanship.	5.18	1.23	74.05	-0.30	-0.76
The staff's politeness and friendliness would want to make me come back again.	4.97	1.28	71.00	-0.32	0.32
I would choose their services again due to staff's knowledge ability and experience.	5.13	1.30	73.29	-0.51	0.43
The individualized attention I received would make me want to come again to the service center for any future need.	4.91	1.52	70.14	-0.44	-0.72
The staff could understand needs and wants.	4.89	1.32	69.86	-0.21	-0.35
The service center is well-lit with basic facilities that are deemed necessary at a service center.	5.14	1.33	73.43	-0.48	-0.08
The staff is well-dressed and appeared professional.	4.91	1.35	70.14	-0.22	-0.22

When the surveyed' levels of participation in the scale expressions were examined, the highest participated expressions were;

- "The order is fulfilled on time" (mean = 5.53),
- "The response to my problem is quick and appropriate" (mean = 5.34),
- "The service center is able to understand and solve my problem" (mean = 5.32),

- "The staff understood my problem accurately and provided appropriate response" (mean = 5.25).

Participation levels of survey questions are combined in terms of Servqual dimensions to test each dimensions effect on perceived service quality, as shown in Table 10.

Table 10. Statistics of Scale Scores

	Mean	SD	%	Distortion	Stickiness
Service quality	5.11	1.15	72.94	-0.77	-0.46
Reliability	5.28	1.38	75.47	-0.63	-0.83
Responsiveness	5.01	1.38	71.62	-0.61	-0.58
Assurance	5.09	1.12	72.78	-0.27	-0.33
Empathy	4.90	1.26	70.00	-0.35	-0.46
Tangibles	5.03	1.21	71.79	-0.35	0.04

The mean score for overall service quality on previous technical service center was 5.11 ± 1.15, for reliability 5.28 ± 1.38, for responsiveness 5.01 ± 1.38, for assurance 5.09 ± 1.12, for empathy 4.90 ± 1.26, and for tangibles is 5.03 ± 1.21.

4.2 Relationship test

Pearson correlation test is used to determine the direction and strength between the perceived service quality of participants in terms of Servqual dimensions and repurchasing the same brand decision as shown in Table 11.

Table 11. Relationship between Service Quality Impact on Repurchasing the Same Brand and Scale Scores

	Service quality impact on intention of repurchasing the same brand	
	r	p
Service quality	0.823**	0.000
Reliability	0.738**	0.000
Responsiveness	0.776**	0.000
Assurance	0.681**	0.000
Empathy	0.700**	0.000
Tangibles	0.732**	0.000

$p < 0.05$ significant relationship; $p > 0.05$ no significant relationship.
$0 < r < 0.299$ weak; $0.300 < r < 0.599$ medium; $0.600 < r < 0.799$ strong; $0.800 < r < 0.999$ very strong correlation coefficient power level

According to Pearson correlation test results, there is a very strong positive relationship between the service quality impact on the intention of repurchasing the same brand and the quality of service exists (r = 0.823). There is a strong positive correlation between responsiveness (r = 0.776), reliability (r = 0.738), tangibles (r = 0.732), empathy (r = 0.781) and assurance (r = 0.681) dimensions. The data shows that in the sample group, the increase in satisfaction with the service quality of the participants increases this idea of repurchasing the same brand.

4.3 Comparison tests

ANOVA test is applied for different age groups to compare whether there is statistically significant difference in perception, as seen in Table 12.

Table 12. Anova Results among Participants from Different Age

	Age	n	Mean	SD	F	p
Service quality impact on intention of repurchasing the same brand	15-24	98	5.35	1.36	0.315	0.730
	25-34	160	5.39	1.44		
	35 and above	42	5.19	1.55		
Service quality	15-24	98	5.19	1.14	1.404	0.247
	25-34	160	5.12	1.13		
	35 and above	42	4.84	1.20		
Reliability	15-24	98	5.43	1.41	1.431	0.241
	25-34	160	5.27	1.34		
	35 and above	42	5.00	1.47		
Responsiveness	15-24	98	5.13	1.33	1.846	0.160
	25-34	160	5.04	1.42		
	35 and above	42	4.65	1.31		
Assurance	15-24	98	5.21	1.14	1.517	0.221
	25-34	160	5.08	1.08		
	35 and above	42	4.86	1.20		
Empathy	15-24	98	4.93	1.19	0.595	0.552
	25-34	160	4.93	1.29		
	35 and above	42	4.70	1.34		
Tangibles	15-24	98	4.91	1.25	1.610	0.202
	25-34	160	5.14	1.21		
	35 and above	42	4.85	1.12		

According to ANOVA test results, there is no statistically significant difference between the participants' age in terms of scale scores, and the impact of service quality on repurchasing the same brand and service quality perception ($p > 0.05$).

Independent t test is applied for gender to compare whether there is difference in perception of service quality in terms of gender, as seen in Table 13.

Table 13. Independent T Test Results among Participants from Different Gender

	Gender	n	Mean	SD	t	p
Service quality impact on intention of repurchasing the same brand	female	154	5.40	1.38	0.696	0.487
	male	146	5.29	1.48		
Service quality	female	154	5.18	1.08	1.076	0.283
	male	146	5.03	1.21		
Reliability	female	154	5.30	1.29	0.222	0.824
	male	146	5.26	1.47		
Responsiveness	female	154	5.09	1.28	0.940	0.348
	male	146	4.94	1.48		
Assurance	female	154	5.24	1.11	2.263	0.024*
	male	146	4.95	1.12		
Empathy	female	154	5.03	1.19	1.825	0.069
	male	146	4.76	1.33		
Tangibles	female	154	5.05	1.26	0.395	0.693
	male	146	5.00	1.17		

According to the independent t test results, there is a statistically significant difference in terms of assurance perception score between different gender participants ($p < 0.05$). Female participants have a higher level of assurance perception with the mean 5.24 versus the mean 4.95 of male participants. However, there is no statistically significant difference in the level of reliability, responsiveness, empathy and tangibles perception scores between different gender participants. There is no statistically significant difference in the level of service quality impact on repurchasing among different participants ($p > 0.05$).

ANOVA test is applied for professions to compare whether there is difference in service quality perception between different profession groups, as seen in Table 14.

Table 14. Anova Results among Participants from Different Professions

	Profession	n	Mean	SD	F	p
Service quality impact on intention of repurchasing the same brand	student	81	5.49	1.37	1.384	0.230
	worker	108	5.28	1.43		
	officer	60	5.45	1.47		
	retired	17	5.06	1.48		
	business owner	11	5.91	1.22		
	unemployed/housewife	23	4.83	1.50		
Service quality	student	81	5.25	1.05	0.866	0.505
	worker	108	5.04	1.20		
	officer	60	5.14	1.13		
	retired	17	4.73	1.07		
	business owner	11	5.35	1.03		
	unemployed/housewife	23	4.99	1.35		
Reliability	student	81	5.50	1.27	0.864	0.505
	worker	108	5.16	1.46		
	officer	60	5.30	1.30		
	retired	17	4.93	1.30		
	business owner	11	5.47	1.21		
	unemployed/housewife	23	5.23	1.72		
Responsiveness	student	81	5.21	1.22	0.901	0.481
	worker	108	5.00	1.44		
	officer	60	4.93	1.38		
	retired	17	4.57	1.26		
	business owner	11	5.24	1.61		
	unemployed/housewife	23	4.81	1.58		
Assurance	student	81	5.23	1.12	0.623	0.683
	worker	108	5.05	1.12		
	officer	60	5.10	1.12		
	retired	17	4.73	1.12		
	business owner	11	5.06	1.03		
	unemployed/housewife	23	5.10	1.21		
Empathy	student	81	4.93	1.26	1.194	0.312
	worker	108	4.79	1.29		
	officer	60	5.13	1.28		
	retired	17	4.44	1.30		
	business owner	11	5.27	1.21		
	unemployed/housewife	23	4.87	1.10		
Tangibles	student	81	5.04	1.21	1.512	0.186
	worker	108	5.00	1.17		
	officer	60	5.14	1.28		
	retired	17	4.76	0.81		
	business owner	11	5.73	1.40		
	unemployed/housewife	23	4.63	1.34		

According to ANOVA test results, there is no statistically significant difference in terms of scale scores among the participants from different profession and the level of impact of the technical service on the new smartphone purchase ($p > 0.05$).

ANOVA test is applied for different number of smartphone owners so far to compare whether the perception of service quality differs, as seen in Table 15.

Table 15. Anova Results among Participants from Different Previous Number of Smartphone Ownership History

	Number of smartphones used up to now	n	Mean	SD	F	p
Service quality impact on repurchasing the same brand	1-2	65	5.26	1.48	2.615	0.075
	3	81	5.09	1.44		
	More than 3	154	5.52	1.38		
Service quality	1-2	65	5.11	1.23	3.541	0.030*
	3	81	4.83	1.22		
	More than 3	154	5.25	1.05		
Reliability	1-2	65	5.24	1.45	0.642	0.527
	3	81	5.16	1.54		
	More than 3	154	5.37	1.26		
Responsiveness	1-2	65	5.09	1.50	5.569	0.004*
	3	81	4.59	1.41		
	More than 3	154	5.20	1.27		
Assurance	1-2	65	5.08	1.12	6.840	0.001*
	3	81	4.73	1.17		
	More than 3	154	5.29	1.05		
Empathy	1-2	65	5.01	1.37	2.934	0.055
	3	81	4.61	1.25		
	More than 3	154	5.01	1.21		
Tangibles	1-2	65	4.99	1.34	3.552	0.030*
	3	81	4.75	1.10		
	More than 3	154	5.19	1.19		

According to ANOVA test results, there is a statistically significant difference in service quality score among the different participants' previous smartphone ownership ($p < 0.05$). More than three smartphone users have the highest service quality perception (5.25). There is a statistically significant difference between the number of smartphones used so far in terms of responsiveness perception level is highest for more than three smartphone users (5.20). There is a statistically significant difference between the number of smartphones that has been used so far and the assurance score among the different participants. More than three smartphone users have the highest level of assurance perception (5.29). There is a

statistically significant difference between the number of smartphones used so far and the tangibles score among the different participants. The level of physical state perception of the users who use more than three smartphones is the highest (5.19).

Although the p statistics with 0.075 which is slightly higher than 0.05 inclines that there is no statistically significant difference between the number of smartphone used so far and the level of impact of the technical service on the purchase of new smartphones among different participants, it should be noted that users with more than three smartphones have higher mean compared to the other groups. In spite of the differences that are significant in most of the cases, the group of users with three smartphones have the lowest means for every dimension.

ANOVA test is applied for different number of technical service encountering with participants so far to compare whether the perception of service quality differs, as shown in Table 16.

Table 16. Anova Results among Participants from Different Number of Technical Service Encountering History for Their Current Smartphone

Number of current smartphones sent to service		n	Mean	SD	F	p
Service quality impact on repurchasing the same brand	none	124	5.39	1.35	0.246	0.782
	one	158	5.30	1.46		
	more than 1	18	5.50	1.72		
Service quality	none	124	5.15	1.13	1.525	0.219
	one	158	5.03	1.20		
	more than 1	18	5.50	0.66		
Reliability	none	124	5.35	1.38	2.130	0.121
	one	158	5.17	1.41		
	more than 1	18	5.83	0.85		
Responsiveness	none	124	5.10	1.36	0.793	0.454
	one	158	4.92	1.42		
	more than 1	18	5.22	1.11		
Assurance	none	124	5.20	1.07	1.491	0.227
	one	158	4.99	1.16		
	more than 1	18	5.26	1.07		
Empathy	none	124	4.86	1.19	1.443	0.238
	one	158	4.88	1.32		
	more than 1	18	5.39	1.22		
Tangibles	none	124	4.94	1.16	1.838	0.161
	one	158	5.03	1.27		
	more than 1	18	5.53	0.98		

According to ANOVA test results, the number of sending the last smartphone to the technical service is not statistically significant in terms of the scale scores among the different participants, and the level of effect of the technical service on the new smartphone purchase ($p > 0.05$).

As shown in Table 17, independent t test is applied to test whether choosing the same technical service company again differs in terms of service quality perception.

Table 17. Independent T Test Results among Participants from Different Preferences of Choosing the Same Technical Service for Further

	Choose the same technical service company again	n	Mean	SD	t	p
Service quality impact on repurchasing the same brand	Yes	197	5.32	1.39	-0.365	0.715
	No	103	5.39	1.50		
Service quality	Yes	197	5.10	1.15	-0.181	0.857
	No	103	5.12	1.14		
Reliability	Yes	197	5.26	1.38	-0.430	0.668
	No	103	5.33	1.40		
Responsiveness	Yes	197	5.04	1.42	0.443	0.658
	No	103	4.96	1.31		
Assurance	Yes	197	5.13	1.09	0.694	0.488
	No	103	5.03	1.18		
Empathy	Yes	197	4.85	1.27	-0.990	0.323
	No	103	5.00	1.25		
Tangibles	Yes	197	4.99	1.23	-0.744	0.458
	No	103	5.10	1.19		

According to the independent samples t test results, there is no significant difference between choosing the same technical service and repurchase intention for the same brand smartphone ($p > 0.05$).

ANOVA test is applied for different previous technical choice of participants on their last technical service need for repairment to compare whether the perception of service quality differs, as seen in Table 18.

Table 18. Anova Results among Participants from Different Previous Technical Service Brands

	Latest technical service company	n	Mean	SD	F	p
Service quality impact on intention of repurchasing the same brand	KVK	70	5.24	1.48	0.861	0.508
	Genpa	14	5.14	1.35		
	Apple Gebze	46	5.67	1.46		
	Samsung TS	127	5.25	1.44		
	Teleservice	11	5.64	0.81		
	Other	32	5.47	1.44		
Service quality	KVK	70	5.09	1.25	1.834	0.106
	Genpa	14	5.39	1.26		
	Apple Gebze	46	5.36	0.82		
	Samsung TS	127	4.93	1.18		
	Teleservice	11	5.72	0.53		
	Other	32	5.13	1.19		
Reliability	KVK	70	5.27	1.48	1.392	0.227
	Genpa	14	5.49	1.29		
	Apple Gebze	46	5.51	1.05		
	Samsung TS	127	5.10	1.44		
	Teleservice	11	5.98	0.68		
	Other	32	5.40	1.50		
Responsiveness	KVK	70	5.06	1.48	1.315	0.258
	Genpa	14	5.36	1.66		
	Apple Gebze	46	5.23	1.10		
	Samsung TS	127	4.84	1.41		
	Teleservice	11	5.64	0.64		
	Other	32	4.93	1.40		
Assurance	KVK	70	5.09	1.21	1.383	0.231
	Genpa	14	5.48	1.17		
	Apple Gebze	46	5.23	0.89		
	Samsung TS	127	4.95	1.12		
	Teleservice	11	5.61	0.89		
	Other	32	5.15	1.20		
Empathy	KVK	70	4.81	1.37	1.493	0.192
	Genpa	14	5.25	1.24		
	Apple Gebze	46	5.18	1.26		
	Samsung TS	127	4.76	1.24		
	Teleservice	11	5.45	0.96		
	Other	32	4.89	1.20		
Tangibles	KVK	70	4.96	1.15	2.903	0.014*
	Genpa	14	5.18	1.53		
	Apple Gebze	46	5.59	1.22		
	Samsung TS	127	4.82	1.20		
	Teleservice	11	5.52	0.77		
	Other	32	4.98	1.17		

According to ANOVA test, there is a statistically significant difference in terms of tangibles perception of previous technical service brands and intention to repurchase the same brand ($p < 0.05$). Those who use the latest Apple technical service have the

highest tangibles perception (5.59). There is no statistically significant difference in terms of the level of previous technical service choice ($p > 0.05$).

ANOVA test is applied to compare whether the perception of service quality differs for different smartphone models sent to technical service, as seen in Table 19.

Table 19. Anova Results among Participants from Different Previous Smartphone Brands sent to Technical Service

Smartphone brand sent to the latest technical service		n	Mean	SD	F	p
Service quality impact on intention of repurchasing the same brand	Apple	56	5.52	1.51	0.428	0.829
	Samsung	146	5.26	1.42		
	Huawei	34	5.26	1.50		
	HTC	20	5.45	1.28		
	GM	14	5.64	1.08		
	Other	30	5.33	1.49		
Service quality	Apple	56	5.30	0.99	1.381	0.231
	Samsung	146	4.98	1.17		
	Huawei	34	5.05	1.21		
	HTC	20	5.13	1.20		
	GM	14	5.66	0.95		
	Other	30	5.15	1.24		
Reliability	Apple	56	5.46	1.18	1.219	0.300
	Samsung	146	5.16	1.43		
	Huawei	34	5.34	1.56		
	HTC	20	4.98	1.27		
	GM	14	5.90	1.05		
	Other	30	5.39	1.41		
Responsiveness	Apple	56	5.16	1.24	1.147	0.336
	Samsung	146	4.87	1.40		
	Huawei	34	4.99	1.44		
	HTC	20	5.30	1.45		
	GM	14	5.62	1.18		
	Other	30	4.97	1.50		
Assurance	Apple	56	5.20	1.06	1.155	0.332
	Samsung	146	4.98	1.11		
	Huawei	34	4.99	1.07		
	HTC	20	5.42	1.17		
	GM	14	5.50	1.08		
	Other	30	5.16	1.29		
Empathy	Apple	56	5.07	1.38	1.271	0.277
	Samsung	146	4.77	1.22		
	Huawei	34	4.85	1.18		
	HTC	20	4.83	1.32		
	GM	14	5.54	1.15		
	Other	30	5.00	1.34		
Tangibles	Apple	56	5.49	1.22	3.084	0.010*
	Samsung	146	4.86	1.16		
	Huawei	34	4.75	1.07		
	HTC	20	5.15	1.27		
	GM	14	5.46	1.17		
	Other	30	5.00	1.36		

According to ANOVA test results, there is a statistical difference in terms of the level tangibles perspective and intention of repurchasing the same brand ($p < 0.05$). Consistent with the previous results, Apple smartphone users have the highest level of perception of tangibles (5.49). There is no statistically significant difference for repurchasing the same brand among different technical service choice ($p > 0.05$).

ANOVA test is applied for different brand smartphone owners to compare whether the perception of service quality differs, as seen in Table 20.

Table 20. Anova Results among Participants from Different Current Smartphone Brands

	Current smartphone brand on use	n	Mean	SD	F	p
Service quality impact on intention of repurchasing the same brand	Apple	62	5.69	1.34	1.471	0.188
	Samsung	134	5.13	1.45		
	Huawei	33	5.45	1.46		
	GM	20	5.60	1.39		
	Other	22	5.32	1.36		
Service quality	Apple	62	5.56	0.69	2.791	0.012*
	Samsung	134	4.86	1.23		
	Huawei	33	5.16	1.17		
	GM	20	5.22	1.12		
	Other	22	5.17	1.18		
Reliability	Apple	62	5.75	0.87	2.682	0.015*
	Samsung	134	5.00	1.50		
	Huawei	33	5.25	1.21		
	GM	20	5.20	1.31		
	Other	22	5.56	1.52		
Responsiveness	Apple	62	5.33	1.10	1.564	0.157
	Samsung	134	4.83	1.48		
	Huawei	33	5.26	1.41		
	GM	20	5.15	1.39		
	Other	22	4.74	1.33		
Assurance	Apple	62	5.45	0.94	3.387	0.003*
	Samsung	134	4.87	1.14		
	Huawei	33	5.25	1.03		
	GM	20	5.55	1.08		
	Other	22	5.09	1.19		
Empathy	Apple	62	5.42	1.08	2.739	0.013*
	Samsung	134	4.72	1.24		
	Huawei	33	4.79	1.48		
	GM	20	4.88	1.15		
	Other	22	5.11	0.95		
Tangibles	Apple	62	5.72	0.97	5.887	0.000*
	Samsung	134	4.70	1.17		
	Huawei	33	4.98	1.37		
	GM	20	5.25	1.35		
	Other	22	5.02	0.96		

According to ANOVA test results, there is statistically significant difference in terms of service quality score among the different participants ($p < 0.05$). Apple users have the highest service quality perception (5.56).

There is a statistically significant difference in reliability score among different participants ($p < 0.05$). Apple users' reliability perception is the highest (5.75).

There is a statistically significant difference in terms of responsiveness score among different participants ($p < 0.05$). Responsiveness perception of Apple users is also the highest (5.33).

There is a statistically significant difference in terms of assurance score between different participants ($p < 0.05$). GM users have the highest perception of assurance (5.55).

There is a statistically significant difference in terms of empathy score among different participants ($p < 0.05$). Apple users have the highest perception (5.42).

There is a statistically significant difference in terms of tangibles score among different participants ($p < 0.05$). Apple users have the highest perception of tangibles (5.72).

There is no statistically significant difference in terms of the impact of service quality on intention of repurchasing the same brand among different participants ($p > 0.05$).

Apple users have either the highest or the second highest mean scores of service quality perception in all dimensions whether the differences are significant.

As shown in Table 21, independent t test is used for whether the perception of service quality differs in terms of using the same smartphone sent to the technical service or not.

Table 21. Independent T Test Results among Participants from Different Preferences of Using the Same Smartphone Sent to Technical Service

Still using the same smartphone sent to the technical service		n	Mean	SD	t	p
Service quality impact on repurchasing the same brand	Yes	116	5.25	1.47	-0.931	0.353
	No	184	5.41	1.40		
Service quality	Yes	116	5.02	1.17	-0.972	0.332
	No	184	5.16	1.13		
Reliability	Yes	116	5.12	1.37	-1.653	0.099
	No	184	5.39	1.38		
Responsiveness	Yes	116	4.93	1.41	-0.848	0.397
	No	184	5.07	1.36		
Assurance	Yes	116	5.09	1.13	-0.066	0.948
	No	184	5.10	1.12		
Empathy	Yes	116	4.84	1.34	-0.599	0.549
	No	184	4.93	1.22		
Tangibles	Yes	116	5.02	1.29	-0.039	0.969
	No	184	5.03	1.17		

According to the independent t test results, there is no statistically significant difference in terms of the scale of usage among the different participants, whether using the same smartphone sent to technical service or not, and the level of technical service effect on repurchasing the same brand smartphone ($p > 0.05$).

4.4 Testing the model

Regression analysis is applied to test whether the model is meaningful and explained by the hypotheseses, as seen in Table 22.

Table 22. Technical Service Quality Impact on Repurchasing the Same Brand Model and Coefficients Test

Dependent variable	Independent variable	Coefficients			Model		
		B	t	p	F	p	R^2
Effect of technical service quality on repurchasing	Reliability	0.256	4.687	0.000*	131.734	0.00	0.691
	Responsiveness	0.230	3.206	0.001*			
	Assurance	0.040	0.715	0.475			
	Empathy	0.153	2.894	0.004*			
	Tangibles	0.259	5.003	0.000*			

According to the results of the regression analysis, the model is statistically significant ($F = 131.734$, $p < 0.05$). Reliability ($B = 0.256$), responsiveness

(B = 0.230), empathy (B = 0.153), tangibles (B = 0.259) dimensions affected the smartphone choice perception after the technical service quality ($p < 0.05$), while the assurance did not affect the size ($p > 0.05$). The change in the number of smartphones after the technical service is 70%, which explains the dimensions of reliability, responsiveness, empathy and tangibles perceptions. As participants level of perception of reliability, responsiveness, empathy and tangibles increase the idea of repurchasing the same brand also increase.

Hypothesis acceptance and rejection status as a result of the questionnaire findings are explained below.

H_1 – Reliability with after-sales services has a positive impact on consumer retention.

The first five questions in survey for previous service quality were grouped for reliability dimension. Reliability dimension questions were examining service quality in terms of problem handling, billing and service, timely order fulfilment, dependability and accuracy. According to analysis, there is a statistically significant relation between reliability dimension and intention of repurchasing the same brand. H_1 is accepted.

H_2 – Responsiveness to customer's needs has a positive impact on customer retention.

Following three questions were conducted to test responsiveness effect on intention of purchasing the same brand sent to technical service, as willingness to respond, personalized attention, and prompt and quick response, respectively. Result of analysis showed that responsiveness dimension has a significant impact on intention of repurchasing the same brand. H_2 is accepted.

H_3 – Inculcating a sense of assurance by after-sales services representatives have a positive impact on customer retention.

To evaluate assurance dimension impact, three questions were asked to participants in terms of inspiring trust and confidence, polite and friendly staff, and staff knowledge and experience. The only hypothesis reject was conducted on for assurance dimension. The probable reason could be lack of face-to-face meeting with respondents and technician of after-sales operations. Almost on each encounter with different participants, there was front desk staff or intermediary firm to send the malfunctioned device to technical service. According to result of survey analysis there is no statistically significant difference for assurance dimension regarding intention of repurchasing the same brand. H_3 is rejected.

H_4 – Providing care and empathy to customer's need have a positive impact on customer retention.

To demonstrate the empathy dimension effect, two questions were asked. The questions were seeking perception of individualized attention and understanding customer needs. In terms of empathy dimension, there is a statistically significant effect on customer intention for repurchasing the same brand. However, the effect of empathy dimension is relatively in lower magnitude than other three dimensions among accepted hypothesizes ($B_{empathy} = 0.153$). H_4 is accepted.

H_5 – A well-defined and customer friendly layout of equipment, facilities, employees and materials has a positive effect on customer retention.

To evaluate tangibles dimension impact, physical appearance of service center and appearance of employee's questions have been asked. According to results, there is a statistically significant difference for tangibles dimension regarding intention of repurchasing the same brand. H_5 is accepted.

Conceptual framework is revised according to test results as seen in Figure 3. Since, control variables have no statistically significant effect on repurchasing the same brand desicision, control variables are eliminated from framework. In addition, rejected hypothesis H_3 is removed from the conceptual framework.

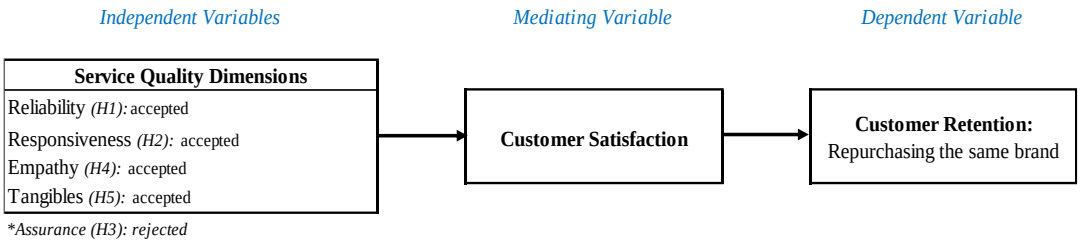

Figure 3. Revised Conceptual Framework

CHAPTER 5

CONCLUSION

The main purpose of conducting this research was to define important determinants of customer satisfaction and customer retention in context of Turkish smartphone market and after-sales services. Although there are many studies abroad focuses on service quality and its effects to customer behavior, only limited data is available for smartphone technical services in Turkey. Besides, smartphone penetration is increasing in Turkey, so as technical service center applications are gaining value to sustain relationship with customers.

Prior studies observed on literature review and Servqual model was selected to quantify subjective opinion into computational form. The hypothesizes were tested and findings were explained, the established model found statistically meaningful. In Turkish smartphone market, after-sales services' quality perception that is explained by reliability, responsiveness, empathy and tangibles is effective in repurchasing the same brand with 70% rate. As customers' level of perception of reliability, responsiveness, empathy and tangibles increased, the idea of repurchasing the same brand is also developed. Demographic factors such as gender, age, profession examined as control variables with detailed previous smartphone and technical service history questions such as number of smartphone used so far, number of encountering technical services so far, choosing the same technical service on purpose, the latest smartphone brand and technical service name, and lastly whether using the same device sent to technical service.

Servqual model stated the five main dimensions for service quality measurement. However, the study revealed no significant effect of assurance

dimension on overall service quality perception of technical service customers in Istanbul, Kadıköy. Besides, the examined studies agreed on positive relationship between perceived service quality and customer satisfaction as well as customer retention. The findings are supporting repurchasing decision based on previous technical service experience in 70% explanation rate. The study has its limitations to generalize the results. Since the study was conducted within Kadıköy, expanding the geographic region to 81 cities of Turkey would be much more appropriate to demonstrate Turkish market attitude towards quality of technical service and retention. It is also possible to extent the study for post-sale activities besides technical service applications. Some questions such as previous smartphone ownership and technical service experience asked to filter users and to sustain a relative sample for the purpose of the study. A different set of questions should have been designed in order to include different variables in explaining the effect of consumer retention on repurchasing behavior.

Customer retention is assumed to attitude as willingness to buy the same brand in the future on this study. On survey, it has been questioned whether the service quality has impact for future decisions. Since the impact of perceived services are sensational, unnoticed personal impressions should be taken into consideration.

Distributers, retailers and especially producers of the smartphone market should be aware of the importance of after-sales services strategies whether outsource or own the technical service provider. Consumers are getting more demanding, while the market is getting more competitive. Implementing and operating the right after-sales services strategy would be resulted as competitive advantage and customer retention for future purchasing decision of the customers.

Likewise, technical services would build up better customer service applications to increase overall perceived service quality for a sustainable business in terms of profitability and volume.

The main elements of after-sales services and their implications are statutory by governments. For instance, producer warranty is set as two years in Europe and Turkey. However, the same warranty is obligation to producers only for one year in United States and United Kingdom. Whether a producer company reserves certain amount or percentage of income as after-sales services budget, service quality will be affected with pricing strategies.

Some further studies would be run. Although this study provides substantial insights into technical service quality and its effect to repurchasing the same brand in Turkish smartphone market, the findings could be extended to gain more detailed comprehension of the after-sales services ecosystem. The future researches may focus on comprehensive studies of after-sales services in respect of price sensitivity and grey market effects to include end-to-end examination of customer behavior.

It would be also beneficial to study on global producers and after-sales applications worldwide. This research provides after-sales services strategies in diverse drivers within local laws and regulations on consumer rights and conduct of services. Moreover, Servqual model could be practiced on other sectors to analyze Turkish market sensitivity towards perception of service quality.

APPENDIX

QUESTIONNAIRE

Participant Information
Age: _____
Profession: _____

- Number of Smartphones Owned (Tick one) □ 1 □ 2 □ 3 □ 4 □ 5 or more
- Male / Female (Tick One)
- How many times have you repaired your latest smartphone?
- Have you been to more than one service centers of the same company? (Yes / No)
- On a scale of 1 to 7 (1= lowest, strongly disagree and 7 = highest, strongly agree), how likely are you to continue using your current smartphone or buy a new smartphone of the same brand depending on service quality received from the after-sales services center.

1	2	3	4	5	6	7

Questionnaire

Dimensions	**Sub-Categories**	**Survey Questions**
Reliability	Q1) Problem Handling	The service center is able to understand and solve my problem.
	Q2) Billing and Service	The service center billed my repair/service order correctly.
	Q3) Timely Order Fulfillment	The order is fulfilled on time.
	Q4) Dependability	I could depend on the staff and service center for my smartphone repair/service needs.
	Q5) Accuracy	The staff understood my problem accurately and provided appropriate response.
Responsiveness	Q6) Willingness to Respond	The staff and its management is willing to respond to my problem and questions
	Q7) Personalized Attention	Personalized attention is given.
	Q8) Prompt and Quick Response	The response to my problem is quick and appropriate.
Assurance	Q9) Inspire Trust and Confidence	The service center is able to inspire trust and confidence through their workmanship.
	Q10) Polite and Friendly Staff	The staff's politeness and friendliness would want to make me come back again.
	Q11) Staff Knowledge and Experience	I would choose their services again due to staff's knowledge ability and experience.
Empathy	Q12) Individualized Attention	The individualized attention I received would make me want to come again to the service center for any future need.
	Q13) Understanding Customer Needs	The staff could understand my needs and what I wanted.
Tangibles	Q 14) Physical Appearance of Service Center	The service center is well-lit with basic facilities that are deemed necessary at a service center.
	Q15) Appearance of Employees	The staff is well-dressed and appeared professional.

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