CANKAYA UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES DEPARTMENT OF MANAGEMENT

MASTER THESIS

TELECOMMUNICATION OPERATORS' SERVICE QUALITY PERCEPTION ANALYSIS

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FEBRUARY 2017

Title of Thesis: **Telecommunication Operators' Service Quality Perception Analysis**
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Approval of the Graduate School of Social Sciences, Cankaya University

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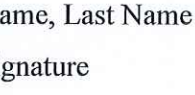
Signature : 
Date : 13.03.2017

ABSTRACT

TELECOMMUNICATION OPERATORS' SERVICE QUALITY PERCEPTION ANALYSIS

Ömer Faruk ŞAHİN
Master Thesis
Graduate School of Social Sciences, MBA

Supervisor: Assoc. Prof. Dr. Ayşegül TAŞ

February 2017, 205 pages

In recent years, telecommunication has become a fixed monthly cost for households in Turkey and all around the world. Amidst a plethora of new technologies founded, telecommunication has become one of the most popular services. Today, every income level, from the highest to the lowest, can access telecommunication services such as voice, Internet, SMS, IPTV etc., which makes telecommunications even more important. The purpose of this study is to define the SERVQUAL criteria for the telecommunications industry, weight the criteria by vendor executives, measure the service quality of vendors, find the gaps between expected and perceived service quality results, and reveal the service quality result. The TOPSIS method was used to find out the importance and weight scores of SERVQUAL variables with telecommunications professionals. To arrive at the result, the SERVQUAL method variables were used and with these variables the survey was applied to operator employees. SPSS was used for

analysis of survey results and the GAP model of SERVQUAL related service quality results were measured. Results indicated that high service quality expectation occurs in operators, whereas perceived service quality results are less than the expectation, making the overall service quality result a low quality. Another important overall result found was that none of the SERVQUAL dimensions were satisfied.

Key Words: Telecommunication, Operator, Vendor, Service Quality, SERVQUAL, TOPSIS

ÖZ

TELEKOMÜNİKASYON OPERATÖRLERİNİN SERVİS KALİTESİ ALGI ANALİZİ

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Şubat 2017, 205 sayfa

Son zamanlarda telekomünikasyon giderleri Türkiye ve dünya genelinde hane halkları için sabit bir gider haline geldi. Telekomünisyon sektöründe teknoloji bakımından ortaya çıkan yeni buluşlar, telekomünikasyonun en popüler servisler arasında olmasına yol açtı. Günümüzde düşük gelir seviyesinden yüksek gelir seviyesine kadar her kademe gelir seviyesi ses, internet, kısa mesaj, internet tv vb. servislere ulaşabiliyor. Bu çalışmanın amacı, telekomünikasyon sektöründe SERVQUAL kriterlerinin belirlenmesi, tedarikçilerde çalışan profesyoneller tarafından kriterlerin ağırlıklandırılması, tedarikçi firmaların servis kalitesinin ölçümlenmesi, beklenen ve algılanan servis kalitesi sonuçları arasındaki farkların bulunması ve servis kalitesi sonucunun ortaya çıkarılmasıdır. SERVQUAL kriterlerinin telekomünikasyon profesyonelleri tarafından ağırlıklandırılması sonucunda TOPSIS metodundan faydalanılmıştır. Sonuca ulaşmak için SERVQUAL kriterleri kullanılmış ve bu kriterler bir anket haline getirilerek operator çalışanlarına uygulanmıştır. Anket sonuçlarının analizinde SPSS kullanılmış olup,

SERVQUAL GAP modeli ile servis kalitesi sonuçları hesaplanmıştır. Operatörler tarafından yüksek servis kalitesi beklentisi olduğu görülmüş, buna rağmen algılanan servis kalitesinin beklenenden düşük olduğu gözlemlenmiş ve sonuç olarak düşük servis kalitesi tespit edilmiştir. Bir diğer önemli sonuç ise hiç bir SERVQUAL boyutunun tatmin edilememiş olduğudur.

Anahtar Kelimeler: Telekomünikasyon, Operator, Üretici, Hizmet Kalitesi, SERVQUAL, TOPSIS

ACKNOWLEDGEMENT

I would like to thank to my supervisor Assoc. Prof. Dr. Ayşegül TAŞ who gave effort with big patience and with guidance to output this thesis, the telecommunication professionals and survey responded that I know and don't know, my wife Zehra ŞAHİN who gave motivation to me and care our children during my thesis.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

BTK	Bilgi Teknolojileri ve İletişim Kurumu
TOPSIS	Technique for Order Preference by Similarity to Ideal Solutions
WWW	World Wide Web
SQWC	Service Quality Weighted Criteria
SQEM	Service Quality Expectation Measure
SQPM	Service Quality Perception Measure
SLA	Service Level Agreement
OPEX	Operational Expenditure
BIST	Borsa İstanbul
NYSE	The New York Stock Exchange
SZSE	Shenzhen Stock Exchange
SEHK	Hong Kong Stock Exchange

CHAPTER 1

1. INTRODUCTION

Telecommunication is a famous digital technology for consumers. Most telecommunications devices, such as smartphones, tablets, laptops etc. are like a natural extension of consumers. Wherever consumers go, they take their intelligent telecommunication devices with them. Many software applications (apps) can be downloaded to consumers' intelligent telecommunication devices. In particular, messaging services apps, video call services apps, social media apps and video content apps are the most popular applications downloaded to intelligent telecommunication devices. These devices are always being innovated by different competitors and new functions are added almost every day. There is big competition for device production companies to innovate their devices and get more market share. Devices and applications are the parts most visible to the consumers.

It is not enough for consumers to have the best devices and the latest updated software applications. They need accessibility everywhere with high speed bandwidth and high service quality. These devices and software applications need Internet accessibility to be usable. Otherwise intelligent telecommunication devices are no different than traditional phones.

Everyday requirements to run software applications are increasing especially for high speed Internet bandwidth. Video quality in video content websites is increasing rapidly. Low quality videos are no longer satisfying for consumers. Consumers upload their photos to social media, which increases quality expectations. Consumers use video calls and live video broadcasting applications, all of which need high speed Internet bandwidth. Consumers' instant needs increase every day as new devices and new applications are ushered in.

Consumer requirements need new kinds of software applications which, in turn, need high speed Internet bandwidth. And consumers need this accessibility everywhere at all times. Thus, it now falls on telecommunications operators to meet this need for high quality services as high speed Internet bandwidth and constant accessibility everywhere. There are three big telecommunication operators in Turkey, called in this thesis as Operator 1, Operator 2 and Operator 3. They endeavor to get more market share and continue to increase customer loyalty. They try to meet their consumers' requirements and increase customer satisfaction with their high-quality services. Almost every day, we see telecommunication operators' advertisements on televisions saying operator x has the highest Internet speed, operator y has the highest accessibility coverage, or operator z has the highest voice quality etc.

Telecommunication operators establish many different types of tariffs to suit customer requirements. What customers pay for is generally limitations as maximum 3000 minutes of calls, 5 GB Internet quota, 1000 short messages etc. Yet, what shapes consumers' judgments about their payments is not their quota limitations. Consumers do not only judge 5 GB Internet quota, but they also judge how fast their Internet speed is during this 5 GB quota; they do not only judge their 3000-minute call quotas, but they also judge whether these calls have high voice service quality. Of course, this makes the telecommunication operators' job harder.

It is not easy for telecommunication operators to meet the demand for high speed Interned bandwidth and high service quality. They need to continually renew, swap, upgrade or innovate their infrastructure. They need to follow the latest technology and infrastructure with passive or active devices, and adapt them to their network. They need to invest in their network and spend money for this. As an example, the old infrastructure was built on a copper line network, whereas now there is a challenge for operators to upgrade their copper lines to fiber lines. They also need to upgrade their active devices for compatibility with fiber lines and the new high quality active devices.

As the latest technology in Turkey for telecommunication is 4.5G, Operators have already started to adapt their network, invest in new base stations, transmission devices etc. and increase coverage. 4.5 G can support high speed Internet bandwidth, but operators need to increase coverage and invest in new telecommunication devices to be able to

provide this service. Huge investments are needed for operators to adapt their networks with the latest technologies and increase service quality and coverage with new devices.

Mostly, consumers do not see these big investments in operator networks. In daily life, it can generally be seen in the street cabinets or base stations of operators'. However, there is a huge telecommunications network to give the best services. According to the BTK 2015 Q4 report, Turkey's fiber infrastructure is around 260,000 km in length (Turkey Telecommunication Market 2015 Quarter 4 Report, http://www.btk.gov.tr/File/?path=ROOT%2f1%2fDocuments%2fSayfalar%2fPazar_Verileri%2f2015-Q4.pdf). New technologies like GPON (gigabit passive optical network) and 4.5G require big investments in networks. There are network layers as access networks which serve end consumers, such as base stations and fiber connections to home devices, fiber infrastructures, IP network layers, transmission layers, core network layers etc. and operators need to install all these layers to serve the consumers. Operators need to buy these devices from telecommunications' vendors. Most telecommunication vendors are foreign-based companies.

Operators need to collaborate with vendors to provide better service to their consumers. Operators do not only buy networks, but also services from vendors. Vendors make their best efforts to deliver high-quality devices to operators to get more market share. Mostly, operators buy these devices with end2end services such as surveys, installations, commissioning, warranties, post warranties, remote support, on-site support, bug fixing, troubleshooting and babysitting services etc. High quality, state-of-the-art technology equipment is important for operators to select the vendor, but after sales services are also a very important decision keystone for operators when selecting a vendor.

With the globalization and standardization of protocols, equipment quality and the latest technology do not make a difference between vendors. This makes service more important for vendors to be selected by operators. Operators can select multiple vendors to purchase the latest technologies and services; but mostly, vendors will have different market shares. This thesis will show the service quality expected by operators from vendors and the service quality perceived by operators. This will help in clarifying the service quality needs of the telecommunications market.

In the second chapter, the definition, importance and characteristics of service is explained. Moreover, quality and service quality concepts and service quality standards are addressed. How to measure service quality, service quality measurement methods, definitions and parameters of SERVQUAL for expected service quality, perceived service quality, the GAP model, the TOPSIS method definition and the history of telecommunications in the world and in Turkey are also addressed. The purpose and limitations of the research, the research model, sampling, variables hypothesis, data analysis and variable weighting by telecommunication professionals are presented. The second chapter aims to provide clear definitions to understand the study well, understand the telecommunications industry, and service quality measurement with SERVQUAL and weight variables with TOPSIS. It also aims to give detailed and clear information about the research itself and the analysis of research data.

The third chapter is the results chapter of the research. Results for expected service quality and perceived service quality variables are analyzed and by using the SERVQUAL GAP model, service quality results are shown from eight different windows. The third chapter aims to demonstrate whether expected service quality is satisfied or not.

This thesis takes a different approach by measuring service quality from the telecommunication market operators' point of view. Its results can potentially help current vendors, start-ups and every organization aspiring to serve telecommunications operators. Understanding the needs and working towards improving services can make a difference in earning the trust of operators.

CHAPTER 2

2. NATURE & QUALITY OF SERVICES

Nowadays, for most industries, services are increasing in importance. It is important to satisfy customers not just with product quality but also with service quality. If service quality cannot satisfy customer expectations, customer decision can be affected negatively even if the product quality is high. Hence, it is important to understand service quality and how to measure service quality concepts. Companies managing to achieve high service quality together with product quality can make a difference in their industries. Telecommunication is an important industry that requires high service quality for customer satisfaction. This chapter will address service, service quality, measuring service quality concepts, an overview of telecommunications, and research data.

2.1. SERVICE: DEFINITION, IMPORTANCE & SCALE

Even though it is hard to define service, professionals describe service using similar definitions. Service management is not a well-defined subject (Christian Grönroos, 1993). Services have been defined as given below and also have specifications.

According to Kotler and Keller, service can be defined as performance or actions that one can offer to another, although it is actually intangible and cannot result in having something tangible, and its output may or may not be a physical product. **Figure 1** shows the difficulty level of evaluating the industries. On the left, it is easy for customers to evaluate it before purchase as they are mostly pure goods; in the middle, customers can evaluate after purchase as it includes services and goods; however, on the right, as they are mostly pure service industries, it is hard for customer to evaluate even after consumption. The importance of service is growing. Soon, this growth will lead to technology and physical products starting to look alike, making it harder for companies to

differentiate their products. Thus, companies are trying to make a difference in their services. Service has a large market scale. Examples to services industries include government hospitals, courts, police stations, schools, emergency assistance organizations etc. As for non-profit organizations, museums, mosques, churches, charities, societies etc. are important services organizations.. (Philip Kotler, Kevin Lane Keller, 2006)

Service is value creation that can change the preference of people, the value of interpersonal communication, planning or other intuitive actions. It is important to underline that, globally, the services market grows rapidly with an unprecedented speed. Especially with information communication technology transformation services becoming the center of attraction throughout the globe. (Jim Spohrer, Paul P. Maglio, 2009)

It is hard to define services, as most of the inputs and outputs that are served to customers are intangible, making the services harder to define. When defining manufacturing, physical inputs are used to output goods, and in agriculture the output can be used as food, so people are not faced with too much difficulty; but for services, defining becomes harder. Services create value and benefit to its served customer for a period and create places that are economic activities. There is a big revolution across Europe and all over the world about the services industry economy that is fast changing the traditional way of doing business. (Christopher H. Lovelock, Sandra Vandermerwe, Barbara Lewis, Suzanne Fernie, 2011)

In one application of SERVQUAL in Turkey for catering firm it was noted that "The importance of service sector have increasingly grown in Turkey as is the case in developed countries economies" (The Measurement of Service Quality by SERVQUAL Method in Service Sector and An Application of Catering Firm, Ali Eleren, Cetin Bektas, A. Sahin Gormus, 2007).

With the growing global economy, services and innovation become more and more important in making a difference. (Hollis Landrum, Victor Prybutok, Xiaoni Zhang, Daniel Peak, 2009)

Indeed, when you check the organizations it is possible to see that most of them provide such a kind of services. For organizations, such as transportation companies (airlines, railways etc.), government departments, health organizations etc, services are

the most important part of what they serve. Yet for product manufacturing organizations, services are less important though not entirely unimportant. Services management is hard due to its characteristics such as intangibility, inseparability, variability and perishability, and there are problems of uncertainties for customer expectations and satisfaction. (Peter Mudie, Angela Pirrie, 2006)

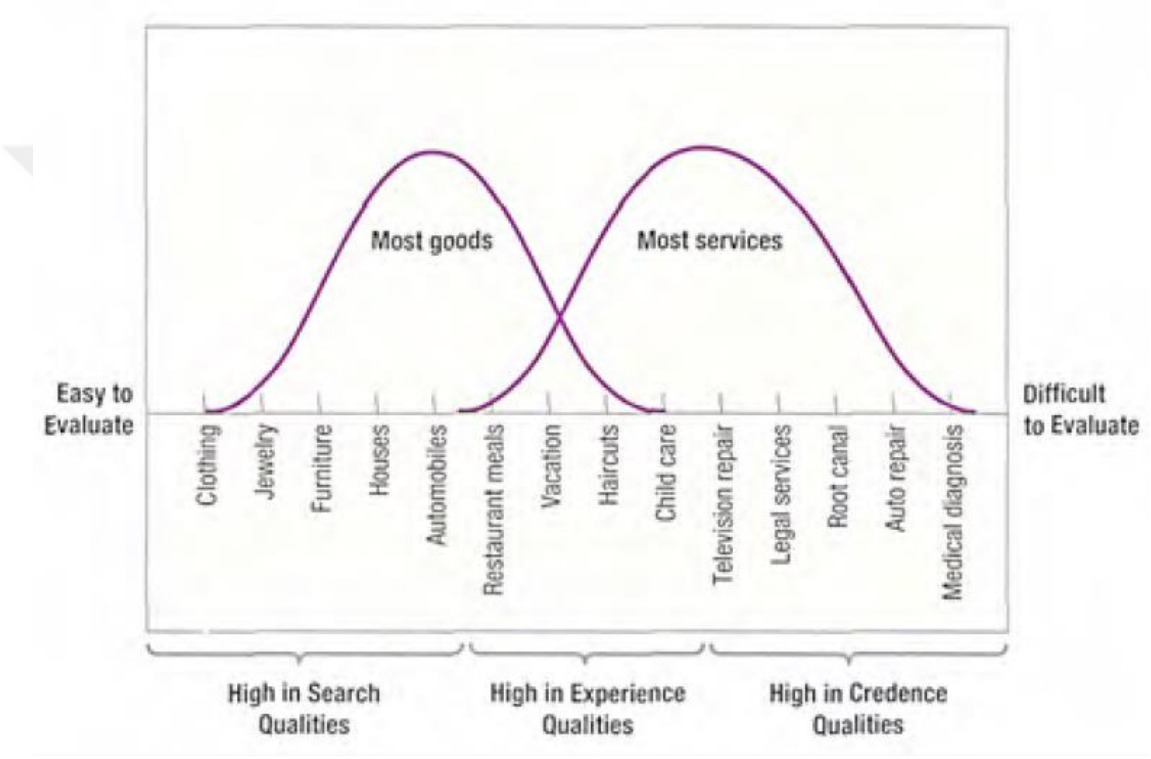

Figure 1 Evaluation For Different Type of Product (Valarie A. Zeithaml, 1981)

2.2. SERVICES DISTINCTIVE CHARACTERISTICS

As mentioned in the definitions, service has its own characteristics. Service has four characteristics: intangibility, inseparability, variability, and perishability (Philip Kotler, Kevin Lane Keller, 2006).

2.2.1. Intangibility

Definitions used for service are mostly about intangibility.

This characteristic is the most important difference between a product and a service. Unlike a product, you cannot generally see, taste or feel the service directly. A service customer generally cannot understand the service until it is delivered. As the customer cannot touch or see what is bought, they cannot realize and cannot understand clearly what they have paid for. (Peter Mudie, Angela Pirrie, 2006)

Customers need evidence of service to realize what they have paid for. Service providers try to reduce this uncertainty aspect of services. When marketing a service companies can use physical evidences for their service. This makes buyers feel more secure. This physical evidence can be a place, people, equipment, communication material, symbols or price. (Philip Kotler, Kevin Lane Keller, 2006)

2.2.2. Inseparability

Service and product have different consumption models. As it is shown in the services marketing strategy book, services are consumed and produced simultaneously, whereas products have different stages beginning from production and ending with consumption. **Figure 2** shows this relation. Buyers also attend the service production with the service company. This is not separated as in product production. There is interactive cooperation between a service company and its consumers during service production. So, this makes each service customized for different buyers. A service company should customize the service for each buyer. (Philip Kotler, Kevin Lane Keller, 2006)

Physical goods	Services
Production ↓ Storage ↓ Sold ↓ Consumed	Sold ↓ Produced and consumed at the same time

Figure 2 Production and Consumption of Goods and Services (Peter Mudie, Angela Pirrie, 2006)

2.2.3. Variability

Service quality depends on who provides the service, when service is provided, and where service is provided (Peter Mudie, Angela Pirrie, 2006). Variability directly affects services and service quality. Unlike products, service cannot be unified easily.

Even if you serve the same food in one restaurant, you cannot always accomplish the same service quality. It will depend on how your waiter serves to the customer, whether he smiles or presents a face of woe when serving the food.

However, there are some methods that are defined in the Marketing Management book to keep the same service quality and control variability;

- **Invest in good hiring and training procedures:** : It is not important whether it is a high-skilled or low-skilled position; find and recruit the right people and train them well; it will make a change in the service.
- **Standardize the service-performance process throughout the organization:** Check your service, find out the problems and pain points of your organization and prepare processes and flowcharts to fix them.
- **Monitor customer satisfaction:** Do not finish your service after a customer buys it; conduct customer satisfaction surveys, establish systems to receive customer complaints, listen to your customers and employees to get suggestions.
  (Philip Kotler, Kevin Lane Keller, 2006)

2.2.4. Perishability

Unlike products, services cannot be stored and cannot be put on sale or set aside for using later (Peter Mudie, Angela Pirrie, 2006). If a service cannot be sold and used on time it will disappear.

If airline seats cannot be sold, the plane will fly with empty seats. This is a risk both for service selling company and for consumers. However, there are several strategies that can be employed on the supply and demand sides. Here are the strategies for the demand side:

- **Differential pricing** makes it possible to shift the demand from peak to peak-off periods by promoting lower prices for different seasons or periods, such as cinema sessions etc.
- **Nonpeak demand** can be managed through different promotions, as done by McDonald's starting to serve breakfast, and some hotels introducing campaigns for weekend getaways.
- Initiate **Complementary services** for your waiting customers such as automatic teller machines in banks and lounges in restaurants.
- Create **Reservation systems** to manage and see your demand level, like what hotels, hospitals, airlines, mostly do.

Here are the strategies for the supply side;

- Hire **Part-time employees** such as college students, part time workers etc. to manage your peak-hours serving; this way, you can make sure that your employee supply matches with the demands of peak times.
- When there is peak time, **Peak-time efficiency** becomes important since, during peak times, employees can only perform their main tasks and will need assistance.
- **Increase consumer participation** while you are serving; for example, in supermarkets, consumers bag their own groceries, and in all-you-can-eat buffets customers go and get their own foods.
- **Shared** services can be developed, just like what several hospitals do by sharing their medical equipment.
- **Facilities for future expansion** should be followed well to find out more opportunity in the future; as an example, a shopping mall buys land near it to develop future opportunity.

  (Philip Kotler, Kevin Lane Keller, 2006)

2.3. SERVICES 7 Ps

Marketing activity is structured with "4 Ps", which stand for "Product, Price, Promotion and Place". But services activity has an additional "3 Ps" that stand for "People, Physical Evidence and Process". Here is what these 4 Ps stand for:

- **People**: It defines the personnel itself with its appearance, attitude etc.
- **Physical Evidence:** Due to the intangibility of services, try to make services itself tangible with brochures, equipment, signage etc.
- **Process:** Draw and find out the processes of service and make flow chart from beginning, delivery and consumption of service.
  (Peter Mudie, Angela Pirrie, 2006)

2.4. SERVICE QUALITY

Service Quality is as important as the service itself. Each service encounter leads to the service quality of the firm being tested by the receiver. If service quality does not satisfy the client, the client will think twice later whether or not to receive the service from same company. (Philip Kotler, Kevin Lane Keller, 2006)

Unlike measuring or evaluating product quality, service quality is hard to analyze. (Peter Mudie, Angela Pirrie, 2006)

Although quality is described and measured for tangible goods, service quality mostly remains undefined and unmeasured. Knowledge of product quality cannot be enough to understand and evaluate service quality, as services have three specific characteristics: intangibility, heterogeneity, and inseparability. Due to the difficulties arising from these characteristics inherent in services, it is hard to evaluate how services are received and how their quality is perceived by clients since, even for the same service, perceived quality varies across producers and clients. Furthermore, since the client is part of the service, it is hard to keep the same service quality for every client. When a client purchases a product, there are many tangible elements to consider for measuring quality, such as color, hardness, style etc., but when a client purchases a service, tangible factors are very limited and hence it becomes difficult for the client to understand service quality. As mentioned in "Conceptual Model of Service Quality and Its Implications for Future Research", the difficulty of evaluating service quality can be summed up in three bullet points:

- For customers, evaluating service quality is harder than evaluating the quality of physical goods.

- Perception of service quality is a comparison of what the customer expected from the service versus what the customer received from the service.
- Evaluating service quality is not just about the output of a service but also about how long it took to deliver that output.

  (Parasuraman, Valarie A. Zeithaml, & Leonard L. Berry, 1985)

2.5. DEFINITION OF QUALITY

Quality can be defined with various definitions. Day by day, the importance of quality is increasing as consumption increases rapidly all over the world. Juran defined quality with two critical highlights in his "Juran's Quality Handbook", as follows:

"Quality" is defined as the level of meeting customer expectation needs and satisfying the customer for a related product. To summarize this definition, quality focuses on high quality and increases customer satisfaction and thereby income. Yet, when a producer increases the quality of its product or service, costs also increase. This quality definition entails that high quality also means high cost. However, this definition of quality describes the opposite of high quality, high cost. It mainly focuses on high quality with lower cost. **Figure 3** from Juran's Quality Handbook shows the quality definitions and what they mean. (Joseph M. Juran, A. Blanton Godfrey, 1998)

""Quality" means freedom from deficiencies−freedom from errors that require doing work over again (rework) or that result in field failures, customer dissatisfaction, customer claims, and so on." (Juran's Quality Handbook, Joseph M. Juran, A. Blanton Godfrey, 1998)

Product features that meet customer needs	Freedom from deficiencies
Higher quality enables companies to: Increase customer satisfaction Make products salable Meet competition Increase market share Provide sales income Secure premium prices The major effect is on sales. Usually, higher quality costs more.	Higher quality enables companies to: Reduce error rates Reduce rework, waste Reduce field failures, warranty charges Reduce customer dissatisfaction Reduce inspection, test Shorten time to put new products on the market Increase yields, capacity Improve delivery performance Major effect is on costs. Usually, higher quality costs less.

Figure 3 Meanings of Quality (Joseph M. Juran, A. Blanton Godfrey, 1998)

There is no specific definition for quality. The quality definition changes even from one person to another. There are several quality definitions mentioned in the Operations Management Fourth Edition:

- Quality is **Conformance to specifications** that measures how well the product or service meets the targets designed by its producers.
- Quality is **Fitness for use** that focuses on how well the product performs in fulfilling the purpose it was intended for.
- **Value for price paid** is the part where the customer's economic criteria are combined with product quality, and it is sensitive.
- Quality cannot be defined based solely on the product or service itself, as **Support services** are also very important and are often used by customers for evaluating the quality of a product or service.
- One subjective aspect of quality is **Psychological criteria,** through which even the prestige of the service provider, the atmosphere of the place etc. can affect the quality for services or products.

  (R. Dan Reid, Nada R. Sanders, 2011).

2.6. DEFINITION OF SERVICE QUALITY

Mostly, quality definitions in manufacturing mainly focus on conformance to specifications, performance, reliability, features, durability and serviceability, all based on tangible characteristics. Each customer individually can understand easily the product quality. However, unlike manufacturing, a service organization produces an intangible product, which makes service quality harder to define. Service should be experienced, otherwise it cannot be understood, which makes service quality very subjective. Service quality can be defined with perceptual factors such as satisfying customer expectations, the appearance of staff members and how polite they are, the atmosphere of the venue where the service is delivered etc. Moreover, another defining factor for service quality is the timing of delivery, the customer's time spent for the delivery, and consistency with previous deliveries. (R. Dan Reid, Nada R. Sanders, 2011)

Service Quality also can be defined by how well the service meets customer expectations and needs. (Sungchul Yoon, Hyunsuk Suh, 2004)

Service quality is mainly defined as how well the service meets customer expectations. This model also includes our research model. Recent research also focuses on service quality and its impact on company profits and financial outcomes. (ValarieA. ZeithamI, Leonard L Berry, & A. Parasuraman, 1996)

Figure 4 shows the model for service quality and its impact on financial consequences.

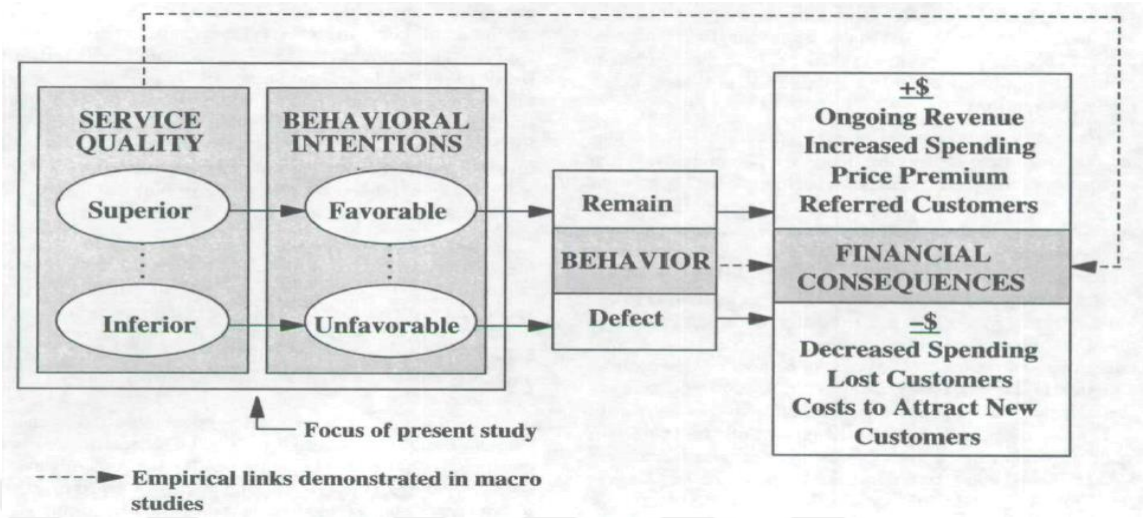

Figure 4 The Behavioral and Financial Consequences of Service Quality (ValarieA. ZeithamI, Leonard L Berry, & A. Parasuraman, 1996)

2.7. SERVICE QUALITY STANDARDS

Service quality standards cannot be defined based only on the quality of service employees, since service standards should be set and arranged vis-à-vis customer expectations. The standard as it is shown in **Figure 5** is to respond to customer complaints within a specified timeframe. **Figure 5** shows us for how long customer expectations should be satisfied per standards and how long it takes for service performance. This illustration shows an instance where even standards cannot meet customer expectations, and service performance cannot meet service standards. In this situation, it is not surprising to lose the customer, and the company should start establishing service standards and service performance criteria to meet customer expectations. Service standards experienced by customers can be categorized as hard and soft standards. (Peter Mudie, Angela Pirrie, 2006)

Hard standards generally define the timed or counted actions such as how many, whether on time or not, how accurately etc.

Soft standards are hard to measure and make it difficult to reach objective results. Soft standards try to measure the answers to questions such as “How did I feel about the service”, “Was I involved in the service or consulted well?”, “Did I like it?”

(Peter Mudie, Angela Pirrie, 2006)

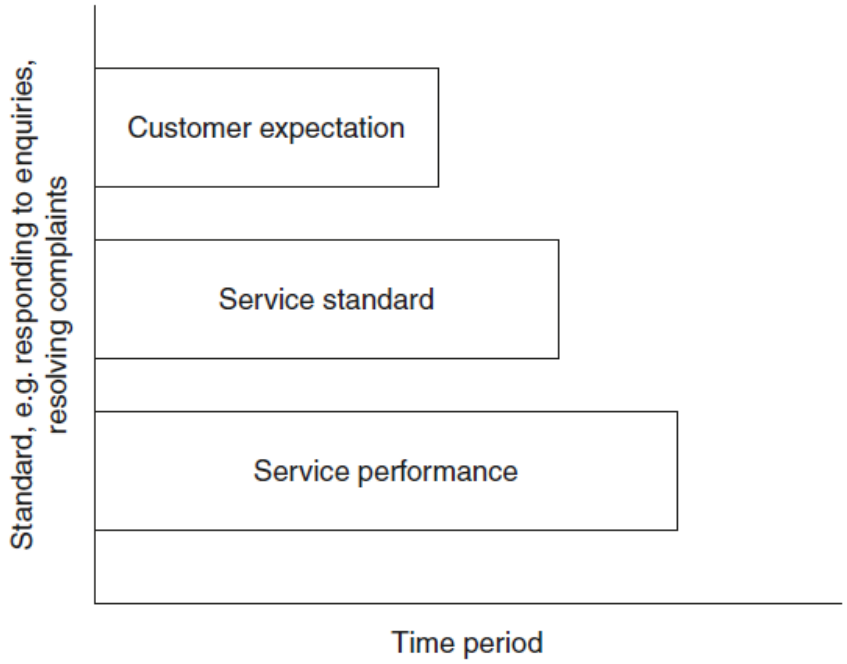

Figure 5 Standard: Expectation and Delivery (Peter Mudie, Angela Pirrie, 2006)

By using most definitions, we can understand that the services industry has grown rapidly in the global arena. Yet, there is still no standardized definition for services. Consumers can get services pure or with a product. It is easier to evaluate the product and product quality as it is tangible, whereas it is harder to evaluate services and service quality as it is intangible. Quality is an important criterion even for products and services to develop an organization's outputs. Without quality, it is hard for an organization to survive long. But how will we know the quality of our services? Is it possible to measure service quality? Even though services are perceptual and intangible, there are methods for measuring service quality. Organizations should know what their customers expect from their services to develop their services quality.

2.8. IMPORTANCE OF MEASURING SERVICE QUALITY

With the growing service industry and increasing competition between services companies, service quality has become ever more important. Service companies need to understand customer requirements and adjust their service quality accordingly. Hence, they need to routinely analyze and measure the service quality of their services. However, the specific characteristics of services makeit difficult to measure service quality (Asst. Prof. Dr. Recep Cicek, İsmail Can Dogan, 2009).

The primary objective of service companies is to satisfy customer needs for their survival. Due to this, service companies need to understand the needs of their consumers, their evaluation and the idea of the consumed service. (Valarie A. Zeithaml, 1981)

Empirical study results from many companies show that service quality strongly affects the customers' behavioral intentions as to whether or not to purchase the service and also defines customer loyalty. (ValarieA. ZeithamI, Leonard L Berry, & A. Parasuraman, 1996)

It is important to measure quality so as to match your services with customer expectations; moreover, in this way, you can hear the voice of your customers. Organizations and managers take interest in service quality measurement results to:

- Understand how service changes affect profit, revenue change and long term customer satisfaction,
- Analyze and understand the low ratings and try to improve pain points in service,
- Evaluate, based on acquired results, the internal personnel performance and efficiency.

(Ruth N. Bolton, James H. Drew, 1994)

Service itself cannot define the success of a service organization. The success of a service organization can be defined with how the service fulfills customer expectations, and the way to understand this is to measure service quality (Zeynep FİLİZ, Sıdıka KOLUKISAOĞLU, 2013).

In recent years in global markets, quality has become a competitive issue for many companies and the only single factor for success. (Joseph M. Juran, A. Blanton Godfrey, 1998)

Service organizations can stand as much as they can serve to their customers. They should position customers as their first interest if they want to survive longer. To this end, service organizations should measure the effects of their services on customers, analyze the results, find the pain points and strong points, and use these results to increase their revenue and profit, to keep their customers loyal and to gain new customers.

Studies about service quality measurement in the world areis listed in **Table 1** as below.

Table 1 Sample Studies About Service Quality in the World

No	Study	Author	Year	Purpose	Conclusion
1	Modeling Customer Satisfaction In Telecommunications: Assessing the Effects of Multiple Transaction Points on the Perceived Overall Performance of the Provider	Antreas D. Athanassopoulos, Anastasios Iliakopoulus	2003	This research focus on finding the residential customers satisfaction of one of the telecommunication company in Europe.	As a result it is seen that telecommunication company's overall performance influence the customer satisfaction.
2	The Measurement of Service Quality by SERVQUAL Method in Service Sector and An Application of Catering Firm	Ali Eleren Çetin Bektaş A. Şahin Görmüş	2007	It is aimed to determine sevice quality level by customer satisfactions and perceptions in Usak city.	Even if perception level is high, high expactation level made SERVQUAL scores negative value.

Table 1 (Cont.) Sample Studies About Service Quality in the World

3	Service Quality and Customer Satisfaction: An Empirical Investigation in Indian Mobile Telecommunications Services	Abdolreza Eshghi, Sanjit Kumar Boy, Shirshendu Ganguli	2008	This study aims to finding service related elements that can influence customer satisfaction, repurchase intention etc. in the Indian mobile telecommunications industry.	Results found under six elements as; support features, relational quality, reliability, competitiveness transmission quality and reputation.
4	A Research for Measuring Service Quality in Increasing Customer Satisfaction: Niğde Province Case	Recep ÇİÇEK, İsmail Can DOĞAN	2009	Find out the expected and perceived service quality of public and private banks' customers in Nigde city.	Consumers' perceptions of the service were less than their expectations. It is found that private and public banks do not meet the customer requirements.

Table 1 (Cont.) Sample Studies About Service Quality in the World

5	Service Quality in Cellular Mobile Services: An Empirical Study of Cellular Mobile Users	Rajesh Kothari, Anamika Sharma, Jitendra Rathore	2011	This study aims to finding customers' perception and service quality factors for cellular service.	It is found that service quality is important to survive and service quality results need to be assessed regularly.
6	A review of Perceived Service Quality:An empirical investigation of grocery stores' customers in Växjö, Sweden	George Panteloukas, Albert Mbu Etonga Asopo, Roland Buwag	2012	This study aims to finding customers' perceived service quality in grocery retail industry.	According to results it is seen that customers' expectation could not be satisfied and grocery stores need improvement for their performance.

Table 1 (Cont.) Sample Studies About Service Quality in the World

7	Health Service Quality a Study on the Measurement of	Dersu Taş	2012	This study aims to finding service quality for the hospital in Turkey, based on patients' expectations.	According to results it is seen that, expectation of patients could not be satisfied for service quality.
8	Measuring Service Quality in Metro Services: A Compratsion of Perceived Service Quality and Expected Service Quality	Enis Hemedoğlu	2012	This study aims to finding customers' expected and perceived service quality gap for metro services.	It is seen that customers' expected service quality has significantly gap than perceived service quality.

Table 1 (Cont.) Sample Studies About Service Quality in the World

9	Multi-Criteria Decision Making Methods Based Weighted SERVQUAL Scales to Measure Perceived Service Quality in Hospitals: A Case Study From Turkey	Serkan Altuntas, Türkay Dereli, Mustafa Kemal Yilmaz	2012	This study has three main objectives as; to measure the hospital weighted service quality with AHP and ANP, finding unweighted perceived service quality result according to different hospital classes in Turkey and compare these two results.	It is seen three important results as; there are different perceived service quality according to different hospital classes, empahty dimension of SERVQUAL is the most important dimension and weighted service quality result is higher than the unweighted service quality result.

Table 1 (Cont.) Sample Studies About Service Quality in the World

10	A Study on Mobile Phone Service Loyalty in Taiwan	Ching-Fu Chen, Lee-Ting Cheng	2012	This study aims to finding customers' service quality results ans satisfaction for mobile telecommunication services in Taiwan.	It is seen that service quality is influencing perceived service quality, perceived service quality influencing customer satisfaction and satisfaction influencing customer loyalty.

Table 1 (Cont.) Sample Studies About Service Quality in the World

11	Customers' Perceptual Analysis of Cellular Operators in Northern India	Alka Sharma, Mandeep Singh	2012	This study aims to finding customers' perception based on service quality, satisfaction, value added services and loyalty.	It is seen that value added services are perceived as important services to make difference between operators.
12	Service Quality Perceptions: A Case of Uganda Telephony Users	Jotham Mbito Byarugaba, Aihie Osarenkhoe	2012	The present study focuses on the service quality perceptions of users of telephony services in Uganda.	It is seen that as a result customers' quality perceptions are different according to various services.
13	SERVQUAL Method and Application of a Service Company	Zeynep FİLİZ, Sıdıka KOLUKISAOĞLU	2013	Customers who purchase a service operation of the service was to examine whether the difference between expected&perceived service quality in one Hotel.	The average customer service for all sizes the differences between perceived&expected service quality achieved is concluded that the ideal of all sizes are examined.

Table 1 (Cont.) Sample Studies About Service Quality in the World

14	Customers' Perceived Service Quality Towards Monopoly Fixed Line Market: A Research Note on Companhia de Telecomunicacoes de Macau S.A.R.L. (CTM)	Matthew Tingchi Liu, Zhu Zhenghao Colin, ChangJit Keng	2014	Aims at examining the dimensions of customer's perceived service quality of fixed line monopoly by taking into account the example of CTM, a telecommunications company based in Macau.	Reliability dimension of SERVQUAL is signed as most important dimension by respondents. Another result is seen as CTM needs to improve service quality.
15	Quality Dimensions in Marketing of Services: A Study With Special Reference to Telecommunication Services	P. Sujatha	2014	The present paper explores the importance of service quality in service industries with special reference to Airtel Cellular Services.	The hypothesis of the model was tested and the findings corroborate with the view that mobile service quality, customer satisfaction and customer loyalty are related.

Table 1 (Cont.) Sample Studies About Service Quality in the World

16	Assessing the Quality of Banking Services using the SERVQUAL Model	Elena Nicoleta Untaru, Ana Ispas, Ioana Dan	2015	Find out users' opinion about the quality of Internet Banking service provided by Raiffeisen Bank, using in this respect the SERVQUAL model.	The general quality of Internet Banking service provided by Raiffeisen Bank has a negative value of -0.04, fact which indicates that the service generates an acceptable quality level, this being strongly influenced by those points where it was recorded a lower level of perceptions as compared to that of expectations.
17	Quality Assesment in higher Education Using the SERVQUAL Model	Sabina Donlagic, Samira Fazlic	2015	Provide empirical evidence that the adapted SERVQUAL model can be used in higher education and to identify the service quality gap based on its application at one institution of higher education (Faculty of Economics) in Bosnia and Herzegovina.	The adapted SERVQUAL model was used for assesing service quality in higher education and the existence of a negative gap between students' expectations and perceptions of the higher education service provided by the higher education institution was determined.

Table 1 (Cont.) Sample Studies About Service Quality in the World

18	Service Quality Perceptions of Customers About Mobile Telecommunication Services: A Case of India	Vikas Gautam	2015	The study is conducted with the following two objectives: (a) to determine the perceptions of customers regarding the service quality in mobile telecommunication service providers and (b) to determine the relevant dimensions of service quality.	The results of a multiple regression analysis show that customers attributed the highest importance to employee performance followed by transmission quality, competitiveness, support attributes, reliability, credibility, operational efficiency, and convenience.
19	Compating Customer Satisfaction With China Mobile and China Telecom Services: An Empirical Study	Siong Choy Chong, Wendy Ming Yen Teoh, Ye Qi	2015	This paper aims to examine and compare customer satisfaction towards China Mobile and China Telecom's services.	The results indicate that all of the influencing factors are significantly and positively correlated with overall satisfaction of China Mobile and China Telecom's customers.

Table 1 (Cont.) Sample Studies About Service Quality in the World

20	Measuring Quality of Maternity Services Using the SERVQUAL Method	Paulina Gajewska, Katarzyna Piskrzyńska	2016	Presents another proposal to assess the quality of helping to shape the quality of maternity services, using the SERVQUAL method.	the area where expectations differ significantly from the service received and at the same time requiring improvement, the whole sphere of interaction between the patient and the medical staff. Keep in mind that the primary value, applied to medical activities is health, the value of which money cannot buy – health is priceless.
21	Measuring Business Schools' Service Quality in an Emerging Market Using an Extended SERVQUAL Instrument	E.R. Mbise, R.S.J. Tuninga	2016	Develop and validate an extended SERVQUAL instrument to measure perceived service quality delivered to students by business schools in an emerging market economy (Tanzania).	Students indicated a Perceptions-Expectations mismatch/discrepancy of the service delivered by business schools as depicted by the negative gap scores.

Table 1 (Cont.) Sample Studies About Service Quality in the World

22	Customer Satisfaction With Mobile Services in Telecommunication Companies	Saleh Saad Alqahtani, Hassan Al Farraj	2016	To find the level of satisfaction and loyalty among the users of cellular phones.	The findings suggest that overall customer satisfaction is comparatively low among customers. Overall, this study offers insights for service providers, regulators and subscribers, while forming a foundation for future benchmarking of the performance of wireless network operators in terms of user satisfaction and loyalty.
23	Are All Customers Really the Same? Comparing Service Quality and Satisfaction Between Residential and Business Telecommunications Customers	Charles Makanyeza, Darlington Mumiriki	2016	The study sought to examine differences in the relationship between service quality and customer satisfaction because of the type of customer in the fixed-line telecommunications sector in Zimbabwe.	It was established that the customer category does not moderate the effect of service quality on customer satisfaction. Practical/managerial implications are, generally, that it is not necessary to segment customers by customer category (residential versus business) when managing service quality to achieve customer satisfaction.

Table 1 (Cont.) Sample Studies About Service Quality in the World

24	A Study of Rural Consumers' Satisfaction and Their Perception Towards Telecom (Wireless) Service	Sushilkumar M. Parmar, Milan S. Shah	2016	The primary objectives of this research study are to study the rural consumer satisfaction and to understand their perception towards telecom service.	The findings indicate that customer care service and value added service have the significant impact on customer satisfaction towards telecom services in rural areas. In addition to this, the result shows that majority of respondents are Idea subscribers in rural areas and 35% of rural consumers are highly satisfied while 44% of respondents agreed that call and SMS plans are consumer friendly.

2.9. ALTERNATIVE METHODS FOR SERVICE QUALITY MEASUREMENT

There are several methods to measure service quality. In this thesis, we used the "SERVQUAL" method. The "Gronroos Perceived Total Quality" and "Cronin and Taylor SERVPERF" methods are also alternative models for measuring service quality. **Figure 6** shows several service quality models and their dimensions.

Study	Model	Dimension
Grönroos, 1984	Service Quality Model	Technical quality, Functional quality, corporate image.
Philip & Hazlett, 1997	PCP Model	Pivotal, Core, Peripheral attributes
Parasuraman et al., 1985	GAP Model	Reliability, Responsiveness, Competence, Access, Courtesy, Communication, Credibility, Security, Understanding/Knowing the Customer, Tangibles
Haywood-Farmer, 1988	Service Quality Attributes	Physical facilities, processes and procedures, People behavior and conviviality, Professional judgment
Parasuraman et al., 1988	SERVQUAL	Tangibles, Reliability, Responsiveness, Assurance, Empathy
Cronin & Taylor, 1992	SERVPERF	Same as SERVQUAL but with performance only statements
Frost & Kumar, 2000	INTSERVQUAL	Reliability, Tangibles, Assurance, Responsiveness, Empathy (SERVQUAL)
Dabholkar et al., 1996	RSQS	Physical aspects, Reliability, Personal interaction, Problem solving, Policy
Brady & Cronin, 2001	Service Quality Model	Personal interaction quality, Physical service environment quality, Outcome quality

Figure 6 Dimensions of Service Quality Models (Emel Kursunluoglu Yarimoglu, 2014)

2.9.1. Perceived Total Quality Model

Perceived total quality is the first model in service quality measurement and was designed by Christian Grönroos in 1984.

The perceived total quality model focuses on how service quality is perceived by customers, and has two dimensions: "technical quality" and "functional quality". Technical quality shows what customers receive for the technical outcomes, while functional quality shows how this technical outcome is presented to customers. Perceived

service quality mainly focuses on the differences between expected service and experienced service, and its main subject is the service or the organization's image of what the customer perception is. (KONG SHIN YEE, 2008)

The perceived service quality model asks organizations to address service not just from the viewpoint of technical expectations but in its entirety, from the very beginning till the end, i.e. before, during, and after the service is rendered.

Total service quality has two dimensions: technical quality that defines what the customer gets from a service or what is delivered as service, and functional quality that defines how a service is delivered. According to total perceived service quality, service quality cannot be explained solely via quality dimensions; it also requires the perceived service quality of a given service along with its evaluation process. (Md.Hussain Kabir and Therese Carlsson, 2010)

Figure 7 shows Gronroos's perceived service quality model.

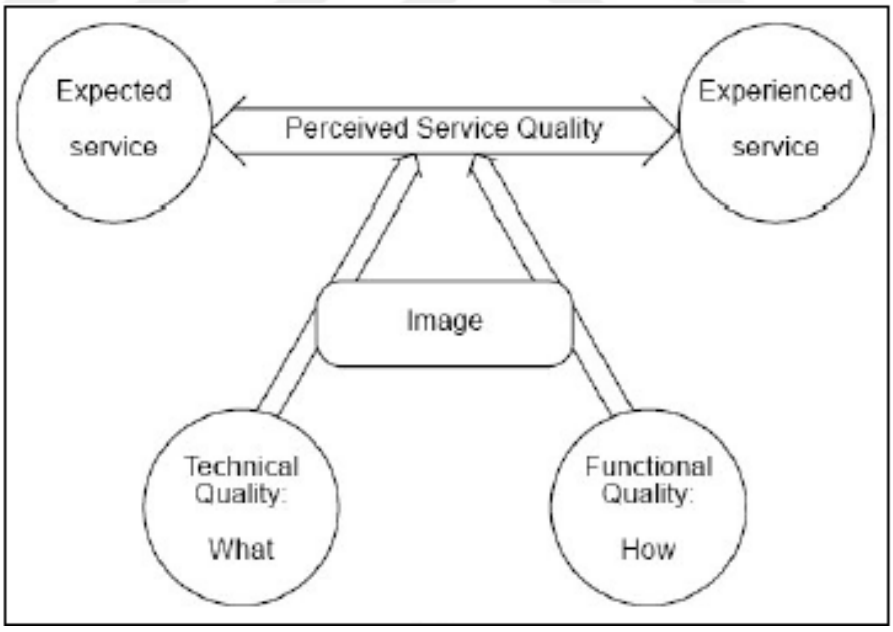

Figure 7 Grönroos's Service Quality Model (KONG SHIN YEE, 2008)

2.9.2. The SERVPERF Model

This model was founded by Cronin and Taylor in 1992 by arguing that the SERVQUAL conceptualization and operationalization is inadequate. One of the objectives for SERVPREF is to show the relationship between customer satisfaction, customer's purchase intentions and service quality. This model aimed to make service organization managers understand how to measure service quality and decide whether a customer is satisfied or not. (J. Joseph Cronin, Jr. and Steven A. Taylor, 1992)

SERVPREF uses the same variables with SERVQUAL, yet unlike SERVQUAL, SERVPREF only measures perceived service quality variables. Thus, SERVPREF explains service quality directly through customer's perceived quality rather than the gap between expected service quality and perceived service quality. (Cenk Murat KOÇOĞLU, Ramazan AKSOY, 2012)

Figure 8 shows the SERVPREF model of service quality.

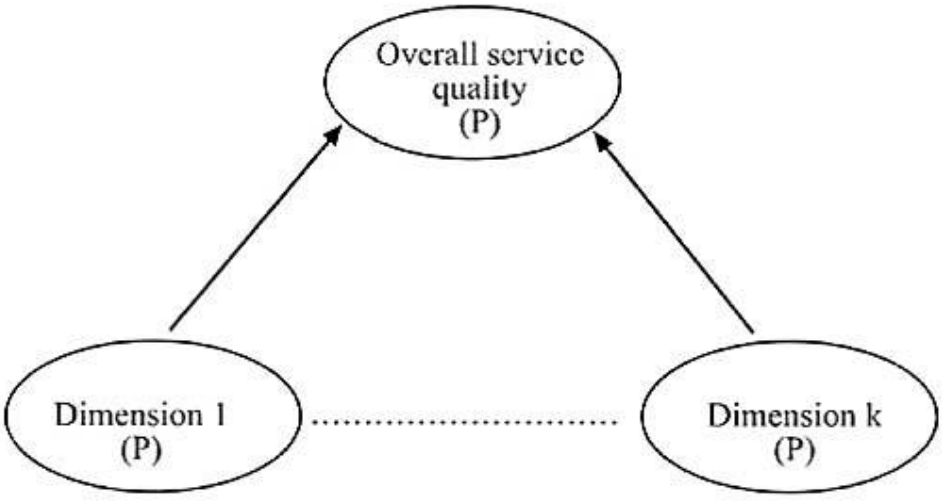

Figure 8 SERVPREF Model (Mohd. Adil, Odai Falah Mohammad Al Ghaswyneh, Alaa Musallam Albkour, 2013)

2.10. THE SERVQUAL SERVICE QUALITY MODEL

SERVQUAL measures service quality by comparing the perception and expectation of customers' evaluation results. With SERVQUAL, 22 perception variables can be applied to broad service industries. (Md.Hussain Kabir and Therese Carlsson, 2010)

SERVQUAL uses perceived service quality instead of service quality. It has 5 dimensions with 22 variables and measures customers' expectations and the performance of the service separately, and then compares the results. If the gap is zero or almost zero between expectations and performance of service, it indicates that the service is good quality. (Recep Cicek, Ismail Can Dogan, 2009)

SERVQUAL is the most popular model among service quality measurement models. (Hollis Landrum, Victor Prybutok, Xiaoni Zhang, Daniel Peak, 2009)

The SERVQUAL scale is widely used by both academic researchers and practitioners. (Sungchul Yoon, Hyunsuk Suh, 2004)

SERVQUAL was developed from five major service industries: telephone services, retail banking, credit cards, repair and maintenance, and securities brokerage companies. The SERVQUAL dimensions have developed through traditional service delivery, yet today, the vast increase in the utilization rates for IT services has changed the nature of services. (Faye X. Zhu, Walter Wymer J., Incazz Chen, 2002)

SERVQUAL is used in numerous researches and it is useful to find out the deficiencies in services. SERVQUAL has been applied to various service industries, as Yavas, Bilgin and Shemwel did in 1997 in Turkey in the banking industry and found out that service contact personnel play an important role in reaching high quality in services. (Mohd. Adil, Odai Falah Mohammad Al Ghaswyneh, Alaa Musallam Albkour, 2013)

SERVQUAL provides a technology to measure and manage service quality, and it was found in 1985. In the following years, its innovators promoted it several times. SERVQUAL can be analyzed in different forms to find out the gap results. It can be analyzed item by item as each variable difference between perception and expectation (P1-E1, P2-E2, P3-E3, …). Dimension by dimension gap can be analyzed to find out SERVQUAL dimensions GAP results (Dimension 1 Perceived Average – Dimension 1

Expectation Average). To find out the overall quality result, single average values can be used (Average of all Perceived – Average of all Expectation). (Francis Buttle, 1995)

SERVQUAL has two sections. In the first section, it tries to define what customers expect from quality service; in the second section, it tries to measure the quality of the service. SERVQUAL uses the gap model and can lead to three results:

- **Low quality**; if perceived service quality < expected service quality,
- **Satisfying quality**; if perceived service quality = expected service quality,
- **High quality**; if perceived service quality > expected service quality. (Zeynep FİLİZ, Sıdıka KOLUKISAOĞLU, 2013)

With its five dimensions, SERVQUAL describes more determinants for service quality and thus differs from other methods. **Figure 9** shows the SERVQUAL service quality view as the gap between expected and perceived service quality. (Michael K. Brady, J. Joseph Cronin Jr, 2001)

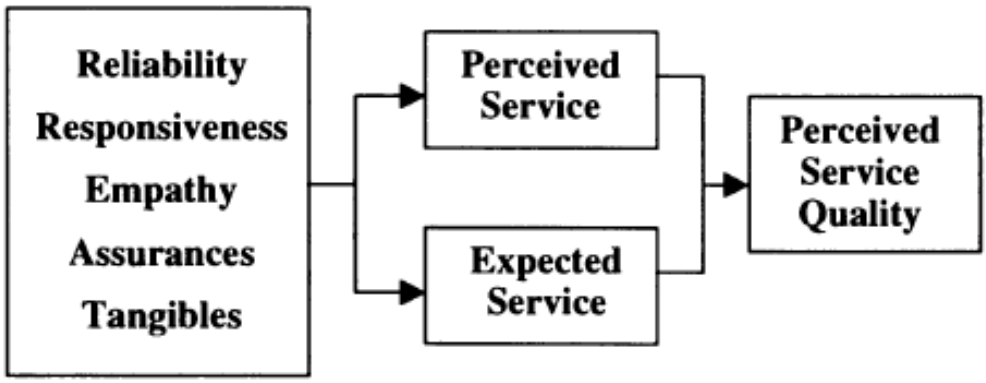

Figure 9 SERVQUAL Model by Zeithaml, Parasurman and Berry (Michael K. Brady, J. Joseph Cronin Jr, 2001)

As set out in the SERVQUAL paper:

"Consistent with the distinction between attitude and satisfaction, is a distinction between service quality and satisfaction; perceived service quality is a global judgment, or attitude, relating to the superiority of the service, whereas satisfaction is related to a specific transaction" (SERVQUAL: A Multiple-Item Scale for Measuring Consumer

Perception of Service Quality, A. Parasurman, Valaria A. Zeithaml, Leonard L. Berry, 1988).

SERVQUAL has good reliability with a multi-item scale that allows service organizations to understand customer service expectations and service perceptions, so that they can have a chance to improve their services. SERVQUAL can be more useful to service organizations when used continuously to measure perceived service quality. SERVQUAL focuses on perceived quality that can be defined as customers' judgment about the service's overall superiority. SERVQUAL is a form of attitude with comparison of the expectations and performance perceptions of the service. Service quality can be formalized as Service quality = Perceived Service Quality – Expected Service Quality. The First Stage of SERVQUAL has seven dimensions as shown in **Figure 10**: "D1: Tangibles, D2: Reliability, D3: Responsiveness, D4-D5: Communication, Credibility, Security, Competence, Courtesy, D6: Understanding/knowing customers, 7D: Access". The final stage of SERVQUAL has five dimensions as shown in **Figure 11**: "Tangibles, Reliability, Responsiveness, Assurance, Empathy", where the latter two (assurance and empathy) include the first stage D4, D5, D6 and D7 dimensions. "Tangibles" define the physical facilities, equipment, and personnel's appearance, and has 4 items in scale. "Reliability" defines whether a promised service has been performed accurately or not, and has 4 items in scale. "Responsiveness" defines whether or not the service organization is willing to help its customers proactively, and has 4 items in scale. "Assurance" defines the employee knowledge and employee confidence in customers, and has 5 items in scale. "Empathy" defines the individualized attention to customers, and has 5 items in scale. (Parasurman, Zeithaml, Berry, 1988)

Summary of Results from First Stage of Scale Purification

Dimension	Label	Reliability Coefficients (Alphas)	Number of Items	Factor Loadings of Items on Dimensions to Which They Belong[a]
Tangibles	D1	.72	4	63 75 62 47
Reliability	D2	.83	5	74 56 73 71 47
Responsiveness	D3	.84	5	60 73 59 76 66
Communication Credibility Security Competence Courtesy	D4	.79	4	35 53 66 56
	D5	.85	7	41 62 47 50 75 52 54
Understanding/ Knowing Customers	D6	.85	4	80 76 62 77
Access	D7	.78	5	57 50 75 52 71
Reliability of Linear Combination (Total-Scale Reliability)		.94		

[a] Numbers are the magnitudes of the factor loadings multiplied by 100. The loadings of items on dimensions to which they did not belong were all less than .3. The percentage of variance extracted by the seven factors was 61.7%.

Figure 10 First Stage of SERVQUAL (Parasurman, Zeithaml, Berry, 1988)

Internal Consistencies of the Five Service-Quality Dimensions Following Second Stage of Scale Purification

Dimension	Label	Number of Items	Reliability Coefficients (Alphas)[a] B	CC	R&M	LDT	Items[b]
Tangibles	F1	4	.52	.62	.64	.64	Q1 Q2 Q3 Q4
Reliability	F2	5	.80	.78	.84	.74	Q5 Q6 Q7 Q8 Q9
Responsiveness	F3	4	.72	.69	.76	.70	Q10 Q11 Q12 Q13
Assurance	F4	4	.84	.80	.87	.84	Q14 Q15 Q16 Q17
Empathy	F5	5	.71	.80	.72	.76	Q18 Q19 Q20 Q21 Q22
Reliability of Linear Combination (Total-Scale Reliability)			.87	.89	.90	.88	

[a] B = Bank; CC = Credit Card Company; R&M = Repair and Maintenance Company; LDT = Long-Distance Telephone Company

[b] The item numbers correspond to those of the expectation and perception statements in the appendix.

Figure 11 Final Stage of SERVQUAL (Parasurman, Zeithaml, Berry, 1988)

2.10.1. Expected Service Quality

Expectations have important roles for consumers evaluating the service quality. Expectations can be affected by various factors and it is important for service organizations to know what factors affect customer expectations. (Anıl Degermen, 2004)

Understanding and defining customer expectations and exceeding these expectations is the key to success in service quality. (Md.Hussain Kabir and Therese Carlsson, 2010)

Expectations can be categorized, according to Rope & Pöllänen (1988), as ideal expectations, former expectations and minimum expectations. Ideal expectations are mainly related to a customer's individual values. It can be different for everyone and it is usually very difficult to fulfill these expectations. If a service organization wants to get ahead of its competitors, they should try to fulfill some of the ideal expectations. Former expectations are mainly related to a customer's historical experiences about the service organization, which can be shaped by the organization's brand, slogan, advertisement, colors etc. Minimum expectations are mainly related to customers' minimum baseline about the service; they can vary across services or industries but it is the most important factor in convincing the customer to continue purchasing. (Veinalotta Vesterinen, 2013)

Customer expectation can be defined as service delivery standards that the customer is expecting, and a reference point for organizations to assess their service quality. Knowledge of customer expectations should come first for service organizations who desire delivering high quality services. If customer expectations cannot be understood well or accurately, then the company will lose money, time and moreover will not be able to survive. Every customer has different expectations for different services. We can call it the "zone of tolerance" between adequate service and desired service. If customer expectations are high for a related service, customers will expect more in order to feel satisfied, but if the expectations are low then customer can easily be satisfied from the service. Different services have different customer expectation levels as shown in **Figure 12**. There are four elements that can influence customer expectations: explicit service promises, implicit service promises, word-of-mouth communications and past experience. **Explicit service promises** can be explained as personnel-driven or non-personnel marketing activities about services, such as a sales person's communication with customers, brochures etc. **Implicit service promises** are about what quality service should be like; if you are paying high for a service, it will lead to a high quality expectation, but if you are paying low for the service, your quality expectation can be low. **Word-of-mouth** is important for expectations, as it can be passed around via friends, family etc.

and can affect customer expectation directly. **Past experience** is about a customer's historical experiences about the service, whether they were satisfied or not, and whether the services compare favourably with similar experiences. (Alan Wilson, Valarie A. Zeithaml, Mary Jo Bitner, Dwayne D. Gremler, 2012)

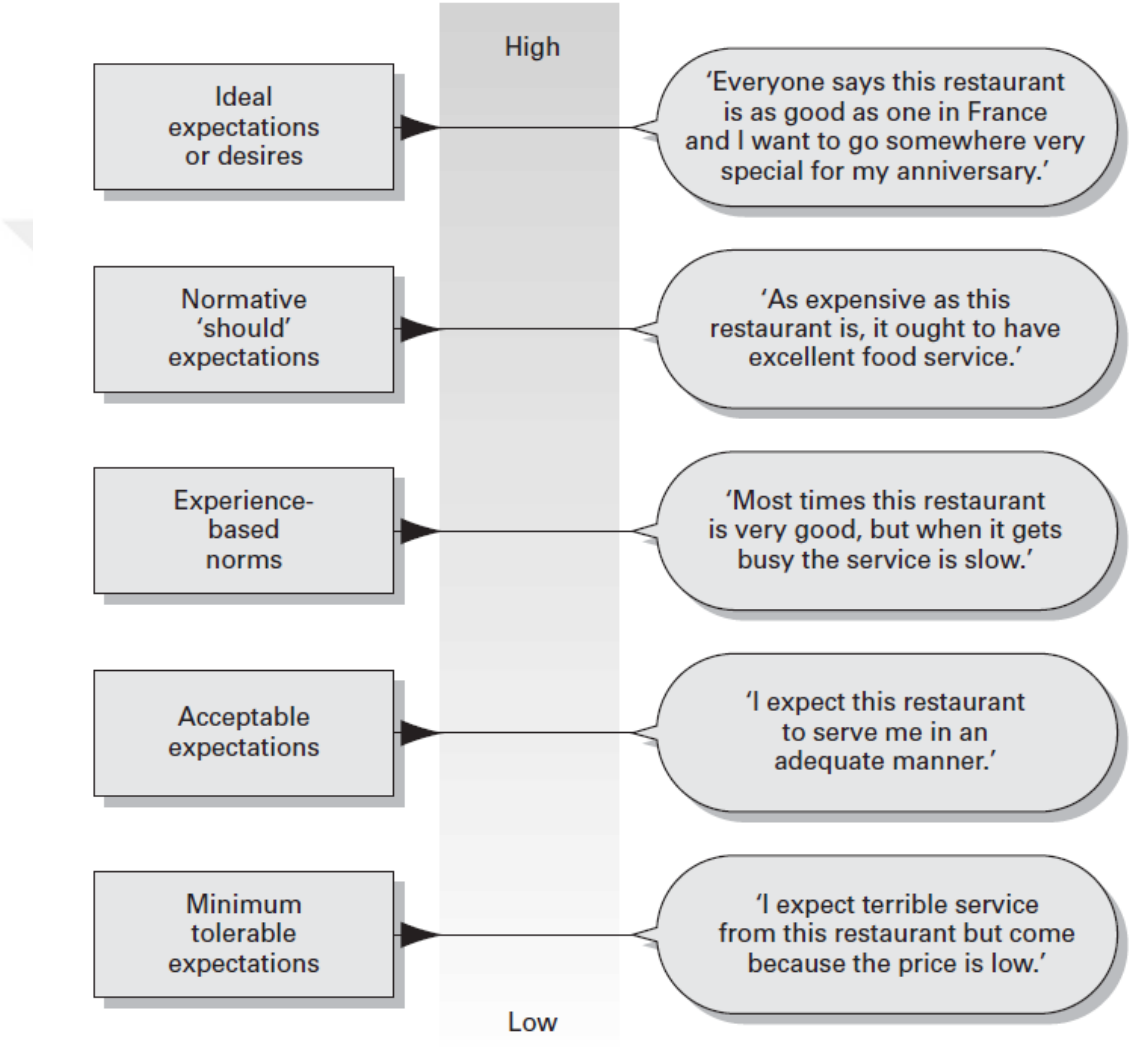

Figure 12 Possible levels of customer expectations (Alan Wilson, Valarie A. Zeithaml, Mary Jo Bitner, Dwayne D. Gremler, 2012)

2.10.2. Perceived Service Quality

While service quality focuses on the five dimensions of delivered service, perceived service quality is a part of customer satisfaction as shown in **Figure 13**.

Customer satisfaction is also influenced from situational and personal factors. Customer satisfaction can be influenced by different elements, such as Product and Service Features, Consumer Emotions, Attributions for Service Success or Failure, Perceptions of Equity or Fairness, Other Consumers, Family Members and Co-workers. (Alan Wilson, Valarie A. Zeithaml, Mary Jo Bitner, Dwayne D. Gremler, 2012)

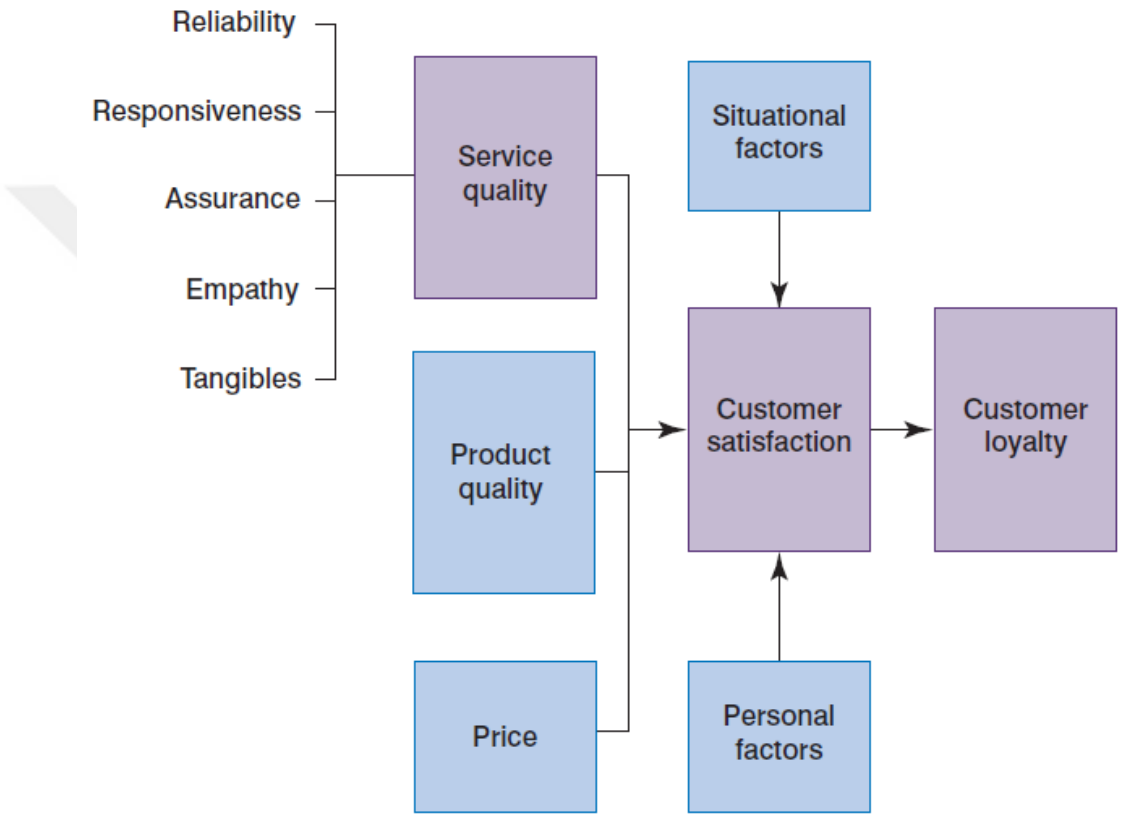

Figure 13 Customer Perceptions of Quality and Customer Satisfaction (Alan Wilson, Valarie A. Zeithaml, Mary Jo Bitner, Dwayne D. Gremler, 2012)

As expressed by Parasurman, Zeithaml and Berry "Based on insights from the present study, perceived service quality is further posited to exist along a continuum ranging from ideal quality to totally unacceptable quality, with some point along the continuum representing satisfactory quality." (Conceptual Model of Service Quality and Its Implications for Future Research, Parasuraman, Valarie A. Zeithaml, & Leonard L. Berry, 1985).

Perceived service quality is the feelings of the customer about the service organization (R. Kenneth Teas, 1993).

Perceived service is as important as expectations; therefore, service organizations need to understand well the perceived service quality to reach the expected quality. Customer's perceived service quality includes sensing, selecting and interpreting. (George Panteloukas, Albert Mbu Etonga Asopo, Roland Buwag, 2012)

Perceived service quality can be defined also as a personal attitude or global judgment about the service. Perceived service quality shows the degree of and inconsistency between customer expectations and perceptions. (Parasurman, Zeithaml, Berry, 1988)

Perceived service quality is mostly customers' personal opinions and can be figured out with historical experiences about the delivered services. Customers' previous experiences, emotions and individual characteristics can affect the perceived service quality, and these elements can differ for each customer. That's why, for the same service, perceived service quality is different for each customer.

2.10.3. Gap Model of Service Quality

As a service quality model, the Gap Model is a comparison of expected and perceived results of SERVQUAL's five dimensions and twenty-two variables. This gap shows the service quality level. During service delivery, there can be gaps in major steps, which can cause big problems in the customers' perception of service quality. As shown in **Figure 14**, there are five gaps defined in service quality. These gaps are clearly defined in the conceptual model of service quality, as follows:

Gap 1 Consumer expectation-management perception gap: It is seen that customer expectations and the perception of the organization's management about customer expectations are consistent.

Proposition 1: The gap between consumer expectations and management perceptions of customer expectations will affect service quality during the evaluation by customers.

Gap 2 Management perception-service quality specification gap: Organization managers show the barriers preventing them from providing the services that meet customer expectations.

Proposition 2: The gap between management perceptions about customer expectations and the firm's service quality specifications has an effect on service quality in customers' point of view.

Gap 3 Service quality specifications-service delivery gap: : It is explained by executives that services employees have a big impact on customers' perceived service quality and it cannot be standardized well.

Proposition 3: The gap between service quality specifications and actual service delivery will affect the perceived service quality by customers.

Gap 4 Service delivery-external communications gap: External communication channels have an effect on customer expectations and perceptions for the services.

Proposition 4: The gap between actual service delivery and external communications about the service has impact on service quality from customers' point of view.

Gap 5 Expected service-perceived service: High, satisfying or low service quality results are about how customers expected and perceived the service.

Proposition 5: The gap between expected service and perceived service is the result of the customer's perception of service quality.

(Parasuraman, Valarie A. Zeithaml, & Leonard L. Berry, 1985)

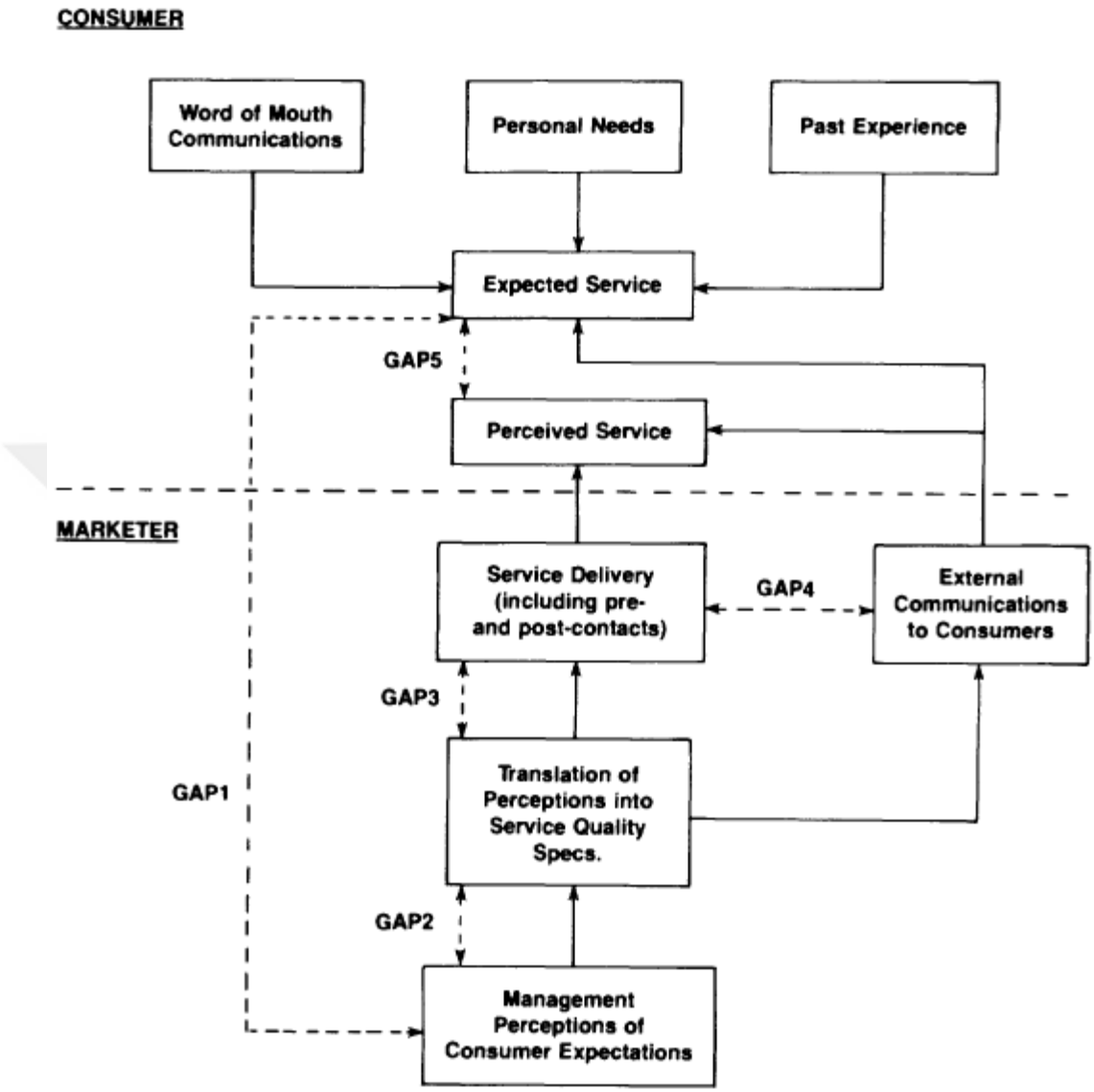

Figure 14 SERVQUAL GAP Model (Parasuraman, Valarie A. Zeithaml, & Leonard L. Berry, 1985)

2.11. THE TOPSIS METHOD

TOPSIS, used for multiple criteria decision-making, will be used in this thesis for weighting the criteria. In multiple criteria selection, each criterion needs to be weighted. This thesis is not making a selection from different options, but it is needed to weight SERVQUAL's criteria with executives to understand the importance of each variable.

TOPSIS (Technique for Order Preference by Similarity to Ideal Solutions) was found by Hwang and Yoon in 1981 and has very limited subjective specification just like weighting the criteria. (Tolga GENC, Mahmut MASCA, 2013)

The TOPSIS method considers the differences in alternatives between ideal and anti-ideal solutions and chooses the greatest difference from anti-ideal and the least difference from ideal. (Alireza Alinezhada, Abbas Aminib, 2010)

In the TOPSIS method, criteria should be numerical and comparable;, this method is easy to understand and can be appliedy inas below six steps as explained below. (Meriç Hatice GÖKDALAY, 2008)

- Calculate the normalized decision matrix as r_{ij};

$$r_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{ij}^2}} \qquad i = 1,2 \dots m \qquad j = 1,2 \dots n$$

- Calculate weighted normalized decision matrix asv_{ij};

$$v_{ij} = w_j r_{ij} \qquad i = 1,2 \dots . m \qquad j = 1,2 \dots . n$$

$$\sum_{j=1}^{n} w_j = 1$$

- Clarify ideal and anti-ideal solution;

$$A^* = \left\{ \left(\frac{max_i v_{ij}}{j} \in J \right), \left(\frac{min_i v_{ij}}{j} \in J' \right) \mid i = 1,2 \dots m \right\}$$

$$A^* = \{v_1^*, v_2^*, v_3^*, v_4^* \dots v_j^* \dots v_n^*\}$$

$$A^- = \left\{ \left(\frac{min_i v_{ij}}{j} \in J \right), \left(\frac{max_i v_{ij}}{j} \in J' \right) \mid i = 1,2 \dots m \right\}$$

$$A^- = \{v_1^-, v_2^-, v_3^-, v_4^- \dots v_j^- \dots v_n^-\}$$

J= (j=1,2,3….n profit attributes)

J'= (j=1,2,3…n cost attributes)

- Calculate the distance from ideal and anti-ideal solutions.

Distance from ideal solution;

$$S_i^* = \sqrt{\sum_{j=1}^{n} (v_{ij} - v_j^*)^2}$$

i=1,2….m

Distance from anti-ideal solution;

$$S_i^- = \sqrt{\sum_{j=1}^{n} (v_{ij} - v_j^-)^2}$$

i=1,2….m

- Calculate the relative distance.

$$C_i^* = S_i^- / (S_i^* + S_i^-)$$

$$0 < C_i^* < 1\,, \;\; i = 1,2,3 \ldots . m$$

- Sort the alternatives according to C_i^* values.

2.11. TELECOMMUNICATIONS: A BRIEF HISTORY

Communication is one of the basic needs of human beings. With the beginning of mankind, communication started in the form of face-to-face interactions. Humans have since felt the need for communication in peace, in war, in health and in sickness. Later, as humanity progressed, so did communication. Humans used nature and animals to meet their communication needs. We used fire to inform each other, we trained pigeons to deliver our messages. Compared to these past methods, there is no doubt that today we are communicating more easily. Nevertheless, we owe our respects to our ancestors for managing to use those methods.

Technological communication, i.e. telecommunication, started in the year 1840 with the use of the electrical telegraph system. The invention of telephone did not take long to follow. The father of telecommunication, Alexander Graham Bell, got the telephone patented in the year 1876. From then on, the fast growth in telecommunications started with the advancement of technology across all industries. By 1907, public radio & telegraphy service was established between the UK and USA by Marconi. In the year

1971, the first e-mail systems were created. In 1990, www (the worldwideweb) started operating over the Internet. In 1991, GSM specifications were commercially released. The ADSL technology was ushered in with copper lines in 1996. 3G (third generation) technology was commercially launched in 2003. Broadband technologies improved quickly with the introduction of new technologies. It was followed by 4G (fourth generation) technology in 2009. In 2011, 100Mbit/s broadband on optical fiber was announced. (Telecommunication timeline, http://www.google.com.tr/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwibssa93azLAhXEDiwKHYslDNQQFggcMAA&url=http%3A%2F%2Fwww.theiet.org%2Fcommunities%2Fhistory%2F175-years%2Ftimeline.cfm%3Ftype%3Dpdf&usg=AFQjCNFXzM4MCx0vXUnFm4GtIuhwE_9FFQ&bvm=bv.116274245,d.bGg)

And 5G (fifth generation) is scheduled to be launched around 2020.

Today, telecommunication is something more then just calling somebody. It is an indispensable part of our lives. We are unable to part with our smartphones. We need them always near us, always easily accessible. This is the naked truth. Today, telecommunication means faster Internet, video calls, cameras, messaging, social media, television etc. Calling is merely a basic function for today's telecommunication.

2.12. TELECOMMUNICATION BRIEF HISTORY IN TURKEY

The telecommunications market in Turkey experiences the same development as the world. Telecommunication is important for the Turkish population. The telecommunications market in Turkey has reached 39.6 bn TL in 2015 with a growth rate of 18%. The total number of xDSL subscribers is 7.2 million, and mobile broadband subscribers amount to 39,1 million with 49,6% penetration, 11,5 million fixed voice subscribers and 73,6 million mobile phone subscribers as of the end of 2015 (http://www.ttinvestorrelations.com/turk-telekom-group/investing-in-turk-telekom/turkey-telecom-sector.aspx).

According to yearly revenues, 4 big operators are sharing the market. As per the BTK (Information and Communication Technologies Authority) 2015 quarter-4 report,

Figure 15 shows the market share for total revenue for 2015. (Turkey Telecommunication Market 2015 Quarter 4 Report, http://www.btk.gov.tr/File/?path=ROOT%2f1%2fDocuments%2fSayfalar%2fPazar_Verileri%2f2015-Q4.pdf)

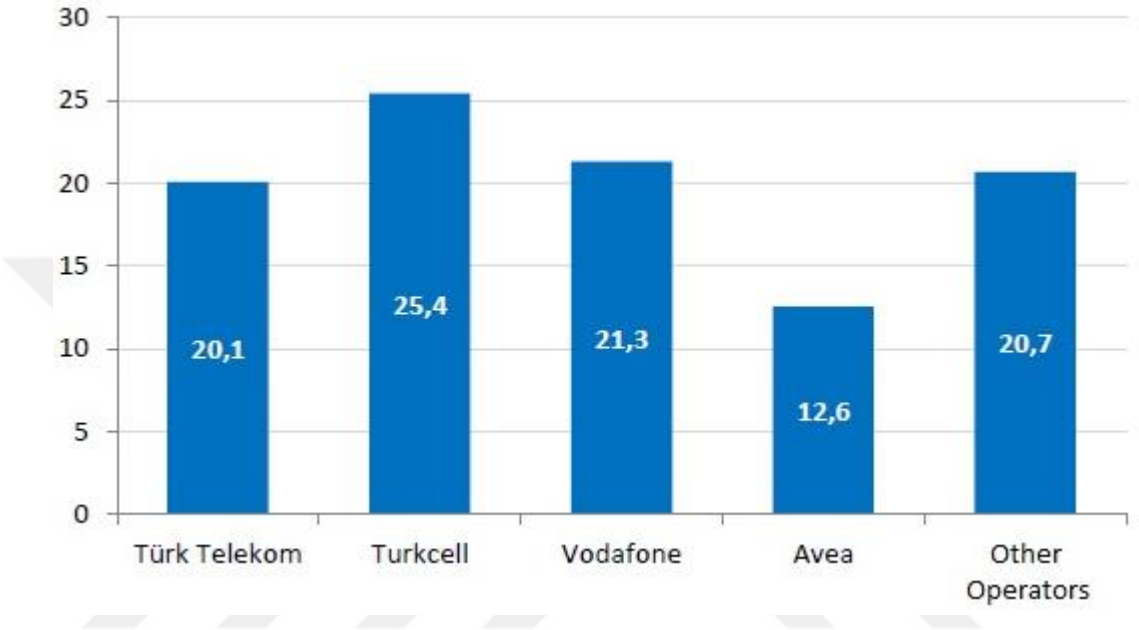

Figure 15 Operators Market Share According to 2015 Total Revenue (%) (BTK 2015 Q4 Report**)**

In the August of 2015, a milestone was reached in the Turkish Telecommunication market. The 4.5G tender was officially held by the BTK and 3 operators -Turkcell, Avea and Vodafone- bought the license for 4.5 G. Thus, the total tender fee reached 3 billion 355 million Euros (not including Value Added Tax). 4.5G is scheduled to be launched on April 1, 2016 by these 3 operators.

A decision was made by one of the major operators, Turk Telekom, to combine 3 different Turk Telekom Group companies in January 2016. According to the plan, Turk Telekom, TTNET and Avea companies will take the name Turk Telekom as one single company brand. We will see how this will affect the market in the coming years.

In this thesis, we will apply our research to the three biggest operators in Turkey and evaluate their four biggest suppliers. All operators provide services both for mobile and fixed telecommunication services. Operator 1 has more than one hundred years of

history and has power in the fixed segment. Operator 1 has around thirty-eight million subscribers. 15% of Operator 1's shares have been traded on the BIST as of May, 2008. GSM telecommunication started with Operator 2 in 1994. Operator 2 has around thirty-five million subscribers and is powerful in the mobile segment. 35,88% of Operator 2's shares are traded on the BIST and NYSE. Operator 2 is the only company quoted on the NYSE. Operator 3 is the second largest mobile operator in Turkey with around twenty-two million subscribers. Operator 3 has been serving as an operator worldwide and started to serve in Turkey in 2005.

Vendor 1 was a global France-based company serving more than one hundred thirty countries all over the world, and is now a part of a Finland-based multinational telecommunications Provider Company. Vendor 1's history goes back to early 1900s and 35% of its shares are traded on the BIST. Vendor 2 is a Sweden-based multinational telecommunications Provider Company and was founded in 1876. Vendor 2 provides its services in around one hundred eighty countries. Vendor 3 was founded in 1987 and has its headquarter in China. Vendor 3 provides service in more than one hundred forty countries all over the world with around one hundred seventy thousand employees. Vendor 4 was founded in 1985 with its headquarter in China. Vendor 4 has been traded on both SZSE and SEHK, and has around sixty-nine thousand employees all over the world.

It is understood that service quality measurement is a must for all services organizations to meet customer expectations. It is also a must for organizations to know customer expectations. Service quality is not something that only happens before, during and after service delivery; post-consumption also affects customers' service quality perceptions. Organizations should continuously measure customer expectations and perceptions to reach high service quality. Using numerous service quality variables, organizations should understand these variables well and weight their importance. The SERVQUAL model was selected in this research to measure service quality since, using the GAP model, we can also find the references values. The telecommunications industry data are explained and, using the TOPSIS model, industry-specific criteria are weighted with executives.

2.13. PURPOSE OF THE RESEARCH

The recent years saw a huge rise in the popularity of telecommunications. Every day, consumers are receiving new technologies and new devices related to telecommunications. Most technologies are now integrating with telecommunication. Numerous advertisements appear on televisions, depicting how 4.5G will change our lives. Turkey's electronic telecommunication market grew 18% in 2015. On April 1st, 2016 we will meet the 4.5G technology in telecommunication.

Operators are racing with each other to get more subscribers. This competition includes charging, new features, advertisements etc. Yet a more powerful competition is taking place about the technologies themselves. Operators need to have the enough quantity and quality of technology infrastructure to serve their customers. From this point of view, operators need vendors to provide their technology infrastructure requirements.

There are several theses and researches about operators' service quality. However, most of these researches focus on how operators serve consumers, and show operators' service quality results..

This thesis focuses on how vendors serve operators, since operator service quality starts with vendor's technology infrastructure and service quality. This thesis aims to shed light to telecommunication market service quality perception and expectation from an operator point of view. By analysing the results accurately, companies serving telecommunication operators can improve their service quality.

2.14. RESEARCH LIMITATIONS

As the purpose of the thesis suggests, this thesis focuses on service quality from the point of view of operators.

As it is a very big market and as professional companies are the subject of the thesis, it is necessary to analyse and understand the requirements well. It is also necessary to include vendor companies serving operators.

The target group of the survey is operator employees. Unfortunately, it is hard to find the real universe for taget group and reach all operators and their employees for completing the survey. The snowball method will be one of the limitations to reaching the employees. Many methods will be used to reach operator employees.

- Reached high-level managers and sent the survey link and purpose to some groups via e-mail.
- Phone calls were used to request them to fill out the survey online.
- Professional social media platform was used to reach operator employees and request them to fill out the survey.

Survey questions are aimed at both expectations and perceptions, so the questions are numerous, having an impact on the completion ratio of the survey. Two hundred sixty-eight of three hundred ninety attempted to finish the full survey.

Sample group calculation is attempted for operators' employees, but the employee quantity doesn't give the real target group since not all employees work for the operator technology segment and hence they don't have sufficient knowledge on vendor service quality. For example, operator employees come from many divisions, such as human resources, finance, site operations, law and regulations, marketing, sales, etc.

2.15. RESEARCH MODEL

Our research model uses the service quality gap model gap five. Research focuses on the gap between expected service quality and perceived service quality. Based on the service quality gap model, our modified model is shown in **Figure 16.**

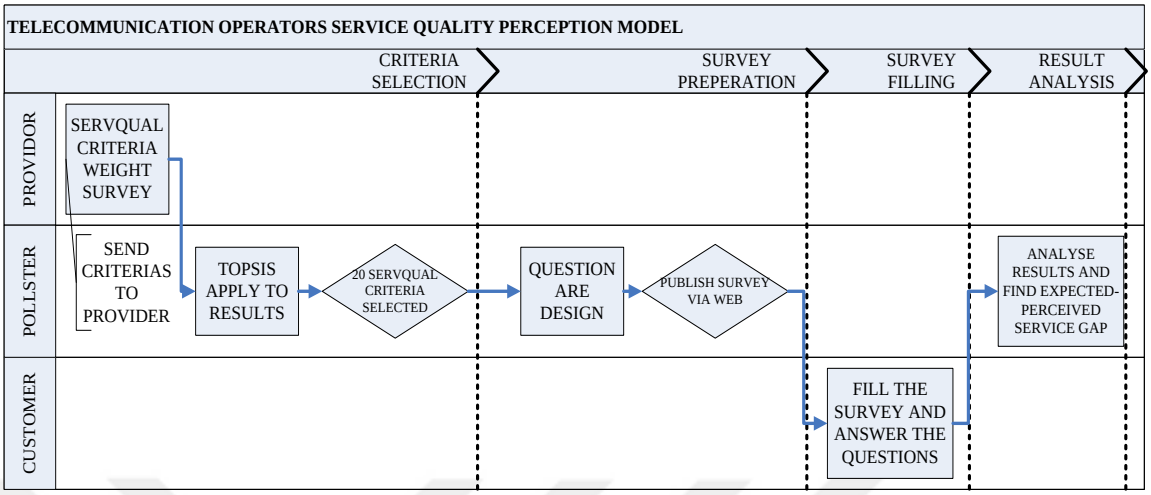

Figure 16 Research Model

2.16. VARIABLE WEIGHTING USING TOPSIS

The SERVQUAL variables and GAP analysis model were used to measure service quality. However, each variable should have a different importance, making service quality results from different criteria more important or less important. Of course, all items from an overall point of view can give the actual service quality of the service organization, although it is also important to know which variable is more important. It can help service organizations to focus and resolve the important criteria for satisfaction of service quality.

Since SERVQUAL variables are mostly standard for service quality and can be applied to different industries, the results cannot be analysed well unless the importance of the criteria for telecommunication industry is well understood. Hence, before starting the survey with operators, it was decided to weight the criteria and find the importance of each criteria. By this way, we compare the service quality results and their weight for each criterion. It shows us whether the telecommunication industry service quality results match the weighted criteria results.

To find the importance and to weight the criteria, a small-scale survey was administered to telecommunications industry professionals. Six professionals from different positions but with active roles in telecommunication industry participated. Detailed survey results are shown in Appendix B.

Table 2 shows the weighted results for each criterion. These results inform us about the level of importance applicable to each criterion.

SQWC5, SQWC6 and SQWC7 are criteria for Reliability and SQWC13 is the criterion for Security. If we check the criteria carefully, all four of these full score variables are about trust and timeliness. There is no doubt that these four criteria are very important for the telecommunications industry. Timeliness for each operation is very important to avoid subscribers pulling out of the service. Due to many security and confidentiality regulations in the telecommunications industry, dependability is highly important. You need to be dependable and on time in the telecommunications industry.

The last two criteria are SQWC17 for empathy and SQWC3 for tangibility with the lowest weighted scores among all the criteria. SQWC3 is about being well-dressed and clean. Being well dressed and clean can be very important in the food and restaurant industry. However, in the telecommunications industry, wearing personal protective equipment, especially for onsite engineers, is more important than being well-dressed. Considering that most of the daily support is provided remotely, even the customers cannot see from whom they get the service. SQWC17 is about paying individual attention to the customer. In the telecommunications industry, when a customer wants to get service, it is more important to deliver the service than pay individual attention to customer. If service is delivered, the customer will very likely be satisfied, whereas it is hard to satisfy your customer with individual attention without delivering the service.

SQWC1: Provider should always keep equipment up to date.

SQWC2: Equipment and outfitting of physical installations by the provider should be visually attractive.

SQWC3: Provider's employees should be well-dressed and clean.

SQWC4: The appearance of documents/facilities that the provider used during service should be visually attractive.

SQWC5: During a problem, provider's employees should warmly contact me to solve the problem.

SQWC6: Provider's service employees should be dependable.

SQWC7: Provider should complete delivery of their service within the promised timeline.

SQWC8: Provider should keep service records accurately.

SQWC9: Provider should give information about planned service and tasks accurately.

SQWC10: Provider's service employees should give fast service.

SQWC11: Provider's service employees should always be willing to help their customers.

SQWC12: Provider's service center should never be too busy to support their customer.

SQWC13: Provider's service employees should make the customer able to trust.

SQWC14: I should feel safe in my transactions with the provider's service employees.

SQWC15: Provider's service employees should be polite to their customers.

SQWC16: Provider's service employees should have enough knowledge to support their customers.

SQWC17: Provider's service employees should give individual attention to their customers.

SQWC18: It is expected that provider's service employees understand their customer needs.

SQWC19: Provider should get your requirements as its service value.

SQWC20: Provider's service center should have available operating hours

Table 2 Service Quality Weighted Criteria Scores

Criteria	Weighted Score
SQWC5	5,0
SQWC6	5,0
SQWC7	5,0
SQWC13	5,0
SQWC8	4,8
SQWC16	4,8
SQWC15	4,7
SQWC12	4,5
SQWC11	4,3
SQWC14	4,3
SQWC9	4,2
SQWC10	4,2
SQWC19	4,2
SQWC2	4,0
SQWC4	4,0
SQWC18	3,8
SQWC1	3,7
SQWC20	3,7
SQWC17	3,5
SQWC3	3,2

2.17. RESEARCH VARIABLES

2.17.1. Descriptive Features

Descriptive Features aim to get an idea of the target group's general information. It does not include special individual information about the target group. Overall, 11 variables are used under this topic:

- Gender
- Age
- Graduation/Education level
- Current Employer
- Experience in Years
- Sub Department

- Title
- Work Location
- Organizational Department
- Whether Get Actively Service Support from Provider or Not
- Service Importance

2.17.2. Provider Selection for Evaluatione

This topic includes only 1 variable and aims to select a provider to evaluate.

- Providers

2.17.3. Expected Service Quality

This topic includes 20 variables and aims to find the expected service quality values. Modified variables of the SERVQUAL theory are used.

- Provider should always keep equipment up-to-date.
- Equipment and outfitting of physical installations by the provider should be visually attractive.
- Provider's employees should be well-dressed and clean.
- The appearance of documents/facilities that the provider used during service should be visually attractive.
- During a problem, provider's employees should warmly contact me to solve the problem.
- Provider's service employees should be dependable.
- Provider should complete delivery of their service within the promised timeline.
- Provider should keep service records accurately.
- Provider should give information about planned service and tasks accurately.
- Provider's service employees should give fast service.
- Provider's service employees should always be willing to help their customers.
- Provider's service center should never be too busy to support their customer.
- Provider's service employees should make the customer able to trust.

- I should feel safe in my transactions with the provider's service employees.
- Provider's service employees should be polite to their customers.
- Provider's service employees should have enough knowledge to support their customers.
- Provider's service employees should give individual attention to their customers.
- It is expected that provider's service employees understand their customers' needs.
- Provider should get your requirements as its service value.
- Provider's service center should have available operating hours.

2.17.4. Perceived Service Quality

This topic includes 20 variables and aims to find the perceived service quality values. These are the modified variables of the SERVQUAL theory.

- Provider always keeps equipment up-to-date.
- Equipment and outfitting of physical installations by the provider are visually attractive.
- Provider's employees are well-dressed and clean.
- The appearance of documents/facilities that the provider uses during service are visually attractive.
- During a problem, the provider's employees warmly contact me to solve the problem.
- Provider's service employees are dependable.
- Provider completes their service within the promised timeline.
- Provider keeps service records accurately.
- Provider gives information about planned services and tasks accurately.
- Provider's service employees give fast service.
- Provider's service employees are always willing to help their customers.
- Provider's service center is never too busy to support their customers.
- Provider's service employees make the customer able to trust.
- I feel safe in my transactions with provider's service employees.

- Provider’s service employees are polite to their customers.
- Provider’s service employees have enough knowledge to support their customers.
- Provider’s service employees give individual attention to their customers.
- Provider’s service employees understand their customers’ needs.
- Provider gets your requirements as its service value.
- Provider’s service center has available operating hours.

2.18. DATA COLLECTION

In this research, we used the SERVQUAL scale to measure expected and perceived service quality. This model has a total of twenty two items for expected service quality and twenty two items for perceived service quality. In this research, modifications have been made according to telecommunication industry requirements and items have been reduced to twenty for expected service quality and twenty for perceived service quality.

The survey method was used as an application. Due to the logistical challenges of reaching out to different cities and different operator employees, an online survey was used. The target group was informed about the survey link, after which they filled out the survey online. With this method, we were able to reach employees from thirty-four cities. That is why a face-to-face survey method was not chosen.

In the descriptive features section, participants are asked to choose an answer for eight questions, with “other” options to let the target group write their own comments for three questions.

In the provider selection section, participants are asked to choose one of the answers for one question.

In the expected service quality section, participants are asked a total of twenty questions and asked to choose one of the five Likert Scale options.

In the perceived service quality section, participants are asked a total of twenty questions and asked to choose one of the five Likert Scale options.

2.19. RESEARCH SAMPLING

The telecommunication operator service quality perception research is based on a sampling universe of employees from telecommunications operators receiving service from vendors. From operator websites and/or some Internet news and personnel information about the operators, we can calculate the universe for three operators to be around fifty thousand.

With respect to operator employee numbers, Turk Telekom has the most employees with around thirty-two thousand, followed by Turkcell with around fifteen thousand employees, and Vodafone has around three thousand employees.

In any case, we cannot calculate the sampling very well as these employees come from many different departments. This is because our main target group for this research is employees who get service from vendors. However, we don't have the chance to learn this quantity exactly. Assumptions for the sampling universe for three operators is maximum ten thousand employees. We will use Cochran's quantitative sampling formula as it is mentioned in research methods in social sciences (Sait Gürbüz, Faruk Şahin, 2015).

$$n = \frac{n_0}{1 + {n_0}/{N}}$$

$$n_0 = \frac{t^2 \times s^2}{d^2}$$

N= Universe Amount

n= Sampling Amount

t= z value (for 95% reliability 1,96)

s= standard deviation

d= acceptable deviation tolerance

Difficulty for the formula, the acceptable deviation tolerance and standard deviation cannot be well known. Hence, we will use 6% as deviation tolerance and 0,5 for the standard deviation. If we put the values in the formula, we can calculate our sampling amount as two hundred sixty.

$$n_0 = \frac{1.96^2 \times 0,5^2}{0,06^2} = 266,777778$$

$$n = \frac{266,777778}{1 + {}^{266,777778}/_{10000}} = 259,845673$$

Since it is hard to get employee information from companies, this research uses the snowball sampling method. Managers and friends were reached out to disseminate the survey link.

2.20. RESEARCH HYPOTHESIS

Per research analysis results, the expected hypotheses are as follows.

The first hypothesis aims to evaluate the results in total.

H1: There is statically significant difference between expected service quality and perceived service quality.

The second hypothesis aims to evaluate the results according to SERVQUAL service dimensions.

H2: There is statically significant difference between expected service quality and perceived service quality according to SERVQUAL service dimensions (Tangibility, Reliability, Responsibility, Security, and Empathy).

The third hypothesis aims to evaluate the results according to different operators' results.

H3: There is statically significant difference between expected service quality and perceived service quality according to different operators' results.

The fourth hypothesis aims to evaluate the results according to different vendors' results.

H4: There is statically significant difference between expected service quality and perceived service quality according to different vendors' results.

The fifth hypothesis aims to evaluate the results according to the survey service importance question.

H5: There is statically significant difference between expected service quality and perceived service quality according to the service importance answer between "technical support" and the other two options.

The sixth hypothesis aims to evaluate the results according to employee experience in years.

H6: There is statically significant difference between expected service quality and perceived service quality according to employees' experience in years.

The seventh hypothesis aims to evaluate the results according to gender.

H7: There is statically significant difference between expected service quality and perceived service quality according to different genders.

The eighth hypothesis aims to evaluate the results according to operators' expectation satisfaction between the vendors.

H8: There is statically significant difference according to operators' expectation satisfaction between different vendors.

2.21. DATA ANALYSIS

To analyse the results, SPSS (Statistical Package for the Social Sciences) version twenty two is used.

2.21.1. Descriptive Features Analysis

Gender Analysis: When we check the departments responding to the survey, we can see that mostly the technical departments attended. The gender analysis results show us that technical departments are dominated by men. **Table 3** also gives us general information about the telecommunication industry's gender profile.

Table 3 Gender Analysis Results

	Frequency	Percent	Valid Percent	Cumulative Percent
Man	245	91,4	91,4	91,4
Women	23	8,6	8,6	100,0
Total	268	100,0	100,0	

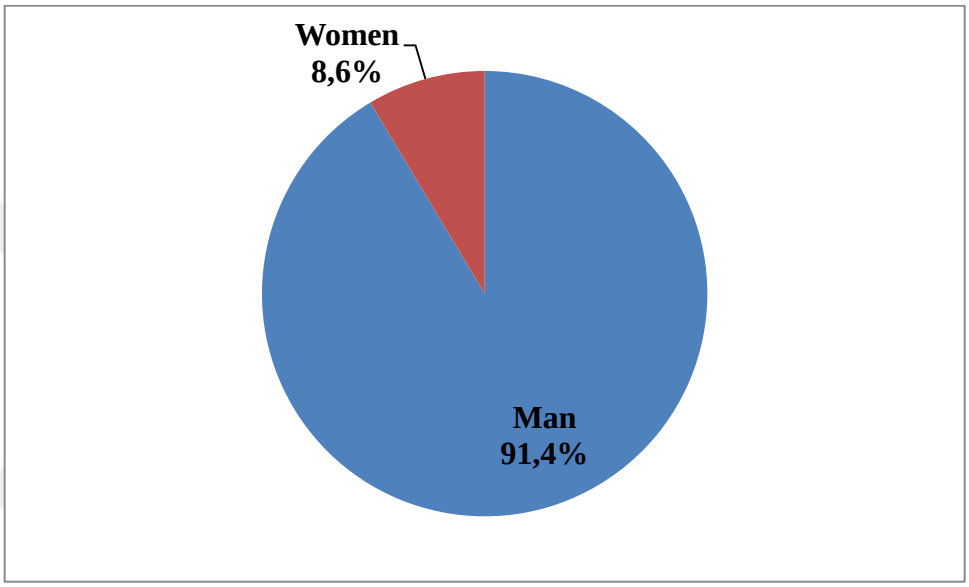

Figure 17 Gender Analysis Results

Age Analysis: The age selection result shows us that middle age, i.e. 30 to 49 years old, employees are the largest group with 75%. Employees over 50 years of age make the smallest group with 6%. However, young employees, most of whom are new graduates, were fewer than expected. Another result worth mentioning according to **Figure 18** is that it is difficult to retire from the telecommunications industry.

Table 4 Age Analysis Results

	Frequency	Percent	Valid Percent	Cumulative Percent
20-29 age	51	19,0	19,0	19,0
30-39 age	111	41,4	41,4	60,4
40-49 age	90	33,6	33,6	94,0
over 50 age	16	6,0	6,0	100,0
Total	268	100,0	100,0	

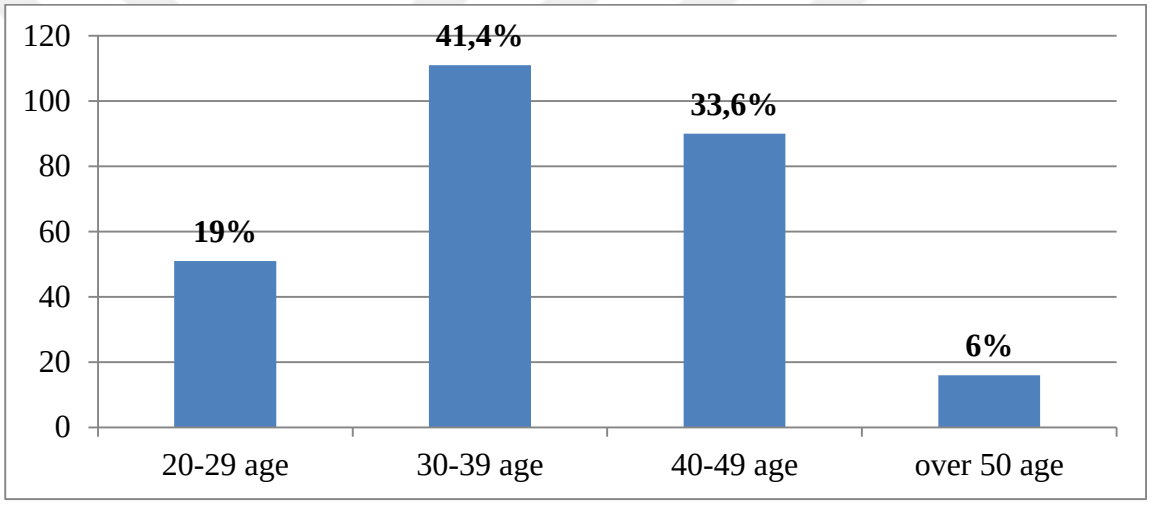

Figure 18 Age Analysis Results

Graduation/Education Level Analysis: The graduation selection results show us that nearly 96% of the employees graduated from university at different levels. 66.3% have at least a bachelor's degree from universities. Yet, the result also shows us that master's degrees and especially doctorate degrees are not preferred by the employees. The reason for this should be researched in different areas, although one of the reasons can be due to 7*24 hours as employees cannot find time to study for a master's or doctorate degree.

Table 5 Graduation Analysis Results

	Frequency	Percent	Valid Percent	Cumulative Percent
High School	11	4,1	4,1	4,1
Tech. High School	79	29,5	29,5	33,6
Bachelor	133	49,6	49,6	83,2
Master	43	16,0	16,0	99,3
Doctorate	2	,7	,7	100,0
Total	268	100,0	100,0	

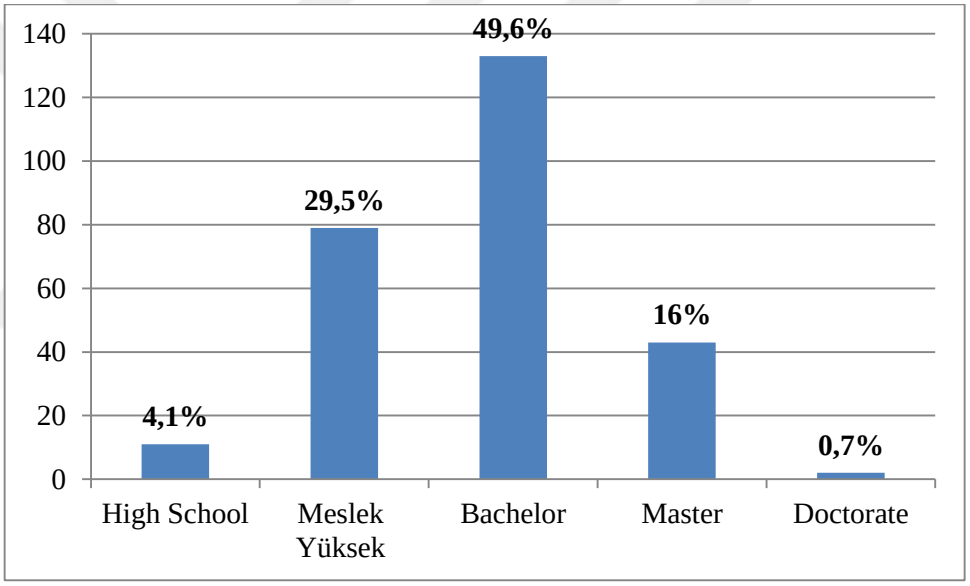

Figure 19 Graduation Analysis Results

Current Employer Analysis: Current employer selection results show us the correct proportions with the operators' current employee numbers. Operator 1 has the largest employee number (around 32000) and is in almost all cities.

Table 6 Current Employer Analysis Results

	Frequency	Percent	Valid Percent	Cumulative Percent
Operator 1	205	76,5	76,5	76,5
Operator 2	44	16,4	16,4	92,9
Operator 3	19	7,1	7,1	100,0
Total	268	100,0	100,0	

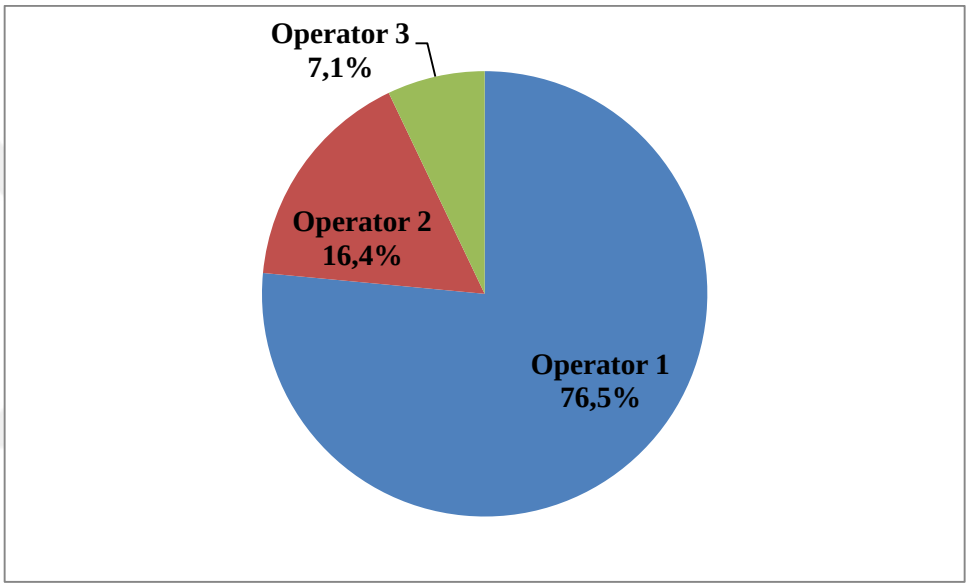

Figure 20 Current Employer Analysis Results

Experience in Years Analysis: Experience in years selection results show us the correct proportion with the age selection result. However, this result also shows that new graduates' preference for telecommunications has been decreasing in the last four years.

Table 7 Experience Analysis Results

	Frequency	Percent	Valid Percent	Cumulative Percent
0-3 years	40	14,9	14,9	14,9
4-7 years	85	31,7	31,7	46,6
8-11 years	41	15,3	15,3	61,9
12-15 years	14	5,2	5,2	67,2
Over 16 years	88	32,8	32,8	100,0
Total	268	100,0	100,0	

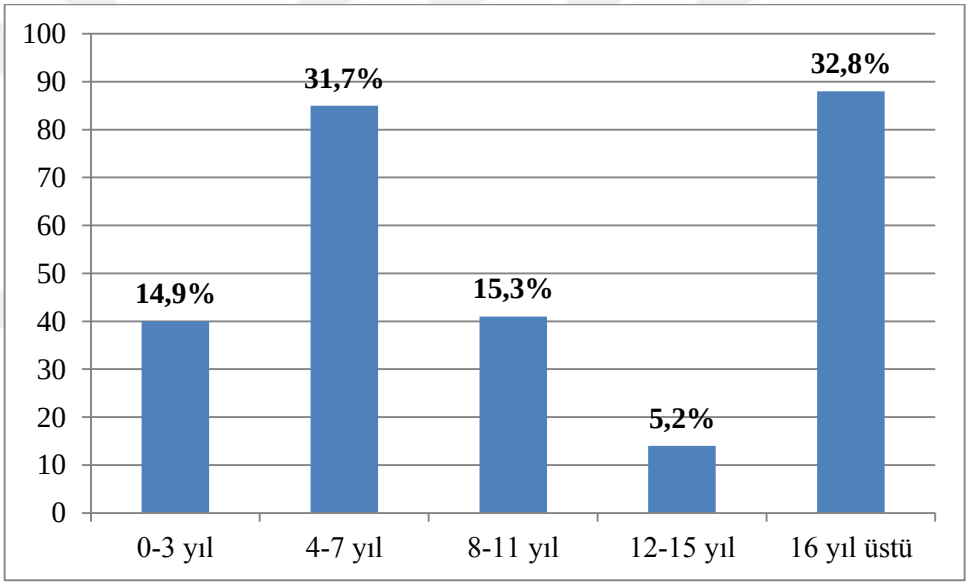

Figure 21 Experience Analysis Results

Sub Department Analysis: The sub department selection result shows us that more than half of the employees are working in operation departments. It is expected to prove valuable as most operations departments and management departments have direct relations with vendors' service teams.

Table 8 Department Analysis Results

	Frequency	Percent	Valid Percent	Cumulative Percent
Operating Department	8	3,0	3,0	3,0
Installation Department	10	3,7	3,7	6,7
Operation Department	156	58,2	58,2	64,9
Planning Department	20	7,5	7,5	72,4
Management Department	66	24,6	24,6	97,0
Other	8	3,0	3,0	100,0
Total	268	100,0	100,0	

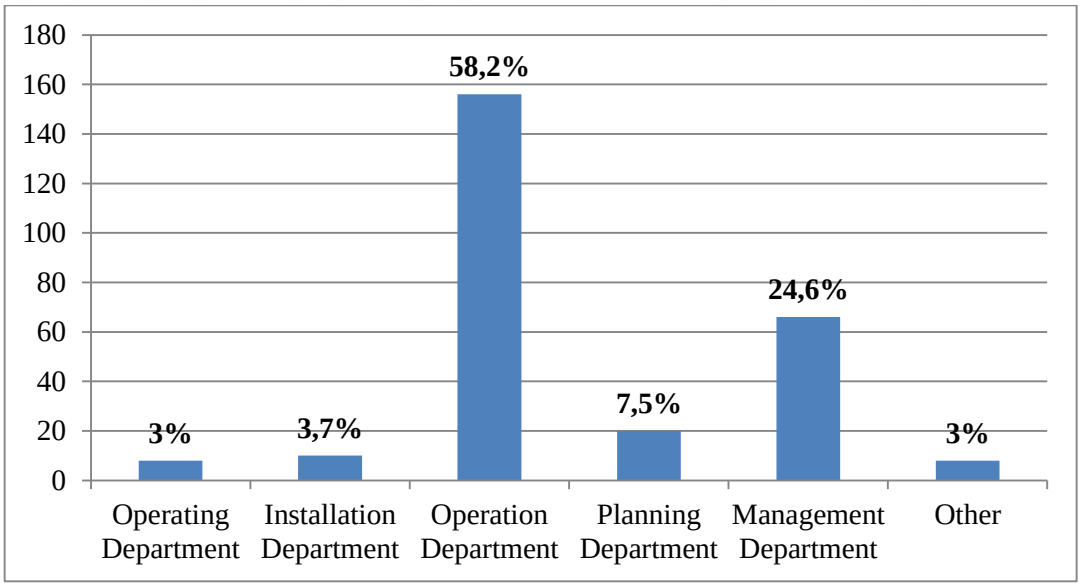

Figure 22 Department Analysis Results

Job Title Analysis: The title selection result shows us that many different levels exist in the telecommunications operators' market. There are many levels in engineering

titles. It means the telecommunications industry can provide a good career path to engineers even in technical expertise or management areas.

Table 9 Job Title Analysis Results

	Frequency	Percent	Valid Percent	Cumulative Percent
Technician	108	40,3	40,3	40,3
Engineer, Expert Asistant	28	10,4	10,4	50,7
Expert Engineer	52	19,4	19,4	70,1
Senior Expert Engineer	22	8,2	8,2	78,4
Team Leader	8	3,0	3,0	81,3
Manager	34	12,7	12,7	94,0
Group Manager	5	1,9	1,9	95,9
Director	1	,4	,4	96,3
Other	10	3,7	3,7	100,0
Total	268	100,0	100,0	

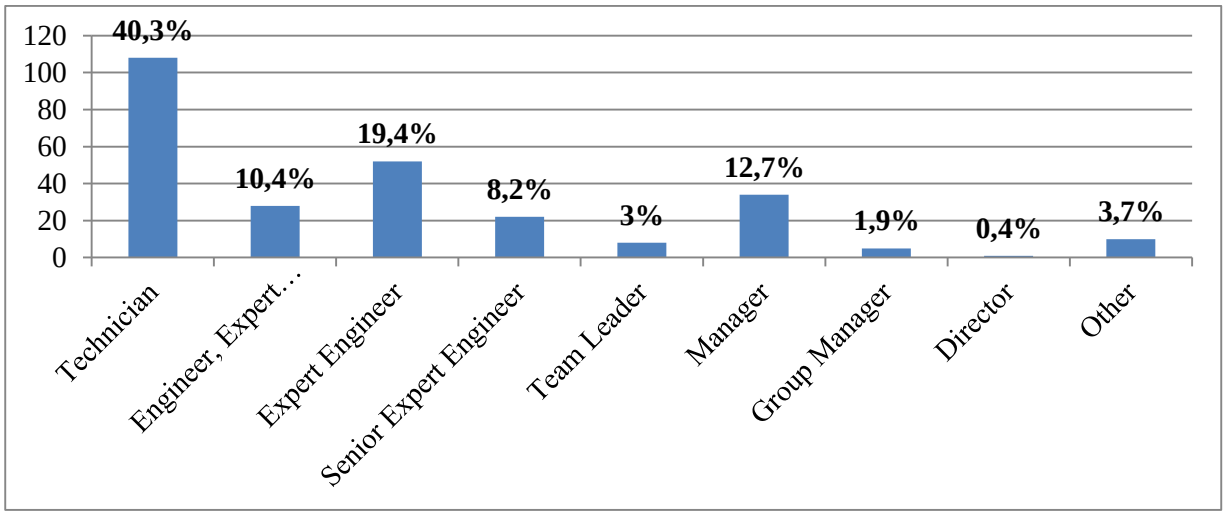

Figure 23 Job Title Analysis Results

Work Location Analysis: The work location selection result shows us 34 different cities where employees attended the survey. However, the result also shows that top 3 attendee locations are Ankara, Istanbul and Izmir. Ankara and Istanbul are home to the operators' headquarters, so it is not unexpected.

Table 10 Job Location Analysis Results

	Frequency	Percent	Valid Percent	Cumulative Percent
Adana	6	2,2	2,2	2,2
Adıyaman	1	0,4	0,4	2,6
Afyonkarahisar	2	0,7	0,7	3,4
Aksaray	3	1,1	1,1	4,5
Ankara	89	33,2	33,2	37,7
Antalya	14	5,2	5,2	42,9
Batman	1	0,4	0,4	43,3
Bursa	15	5,6	5,6	48,9
Çanakkale	1	0,4	0,4	49,3
Çankırı	1	0,4	0,4	49,6
Çorum	1	0,4	0,4	50
Diyarbakır	3	1,1	1,1	51,1
Erzurum	3	1,1	1,1	52,2
Gaziantep	2	0,7	0,7	53
Giresun	2	0,7	0,7	53,7
Gümüşhane	2	0,7	0,7	54,5
Hakkâri	1	0,4	0,4	54,9
İstanbul	46	17,2	17,2	72
İzmir	31	11,6	11,6	83,6
Kahramanmaraş	2	0,7	0,7	84,3

Table 10 (Cont.) Job Location Analysis Results

	Kastamonu	2	0,7	0,7	85,1
	Kayseri	12	4,5	4,5	89,6
	Kırıkkale	2	0,7	0,7	90,3
	Kırşehir	1	0,4	0,4	90,7
	Kilis	1	0,4	0,4	91
	Konya	2	0,7	0,7	91,8
	Mersin	1	0,4	0,4	92,2
	Rize	1	0,4	0,4	92,5
	Sakarya	1	0,4	0,4	92,9
	Samsun	4	1,5	1,5	94,4
	Sivas	1	0,4	0,4	94,8
	Tokat	1	0,4	0,4	95,1
	Trabzon	12	4,5	4,5	99,6
	Yozgat	1	0,4	0,4	100
	Total	268	100	100	

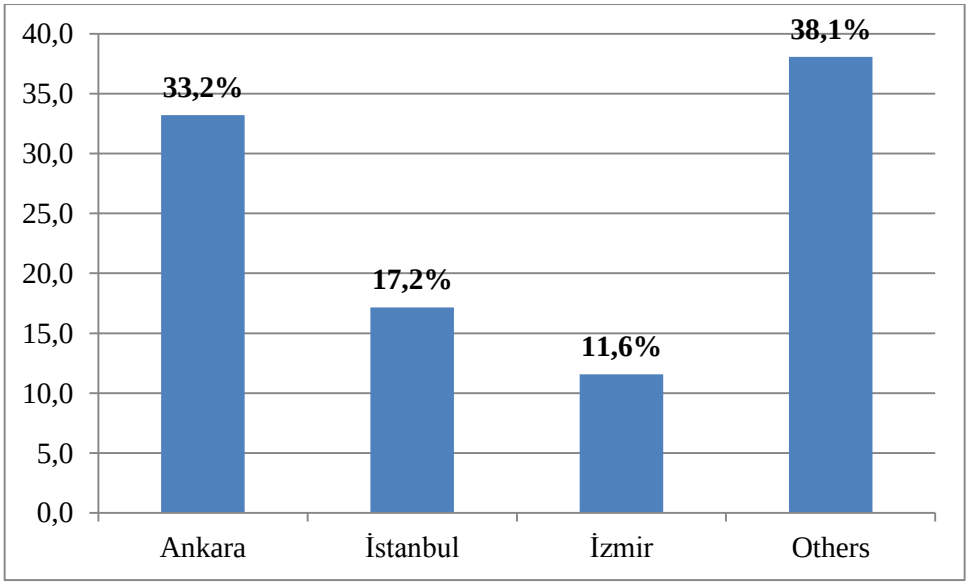

Figure 24 Job Location Analysis Results

Organizational Department Analysis: The organizational department selection result shows us that most of the respondents work at regional directorates. This is also an expected result, as most regional and city directorates have operational departments and have frequent contact with vendors' service teams.

Table 11 Organizational Department Analysis Results

	Frequency	Percent	Valid Percent	Cumulative Percent
Head Quarter	46	17,2	17,2	17,2
Regional Directorate	166	61,9	61,9	79,1
City Directorate	49	18,3	18,3	97,4
Other	7	2,6	2,6	100,0
Total	268	100,0	100,0	

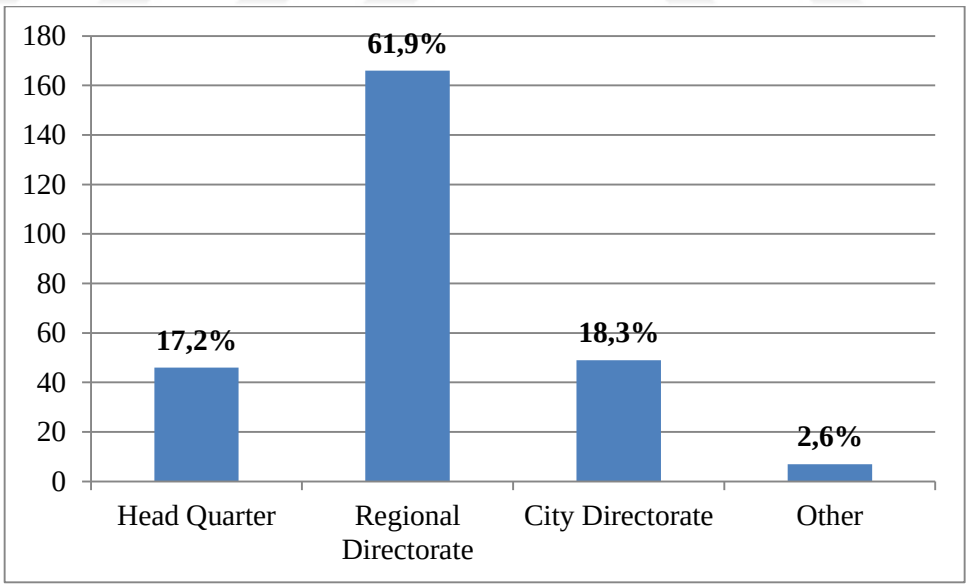

Figure 25 Organizational Department Analysis Results

Whether Get Actively Service Support from Provider Analysis: This result is as expected, with the high percentage of "yes". It is important to have the SERVQUAL service quality results with high accuracy.

Table 12 Provider Support Analysis Results

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	220	82,1	82,1	82,1
No	48	17,9	17,9	100,0
Total	268	100,0	100,0	

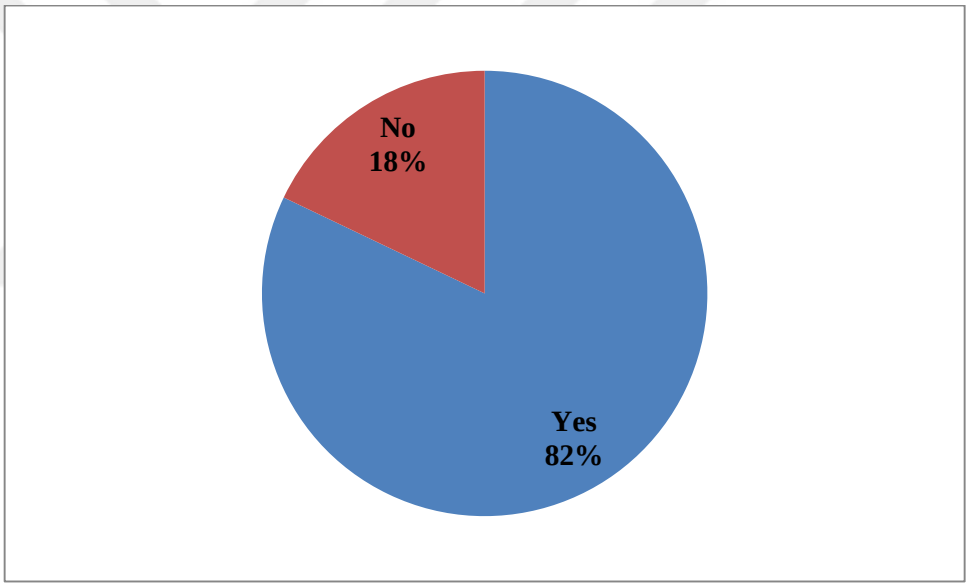

Figure 26 Provider Support Analysis Results

Service Importance Analysis: This is the most important question of descriptive features to understand the opinions of the operators' service teams. The service importance selection result shows us that product price is not important according to service teams. Many vendors are trying to improve their service quality. This result is very important to improve service quality. If you want to give better service, you should have both better technical support and better product quality. If only one of them is better, you cannot satisfy your customers fully in service quality. Another important point is that product price can be neglected in service quality.

Table 13 Service Importance Analysis Results

	Frequency	Percent	Valid Percent	Cumulative Percent
Technical Support	127	47,4	47,4	47,4
Product Price	5	1,9	1,9	49,3
Product Quality	136	50,7	50,7	100,0
Total	268	100,0	100,0	

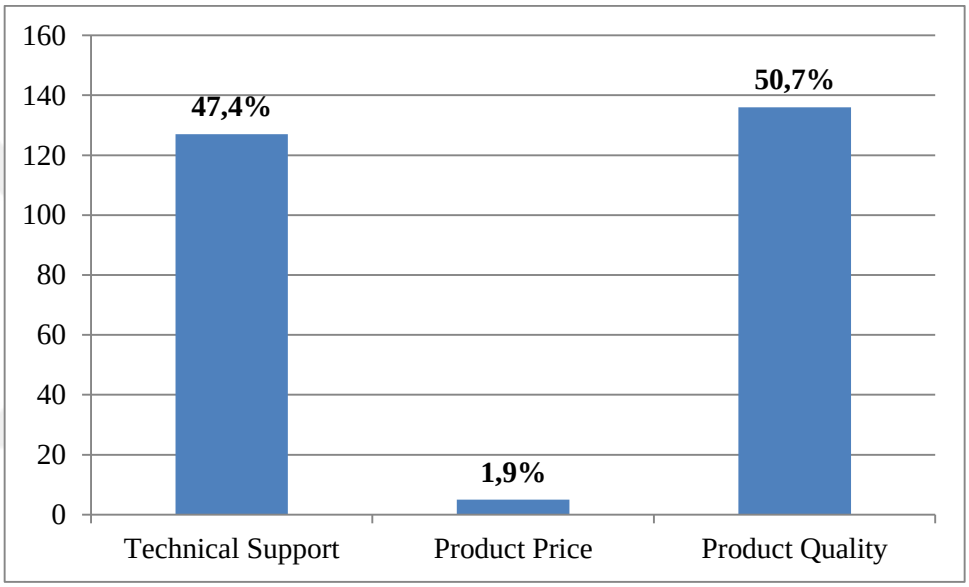

Figure 27 Service Importance Analysis Results

2.21.2. Provider Selection Analysis

In this section, we asked the respondents to choose which vendor they want to evaluate. This result also shows us the preferred vendors in service. Vendor 3 has the highest percentage with 40,3%, followed by vendor 1 with 38,1%. There is a big gap between the second and third vendors. As survey respondents will choose only one of the vendors, this result can show us about the vendor awareness on the operator side.

Table 14 Provider Selection Results

	Frequency	Percent	Valid Percent	Cumulative Percent
Vendor 1	102	38,1	38,1	38,1
Vendor 2	28	10,4	10,4	48,5
Vendor 3	108	40,3	40,3	88,8
Vendor 4	30	11,2	11,2	100,0
Total	268	100,0	100,0	

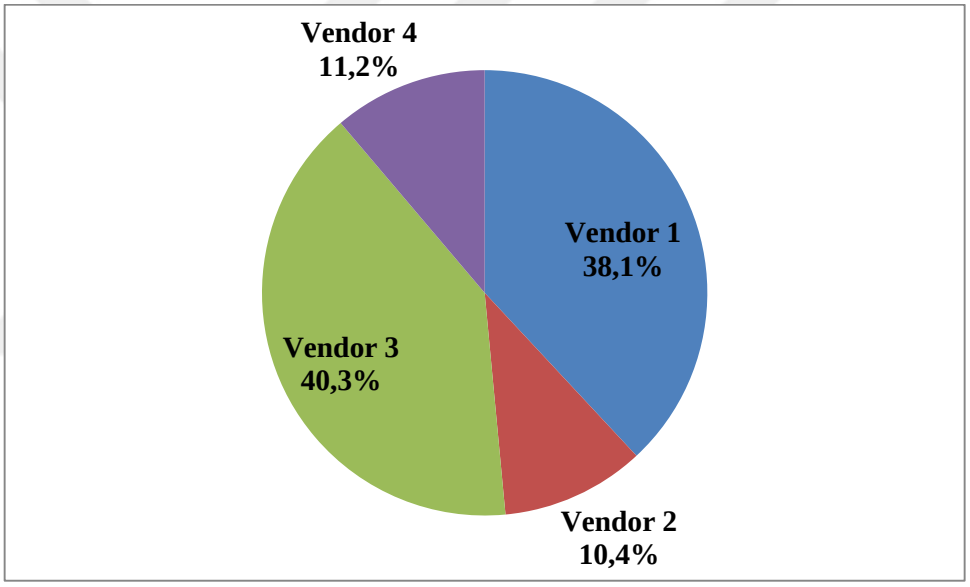

Figure 28 Provider Selection Results

We find out and underline the research studies of the thesis in detail and with clarity in this chapter. As it is very hard to reach operator employees, many limitations were encountered. However, at least we were able to reach the research sampling quantity. The hypothesis of the thesis was clearly explained with expectations underlined. The general parameters of the survey were analysed and the research profile was outlined. Yet, we did not outline the service quality itself. Chapter 3 will analyse expected and perceived service quality and underline the hypothesis results with the GAP model of SERVQUAL

CHAPTER 3

3. SERVICE QUALITY & GAP ANALYSIS

Service quality measurement results are necessary for a good analysis of industry requirements. Overall service quality result is important to get an overview of the service quality result, but it is necessary to analyse each expectation and perception result and find out the strong and weak points. The GAP model of SERVQUAL should provide clarity for each industry and as a result each gap should be found and attempts should be made to improve results for the future. In this chapter, each variable of expected and perceived service quality results is analysed. In line with the hypothesis of the research, GAPs are clarified and results are shared.

3.1. EXPECTED SERVICE QUALITY ANALYSIS

This section's results will show us the overall service quality expectation and each item's service quality expectation in the telecommunications industry. Two items in reliability are combined as "Provider should complete their service within the promised timeline", and two items in empathy are combined as "Provider's service employee employees should give individual attention to their customers".

Service quality expectation section has a total of twenty questions.

SQEM1: Provider should always keep equipment up-to-date.

SQEM2: Equipment and outfitting of physical installations by the provider should be visually attractive.

SQEM3: Provider's employees should be well-dressed and clean.

SQEM4: The appearance of documents/facilities that the provider uses during service should be visually attractive.

SQEM5: During a problem, provider's employees should warmly contact me to solve the problem.

SQEM6: Provider's service employees should be dependable.

SQEM7: Provider should complete their service within the promised timeline.

SQEM8: Provider should keep service records accurately.

SQEM9: Provider should give information about planned services and tasks accurately.

SQEM10: Provider's service employees should give fast service.

SQEM11: Provider's service employees should always be willing to help their customers.

SQEM12: Provider's service center should never be too busy to support their customers.

SQEM13: Provider's service employees should make the customer able to trust.

SQEM14: I should feel safe in my transactions with the provider's service employees.

SQEM15: Provider's service employees should be polite to their customers.

SQEM16: Provider's service employees should have enough knowledge to support their customers.

SQEM17: Provider's service employees should give individual attention to their customers.

SQEM18: It is expected that provider's service employees understand their customers' needs.

SQEM19: Provider should get your requirements as its service value.

SQEM20: Provider's service center should have available operating hours.

Five Likert were used for answers.

1: Strongly Disagree

2: Disagree

3: Neutral

4: Agree

5: Strongly Agree

If we check the overall results, it shows that service quality expectation has a high average. An average 3,3% chose "Strongly Disagree" for overall service quality expectation variables. "Disagree" yielded the same result as "Strongly Disagree". An average 3.3% "Disagree" choices were selected for overall service quality expectation variables. The ratio of "Neutral" was not so different than "Strongly Disagree" and

"Disagree". An average 4% "Neutral" choices were selected for overall service quality expectation variables. Average 32.4% "Agree" choices were selected for overall service quality expectation variables. The result for "Strongly Agree" shows us how service quality expectation is high in the telecommunication industry. Average 56.9 % "Strongly Agree" choices were selected for overall service quality expectation variables. "Strongly Agree" and "Agree" choices constitute 89.4% of all answers. And when variables are checked one by one, SQEM2 and SQEM6 got the highest scores with 4.6.

The average result for overall service quality expectation is 4.4 out of 5. This result is similar to executives weighted results. Later, for each item, we will compare the executive results with customer expectations to see whether they match. Customers also give high importance to provider's dependability. Customer expectation is high for physical installation's attractiveness. Providers should be aware of installation quality on-site. The same goes for executive results for being well-dressed, and giving individual attention is not so important for customers. Overall, all expectation scores are very high, suggesting that telecommunication operators expect high service quality from service providers.

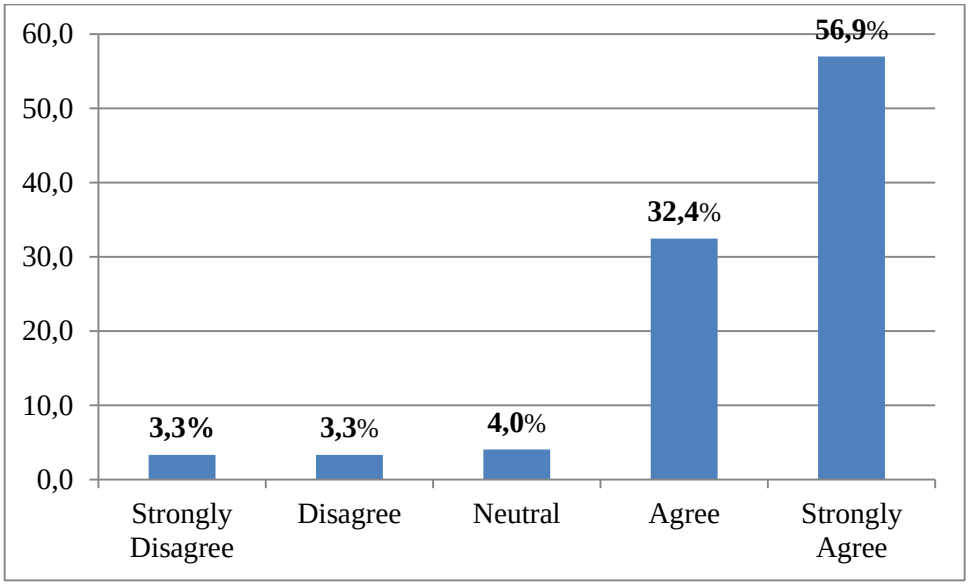

Figure 29 Service Quality Expectation Average Score Results

Table 15 Service Quality Expectation Average Scores

Expectation Variables	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Average Results
Average →	3,3	3,3	4,0	32,4	56,9	4,4
SQEM1	**3,7**	**3,0**	**1,1**	**30,2**	**61,9**	**4,4**
SQEM2	**3,4**	**2,6**	**,7**	**20,5**	**72,8**	**4,6**
SQEM3	**3,7**	**8,2**	**11,6**	**51,1**	**25,4**	**3,9**
SQEM4	**3,0**	**3,7**	**2,2**	**36,2**	**54,9**	**4,4**
SQEM5	**3,0**	**2,2**	**4,1**	**28,0**	**62,7**	**4,5**
SQEM6	**3,4**	**2,2**	**1,5**	**20,5**	**72,4**	**4,6**
SQEM7	**3,4**	**2,6**	**2,2**	**27,6**	**64,2**	**4,5**
SQEM8	**3,4**	**2,2**	**1,5**	**31,7**	**61,2**	**4,5**
SQEM9	**3,7**	**1,5**	**2,2**	**25,7**	**66,8**	**4,5**
SQEM10	**3,7**	**1,5**	**2,2**	**37,3**	**55,2**	**4,4**
SQEM11	**3,4**	**2,2**	**3,4**	**33,6**	**57,5**	**4,4**
SQEM12	**2,2**	**4,9**	**4,5**	**39,9**	**48,5**	**4,3**
SQEM13	**2,6**	**3,0**	**2,6**	**27,6**	**64,2**	**4,5**
SQEM14	**2,6**	**3,0**	**3,0**	**35,4**	**56,0**	**4,4**
SQEM15	**3,4**	**3,0**	**1,1**	**35,8**	**56,7**	**4,4**
SQEM16	**3,7**	**1,1**	**2,2**	**25,0**	**67,9**	**4,5**
SQEM17	**4,1**	**9,3**	**16,4**	**35,1**	**35,1**	**3,9**
SQEM18	**3,7**	**3,7**	**7,1**	**38,8**	**46,6**	**4,2**
SQEM19	**3,4**	**2,6**	**6,7**	**32,5**	**54,9**	**4,3**
SQEM20	**3,0**	**3,0**	**4,1**	**35,8**	**54,1**	**4,4**

3.1.1. Expectation Variable 1 Analysis

SQEM1: Provider should always keep equipment up-to-date. “Strongly Agree” was the most selected choice with 61.9%. “Agree” was selected by 30.2%. Score is 4.4.

It has the same score with the overall expectation score, ranking ninth. Executives weighted score was 3.7, and it was one of the less important variable ranking seventeenth. However, customers have an average expectation to have up-to-date equipment. Service providers need the latest, most up-to-date equipment to provide better services, because updated versions also mean resolved bugs, supported new functions etc. whereas old versions can have bugs and may no longer be supported. Support jobs need updated equipment to provide better service.

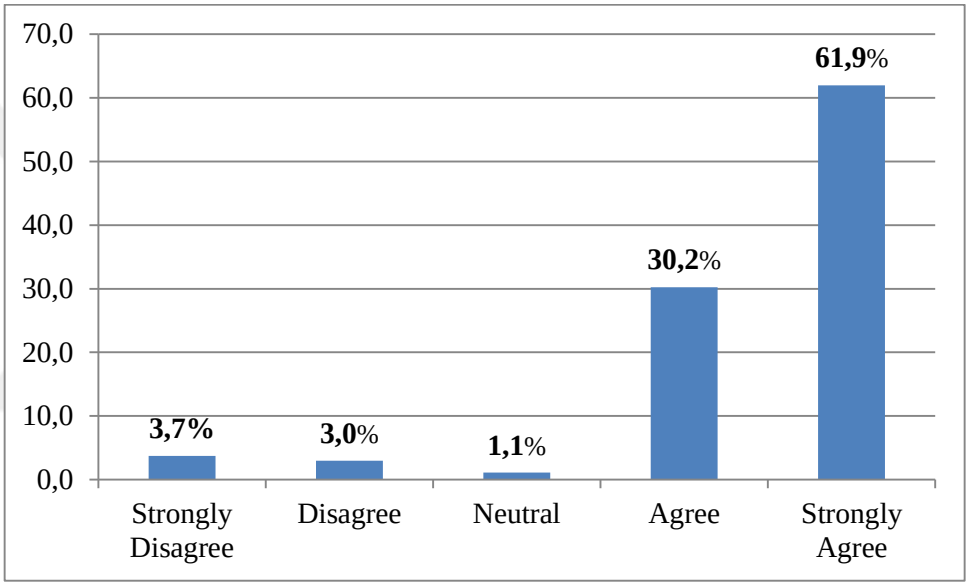

Figure 30 Service Quality Expectation Variable-1 Score Results

3.1.2. Expectation Variable 2 Analysis

SQEM2: Equipment and outfitting of physical installations by the provider should be visually attractive. Score is 4.6. "Strongly Agree" was the most selected with 72.8%. "Agree" was selected by 20.5%. This variable has the highest score and the highest "Strongly Agree" percentage of all expected service quality variables. It means vendors should give importance to installation quality.

This is one of the highest expectation scores for customer expectations, taking the first place. For executives, its weighted score is 4.0, ranking fourteenth. When checked, physical installation of equipment is almost the first step of service in the

telecommunication industry, because when customers buy equipment, the first service is to deliver it to site, and installation and commissioning. Customers want installation once but with high quality, as it is hard to reinstall later. Installation also requires many man-days of on-site support. If service providers want to meet the expectations of customers, they should start with high quality of installation service as a first step.

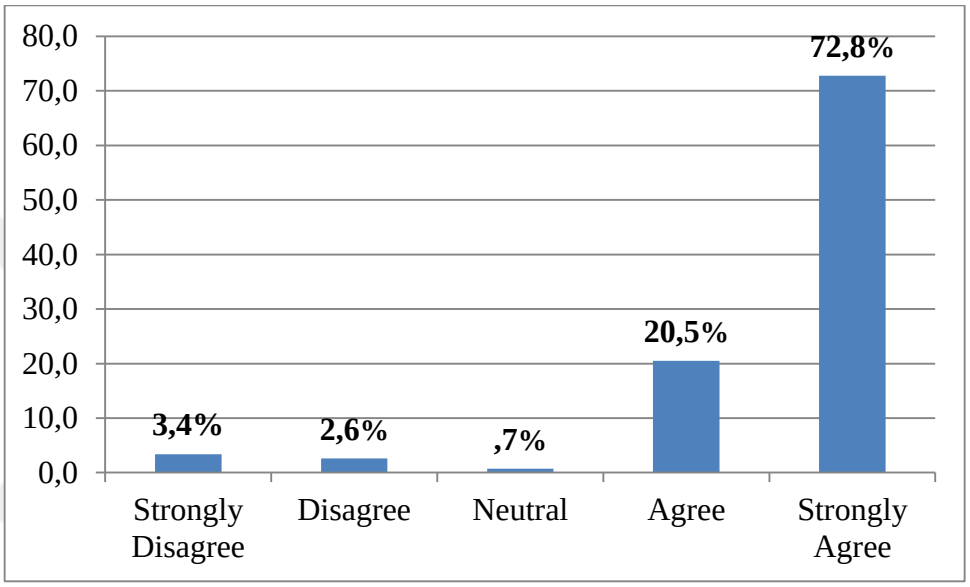

Figure 31 Service Quality Expectation Variable-2 Score Results

3.1.3. Expectation Variable 3 Analysis

SQEM3: Provider's employees should be well-dressed and clean. Score is 3.9. "Agree" was the most selected with 51.1%. "Strongly Agree" was selected by 25.4%. This variable has the lowest score and the lowest "Strongly Agree" percentage of all expected service quality variables.

This is one of the lowest expectation scores for customers, ranking twentieth. For executives, its weighted score is 3.2, coming twentieth. Hence, executives' importance and customer expectation directly match for this variable. In the telecommunications industry, technology is mostly new technologies and they don't require you to constantly go to the sites. Most of the time, customers get technical service support remotely. In Turkey, service providers generally set up technical support centers in Istanbul and

Ankara. Home offices are also an option. However, they provide support across Turkey with the latest and the most secure remote connection technologies. Therefore, customers mostly don't see who is serving them. When a customer calls a technical support engineer at 03:00 am, they don't care whether the engineer is well dressed or not (most probably at 03:00 am engineers are at home in their pyjamas), whereas they do care about how fast the engineer can solve the problem.

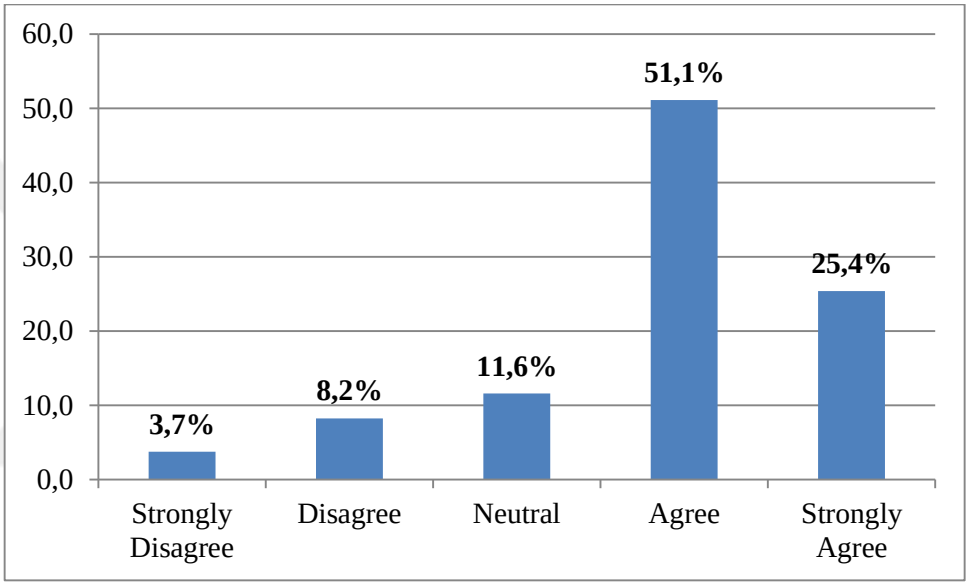

Figure 32 Service Quality Expectation Variable-3 Score Results

3.1.4. Expectation Variable 4 Analysis

SQEM4: The appearance of documents/facilities that the provider used during service should be visually attractive. Score is 4.4. "Strongly Agree" was the most selected with 54.9%. "Agree" was selected by 36.2%.

For executives, its weighted score is 4.0, taking the fifteenth place. Customer expectation is the same with an average score ranking fifteenth. It matches the executives' result. Customers always request to have more support jobs from service providers. To support better their own network and decrease their OPEX costs for service, customers need to learn more about service, especially from a technical point of view. This knowledge exchange can take time. That's why customers always need documents to

handle service supports without service provider support. This requirement is important and affects service providers' service quality. Service providers should prepare and share with customers clear and detailed documents about installation, trouble shooting, network design, command references, alarm references etc. This is very important for operators.

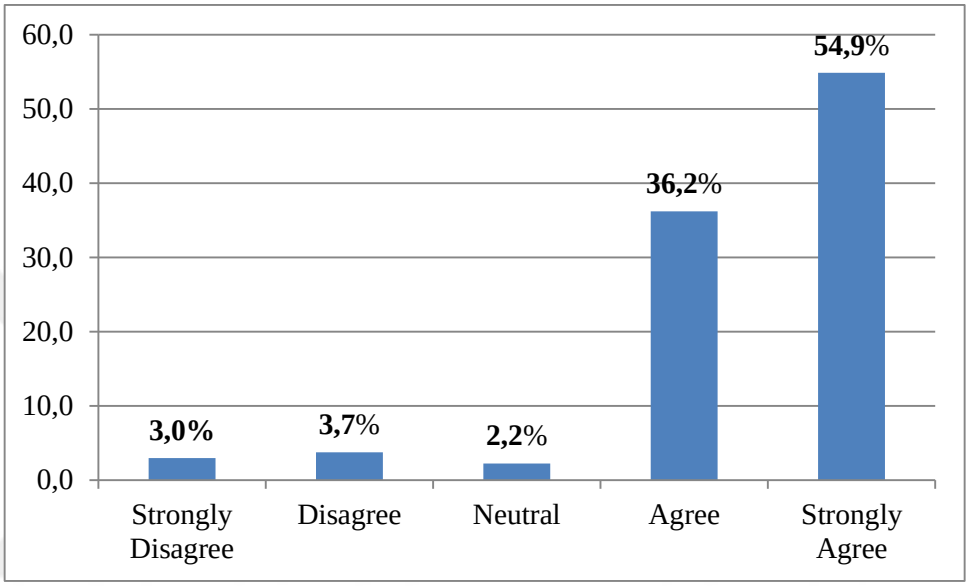

Figure 33 Service Quality Expectation Variable-4 Score Results

3.1.5. Expectation Variable 5 Analysis

SQEM5: During a problem, provider's employees should warmly contact me to solve the problem. Score is 4.5. "Strongly Agree" was the most selected with 62.7%. "Agree" was selected by 28%.

This variable gets full score for executives' weight and share the first place with three other variables. Customer expectation for this variable is over the average value and among top three of all variables. This matches the executives result. When there is a problem, customers don't want to see who makes trouble for them. When there is a problem, there is no formal communication. Customers want to see friendly faces who work like them to solve the problem quickly. If a service employee does not care about the problem and does not interact warmly with the customer, service provider's service quality will be compromised.

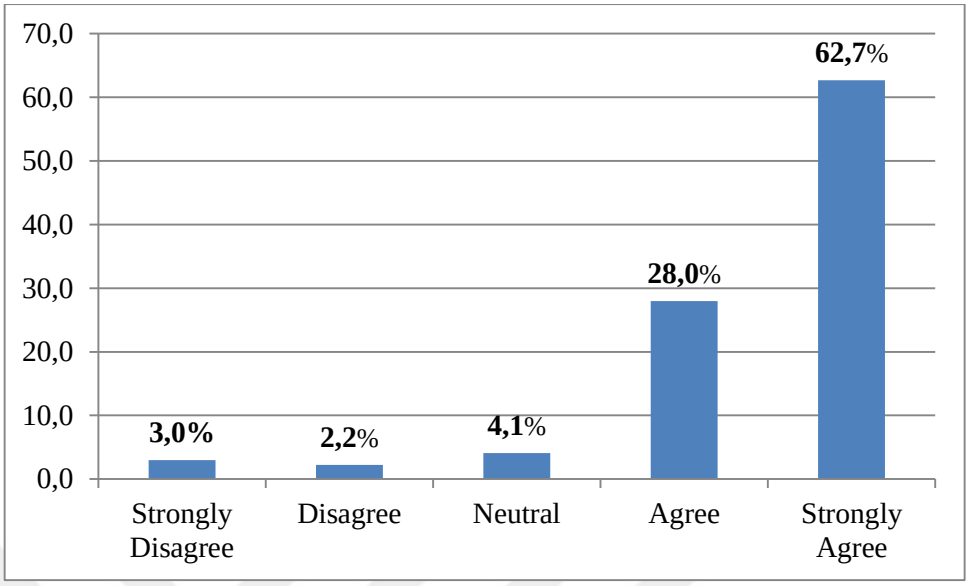

Figure 34 Service Quality Expectation Variable-5 Score Results

3.1.6. Expectation Variable 6 Analysis

SQEM6: Provider's service employees should be dependable. Score is 4.6. "Strongly Agree" choice were the most selected with the 72,4%. "Agree" was selected by 20.5%. This variable has the 2nd highest score and the 2nd highest "Strongly Agree" percentage of all expected service quality variables. It means vendors should give importance to employee dependability.

This variable gets one of the highest expectation of customers and also according to executives' information. The telecommunications industry needs high-security services. The same goes for equipment and service employees. Cyber security is one of the critical issues in the ICT industry. Cyber security is mostly understood as network security, but personnel's cyber security is also very important. Services employees must be dependable and aware of personal cyber security.

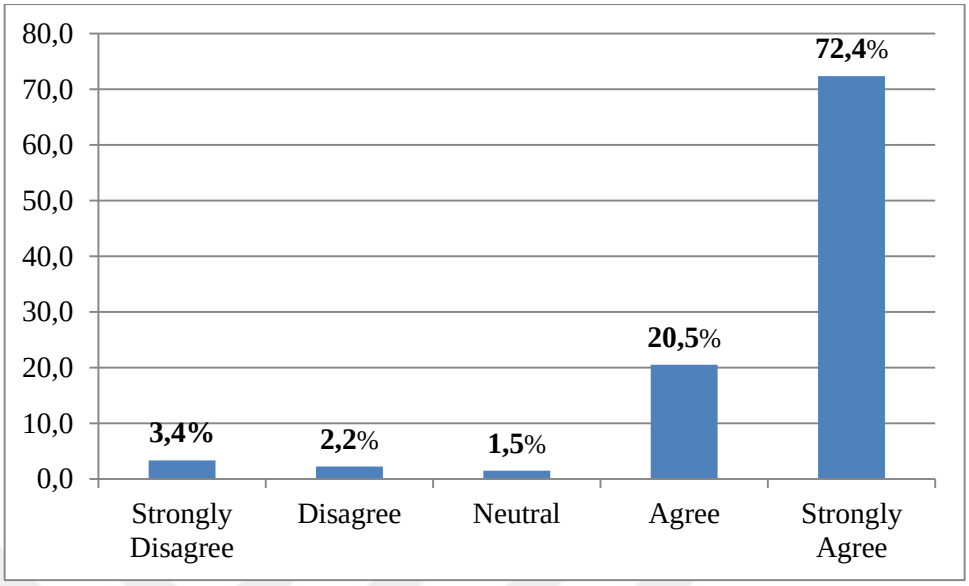

Figure 35 Service Quality Expectation Variable-6 Score Result

3.1.7. Expectation Variable 7 Analysis

SQEM7: Providers should complete their service within the promised timeline. Score is 4.5. "Strongly Agree" was the most selected with 64.2%. "Agree" was selected by 27.6%.

Executives gave full score for this variable. Customers' expectation is also high. In today's telecommunication industry, service operations are generally carried out at night-time to not disrupt the subscribers' services during day time. If vendors cannot finish the services within the planned time, there will be penalties also for operators. This is an important variable for vendors to finish their operations on time.

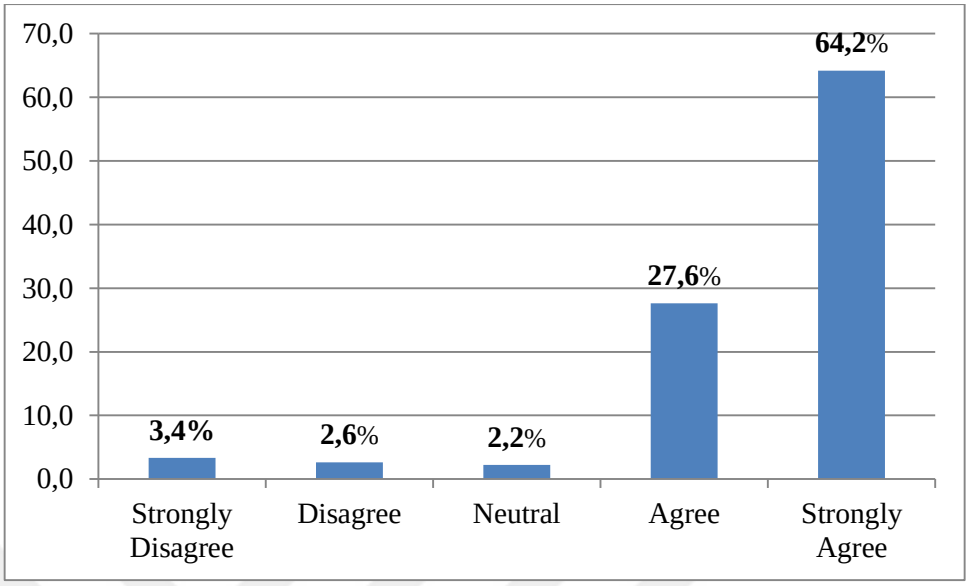

Figure 36 Service Quality Expectation Variable-7 Score Result

3.1.8. Expectation Variable 8 Analysis

SQEM8: Providers should keep service records accurately. Score is 4.5. "Strongly Agree" was the most selected with 61.2%. "Agree" was selected by 31.7%.

Along with the telecommunications industry, many services industries have started to keep history records for their services. It makes their customers satisfied to know the history and decide for the new service. For both executives' and customers' opinion, this is one of the high-importance variables. Mostly, in the telecommunications industry, most trouble tickets are created in one IT system. And most of the tickets have some SLA for vendors' handling time, recovery time, penalty duration etc. Vendors have targets to achieve regarding resolution of the problems; if records are not correct, it will lead to customer disappointment, and vendors will receive penalty for this.

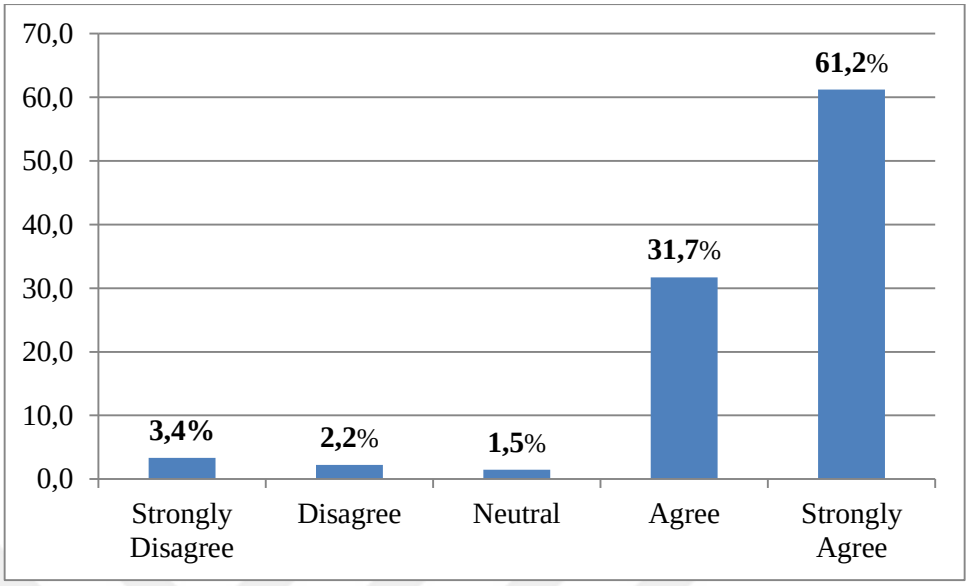

Figure 37 Service Quality Expectation Variable-8 Score Result

3.1.9. Expectation Variable 9 Analysis

SQEM9: Provider should give information about planned service and tasks accurately. Score is 4.5. "Strongly Agree" was the most selected with 66.8%. "Agree" was selected by 25.7%.

Customers' expectation score is higher than executives' weighted score. Customers are always curios about future operations and services. It is important for vendors to satisfy their customers by giving accurate information about planned services and operations. Customers do not like unplanned, urgent requests.

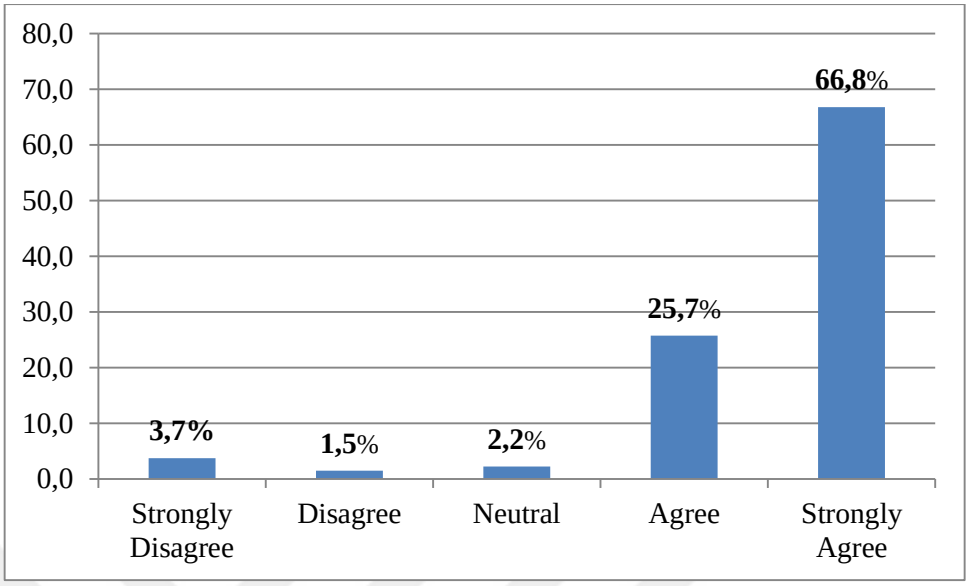

Figure 38 Service Quality Expectation Variable-9 Score Result

3.1.10. Expectation Variable 10 Analysis

SQEM10: Provider's service employees should give fast service. Score is 4.4. "Strongly Agree" was the most selected with 55.2%. "Agree" was selected by 37.3%.

Customers mostly send their problems requiring urgent support. Especially in the telecommunication industry, you cannot play favourites between subscribers. Sometimes even one subscriber can be very important. When there is a problem or planned service, customers cannot patiently wait for the vendors to handle the issue. In any case, vendors need to give quick response to customers.

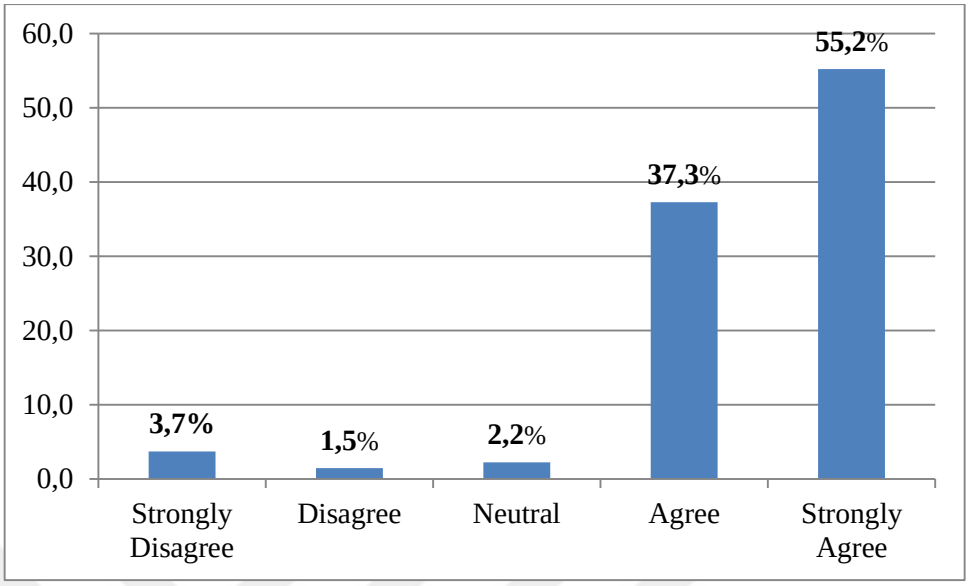

Figure 39 Service Quality Expectation Variable-10 Score Result

3.1.11. Expectation Variable 11 Analysis

SQEM11: Provider's service employees should always be willing to help their customers. Score is 4.4. "Strongly Agree" was the most selected with 57.5%. "Agree" was selected by 33.6%.

This is an important variable for both executives' and customers' expectation scores. It is somehow related to whether service employees love their jobs. In the services industry, the most important part of one's job is satisfying your customers. And this is related to whether you want to serve and help them. As an example, equipment just does what it is produced for; however, as a service employee, you cannot satisfy your customer by just doing your job. Services employees should understand and be willing to help their customers. It is also the same for the telecommunications industry. You should not just solve the problem, but also show customers that you are willing to help them kindly.

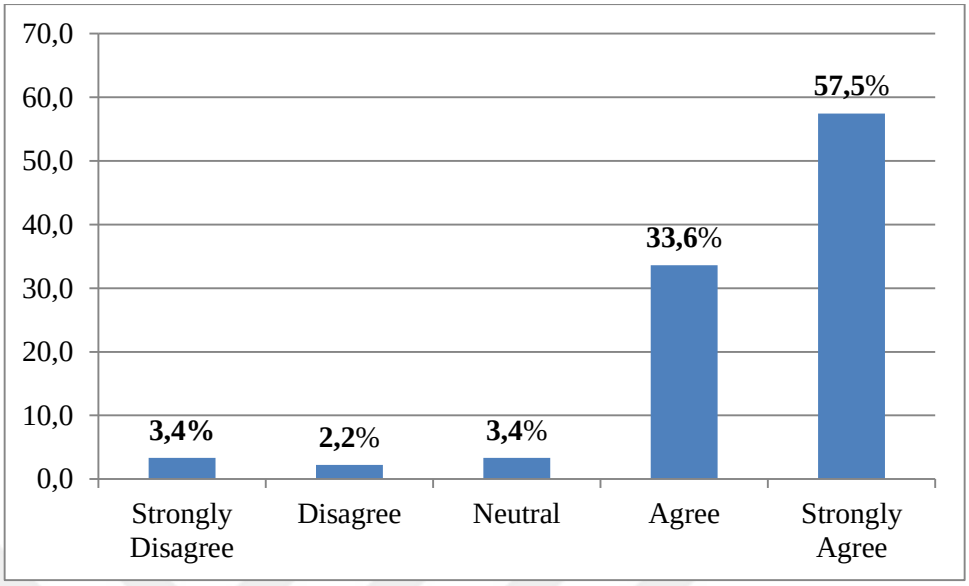

Figure 40 Service Quality Expectation Variable-11 Score Result

3.1.12. Expectation Variable 12 Analysis

SQEM12: Provider's service center should never be too busy to support their customers. Score is 4.3. "Strongly Agree" was the most selected with 48.5%. "Agree" was selected by 39.9%.

Customers' expectations score is lower than executives' weighted scores. It is also related to giving fast service to customer. If customers cannot reach the service provider due to an overloaded service center, there will be a problem for both parties. Vendors cannot handle the trouble ticket in time, while customers cannot solve their problem and have their tickets closed.

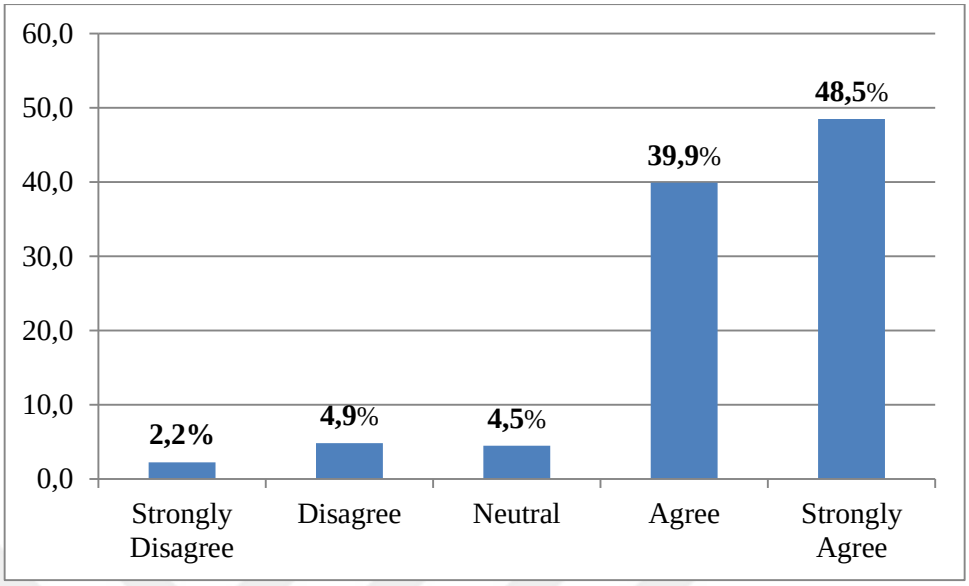

Figure 41 Service Quality Expectation Variable-12 Score Result

3.1.13. Expectation Variable 13 Analysis

SQEM13: Provider's service employees should make the customer able to trust. Score is 4.5. "Strongly Agree" was the most selected with 64.2%. "Agree" was selected by 27.6%.

Executives' opinion for this variable is a full score. For customers, it also has high expectation scores. It is somewhat related to having dependable service employees. If customers do not have confidence in their services employees, they cannot work with the service provider. Services employees must give high importance to making their customers trust them.

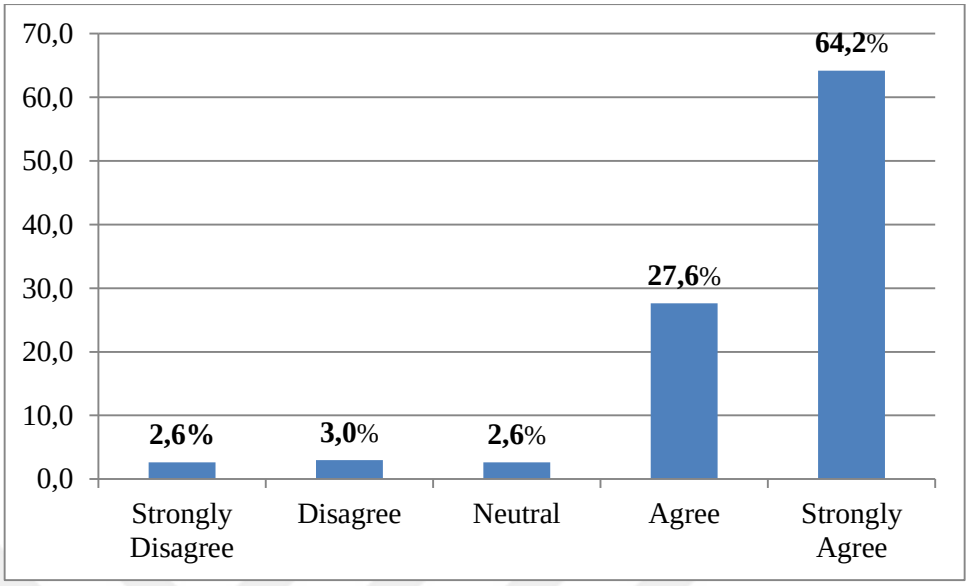

Figure 42 Service Quality Expectation Variable-13 Score Result

3.1.14. Expectation Variable 14 Analysis

SQEM14: I should feel safe in my transactions with the provider's service employees. Score is 4.4. "Strongly Agree" was the most selected with 56%. "Agree" was selected by 35.4%.

Customers should be sure that service employees will be discreet with confidential information and will not transfer secure information to third parties.

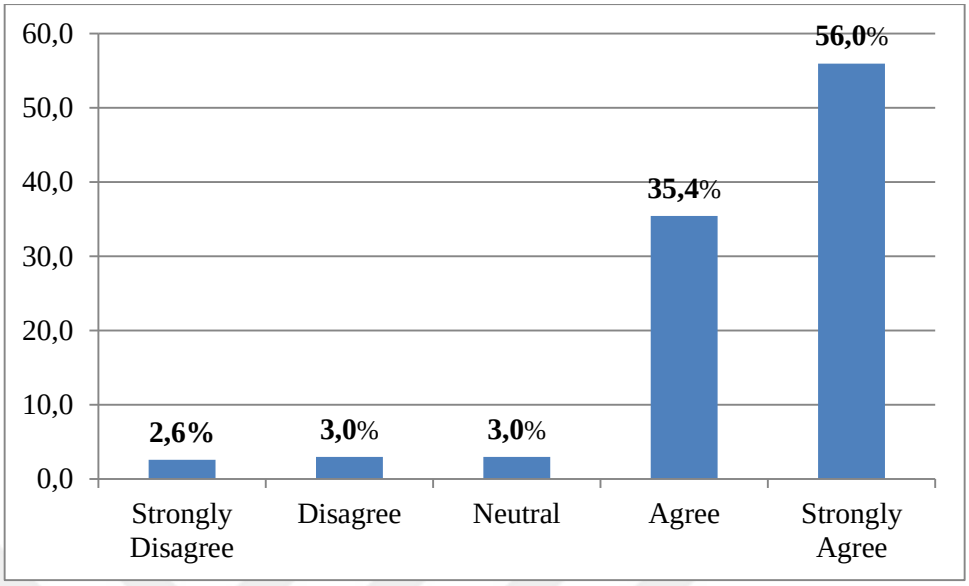

Figure 43 Service Quality Expectation Variable-14 Score Result

3.1.15. Expectation Variable 15 Analysis

SQEM15: Provider's service employees should be polite to their customers. Score is 4.4. "Strongly Agree" was the most selected with 56.7%. "Agree" was selected by 35.8%.

Not only the telecommunication industry, but almost all services industries need to be polite to their customers. Being polite always helps to communicate with consumers more efficiently.

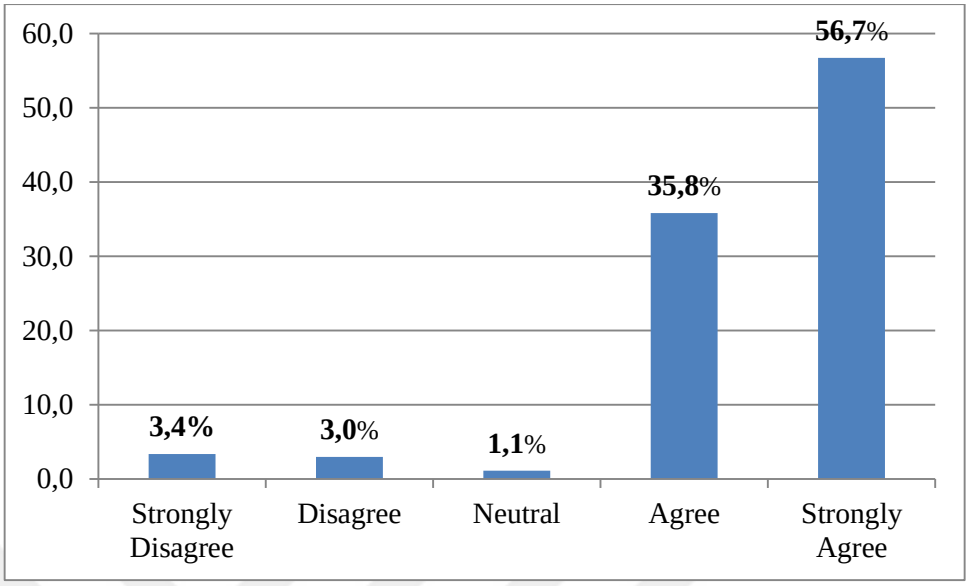

Figure 44 Service Quality Expectation Variable-15 Score Result

3.1.16. Expectation Variable 16 Analysis

SQEM16: Provider's service employees should have enough knowledge to support their customers. Score is 4.5. "Strongly Agree" was the most selected with 67.9%. "Agree" was selected by 25%.

This variable also has high importance for executives' weighted scores and customer expectations. In the telecommunications industry, most of the service employees are technical-based employees (engineers, technicians etc.). Most of the jobs between operators and vendors are technical and technology-based. Hence, it makes service employees' knowledge very important. Without knowing the details about related technical services, service employees cannot solve customers' problems, resulting in dissatisfied customers. That's why vendors always try to keep a high level of technical knowledge and/or certified service employees.

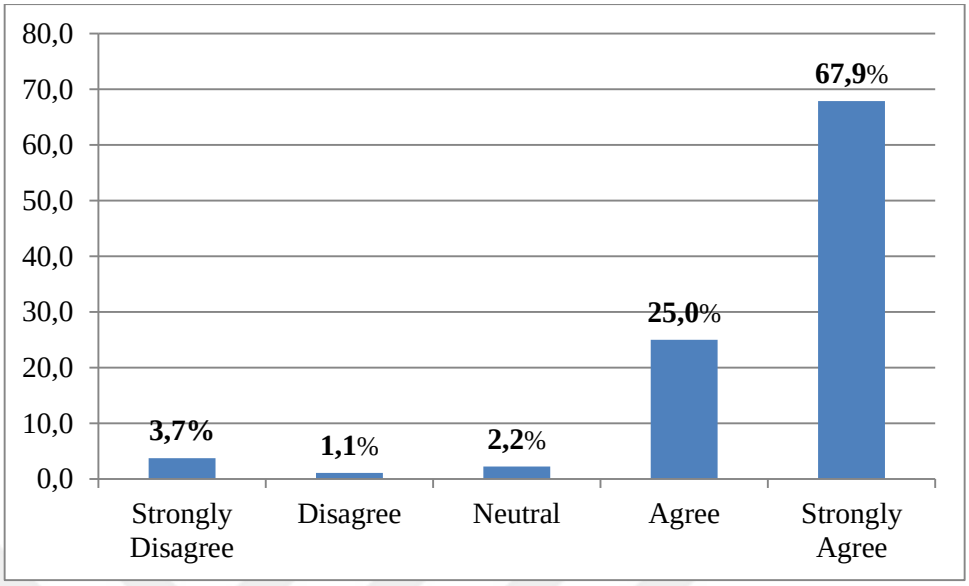

Figure 45 Service Quality Expectation Variable-16 Score Result

3.1.17. Expectation Variable 17 Analysis

SQEM17: Provider's service employees should give individual attention to their customers. Score is 3.9. "Strongly Agree" and "Agree" were selected by 35.1%. This variable has the second lowest score and the second lowest "Strongly Agree" percentage of all expected service quality variables.

This variable, both for executives' opinion and customers' expectations, has low scores. This result shows that, for the telecommunications industry, individual attention to customer is not highly important. Customers mostly want better technology solutions, quick problem solving, quick delivery etc.

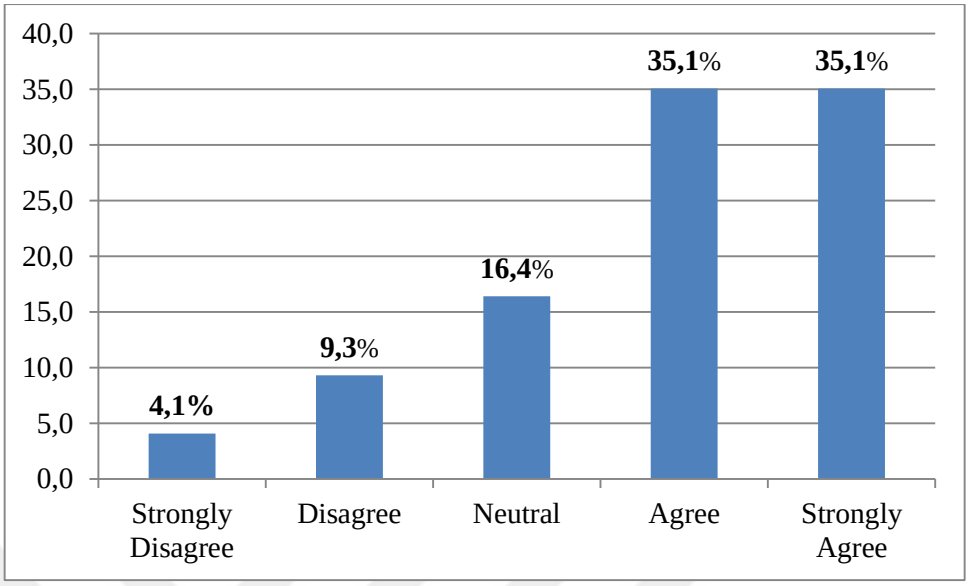

Figure 46 Service Quality Expectation Variable-17 Score Result

3.1.18. Expectation Variable 18 Analysis

SQEM18: It is expected that provider's service employees understand their customers' needs. Score is 4.2. "Strongly Agree" was the most selected with 46.6%. "Agree" was selected by 38.8%.

Executives' weighted score is lower than customers' expectations. In the telecommunications industry, you cannot survive unless you identify and understand the problems of your customers. In order to provide better services, vendors should keep track of the needs of their customers regarding technology and service criteria.

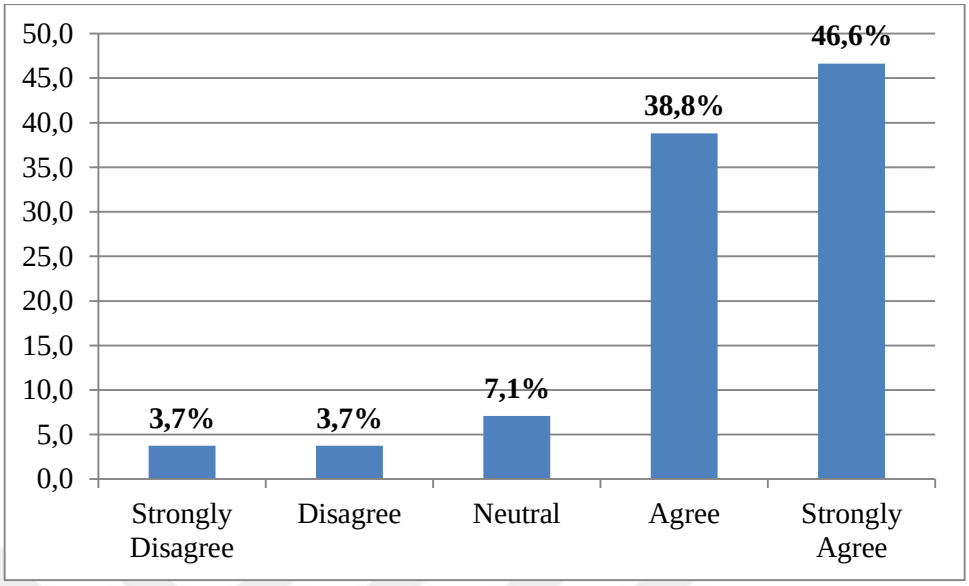

Figure 47 Service Quality Expectation Variable-18 Score Result

3.1.19. Expectation Variable 19 Analysis

SQEM19: Provider should get your requirements as its service value. Score is 4.3. "Strongly Agree" was the most selected with 54.9%. "Agree" was selected by 32.5%.

Vendors sign contracts with customers for related services, and all service requirements are defined clearly in these contracts. Hence, vendors should setup their services according to the requirements set out in their contracts with the customer. If the customer requires 7/24 support, then vendors should provide 7/24 support. Without understanding the customers' requirements and setting them as your service value, the service rendered will have no added value and will not satisfy the customer.

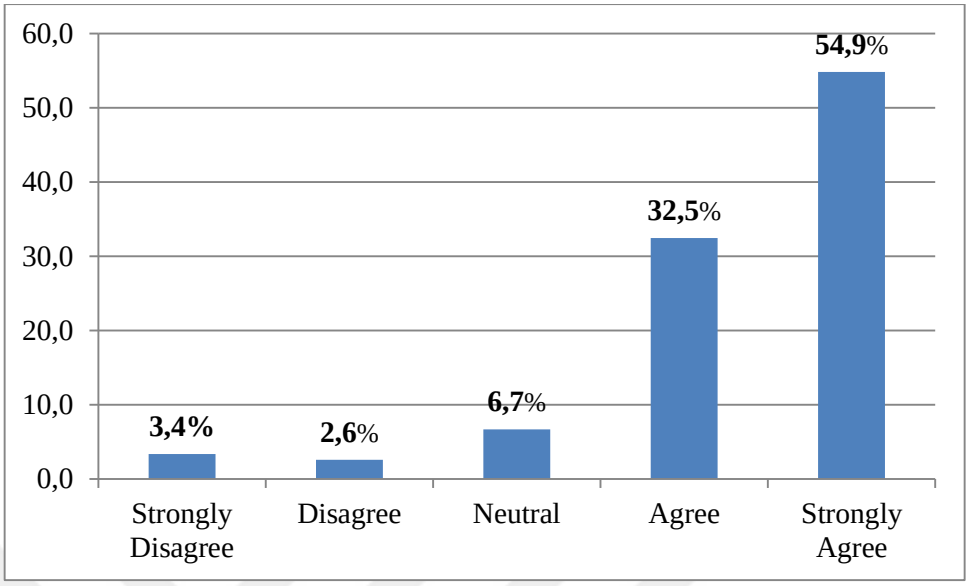

Figure 48 Service Quality Expectation Variable-19 Score Result

3.1.20. Expectation Variable 20 Analysis

SQEM20: Provider's service center should have available operating hours. Score is 4.4. "Strongly Agree" was the most selected with 54.1%. "Agree" was selected by 35.8%.

Executives' weighted score is lower than customers' expectations score. Nowadays, the telecommunications sector does not have regular working hours. The telecommunication services industry requires 7/24/365 support. Subscribers' data or voice services cannot be shut down even at night-time. Therefore, vendors should set up their service center in a way that will ensure constant availability.

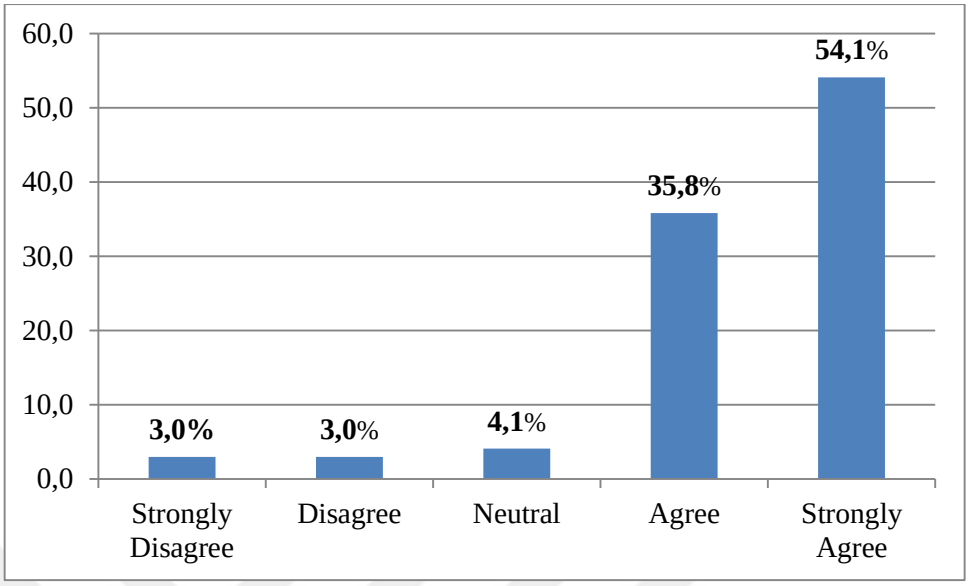

Figure 49 Service Quality Expectation Variable-20 Score Result

3.2. PERCEIVED SERVICE QUALITY ANALYSIS

This topic includes twenty variables and aims to find the perceived service quality values. These variables are the modified variables of the SERVQUAL theory. Two items in reliability are combined as "Provider completes their service within the promised timeline", and two items in empathy are combined as "Provider's service employees give individual attention to their customers"

Perceived service quality has a total of twenty questions.

SQPM1: Provider always keeps equipment up-to-date.

SQPM2: Equipment and outfitting of physical installations by the provider are visually attractive.

SQPM3: Provider's employees are well-dressed and clean.

SQPM4: The appearance of documents/facilities that the provider uses during service are visually attractive.

SQPM5: During a problem, the provider's employees warmly contact me to solve the problem.

SQPM6: Provider's service employees are dependable.

SQPM7: Provider completes their service within the promised timeline.

SQPM8: Provider keeps service records accurately.

SQPM9: Provider gives information about planned services and tasks accurately.

SQPM10: Provider's service employees give fast service.

SQPM11: Provider's service employees are always willing to help their customers.

SQPM12: Provider's service center is never too busy to support their customers.

SQPM13: Provider's service employees make the customer able to trust.

SQPM14: I feel safe in my transactions with provider's service employees.

SQPM15: Provider's service employees are polite to their customers.

SQPM16: Provider's service employees have enough knowledge to support their customers.

SQPM17: Provider's service employees give individual attention to their customers.

SQPM18: Provider's service employees understand their customers' needs.

SQPM19: Provider gets your requirements as its service value.

SQPM20: Provider's service center has available operating hours.

Five Likert were used for answers.

1: Strongly Disagree

2: Disagree

3: Neutral

4: Agree

5: Strongly Agree

If we check the overall results, it shows that perceived service quality has a lower average score than expected service quality. On average, 2.8% "Strongly Disagree" choices were selected for overall perceived service quality variables. An average of 5.8% "Disagree" choices were selected for overall perceived service quality variables. An average of 15.4% "Neutral" choices were selected for overall perceived service quality variables. An average of 49,1% "Agree" choices were selected for overall perceived service quality variables. An average of 26,9% "Strongly Agree" choices were selected for overall perceived service quality variables. "Strongly Agree" and "Agree" constitute 76% of all answers. All variables' scores are analysed below for each vendor.

This result shows that, in the telecommunications industry, operators' expectations cannot be met. Hence, there is a GAP to satisfy customers' requirements. Vendors should

give more value their services. Detailed analysis for each vendors' perceived service quality results are shown in **Appendix C**. Results suggest that vendors are unable to meet customer requirements, or unable to sufficiently demonstrate the value of their services to their customers.

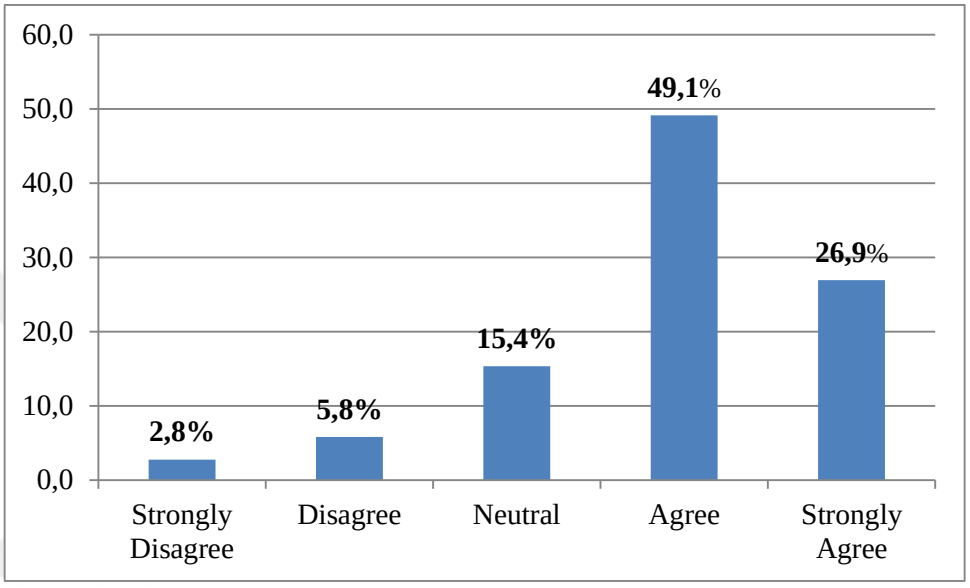

Figure 50 Service Quality Perception Average Score Result

Table 16 Service Quality Perception Average Scores

Perceived Variables	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Average Results
Average→	2,8	5,8	15,4	49,1	26,9	3,9
SQPM1	**2,2**	**9,0**	**12,3**	**49,6**	**26,9**	**3,9**
SQPM2	**3,4**	**4,1**	**13,1**	**49,6**	**29,9**	**4,0**
SQPM3	**2,6**	**4,9**	**13,4**	**54,1**	**25,0**	**3,9**
SQPM4	**3,4**	**7,8**	**14,9**	**50,4**	**23,5**	**3,8**
SQPM5	**3,0**	**5,6**	**13,1**	**50,0**	**28,4**	**4,0**
SQPM6	**3,0**	**3,0**	**13,8**	**50,4**	**29,9**	**4,0**
SQPM7	**3,0**	**6,7**	**18,7**	**44,4**	**27,2**	**3,9**
SQPM8	**3,0**	**7,8**	**19,0**	**44,4**	**25,7**	**3,8**
SQPM9	**3,4**	**6,7**	**17,2**	**47,4**	**25,4**	**3,8**
SQPM10	**3,0**	**7,1**	**15,3**	**48,1**	**26,5**	**3,9**
SQPM11	**2,2**	**6,0**	**14,6**	**51,5**	**25,7**	**3,9**
SQPM12	**3,4**	**9,0**	**19,4**	**42,9**	**25,4**	**3,8**
SQPM13	**2,6**	**4,9**	**19,8**	**46,6**	**26,1**	**3,9**
SQPM14	**3,0**	**4,9**	**16,8**	**48,5**	**26,9**	**3,9**
SQPM15	**2,6**	**0,7**	**7,1**	**53,0**	**36,6**	**4,2**
SQPM16	**1,9**	**4,9**	**15,7**	**48,5**	**29,1**	**4,0**
SQPM17	**2,2**	**7,5**	**19,4**	**46,6**	**24,3**	**3,8**
SQPM18	**2,2**	**4,9**	**13,4**	**54,9**	**24,6**	**3,9**
SQPM19	**2,2**	**5,6**	**16,4**	**50,7**	**25,0**	**3,9**
SQPM20	**3,0**	**5,2**	**13,8**	**51,1**	**26,9**	**3,9**

3.2.1. Perception Variable 1 Analysis

SQPM1: Provider always keeps equipment up-to-date. - **DISSATISFIED**

Average score is 3.9. Compared to the expectation score, which is 4.4, vendors could not satisfy this variable. Equipment that is not up-to-date always carries the risk of having bugs, and it is hard to give service if a version is no longer supported. The result shows that customer satisfaction can be increased if vendors update their equipment.

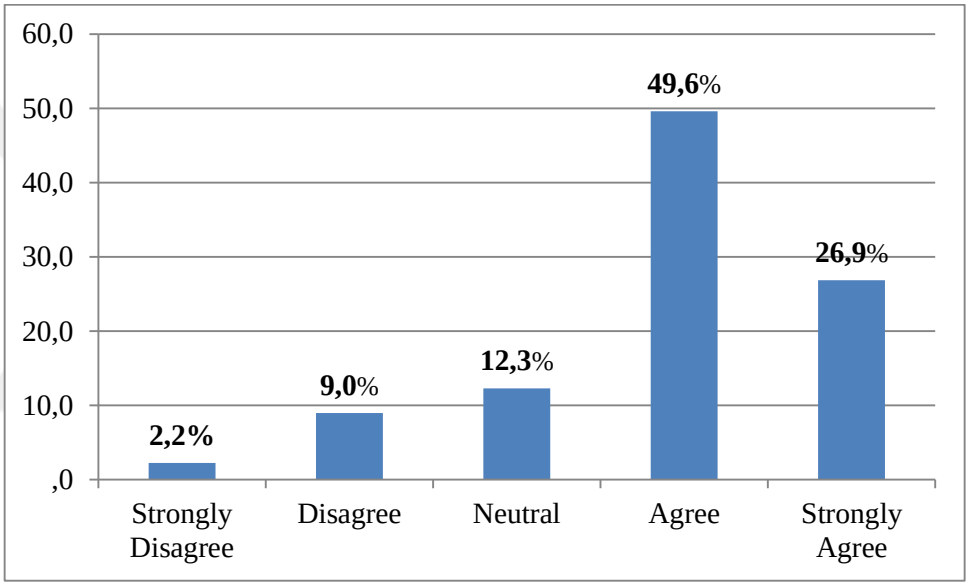

Figure 51 Service Quality Perception Variable-1 Score Result

3.2.2. Perception Variable 2 Analysis

SQPM2: Equipment and outfitting of physical installations by the provider is visually attractive. - **DISSATISFIED**

Average score is 4.0. This result also failed to meet customer expectations. For the customer expectations result, this variable has one of the highest scores. Vendors should give more importance to the quality of their physical installations to satisfy customer expectations.

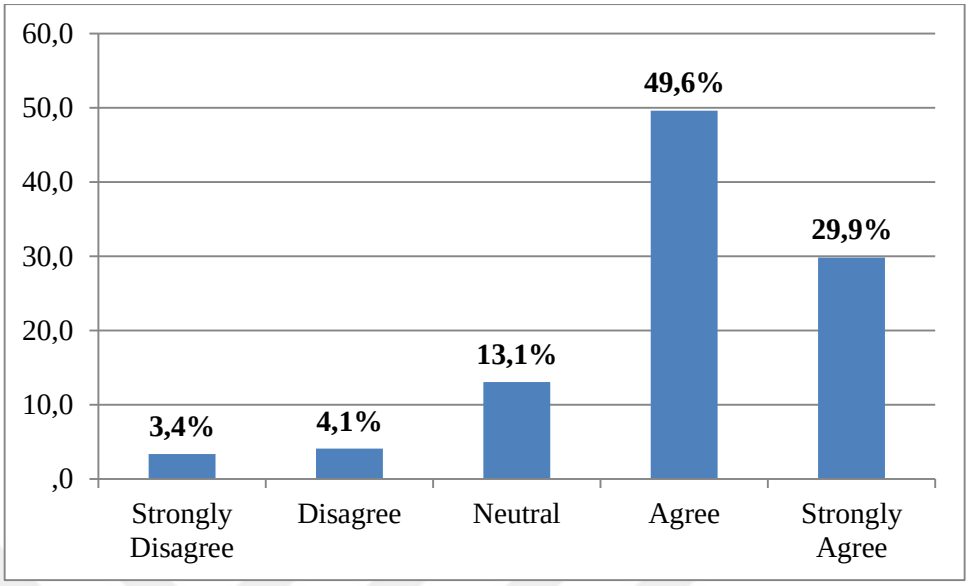

Figure 52 Service Quality Perception Variable-2 Score Result

3.2.3. Perception Variable 3 Analysis

SQPM3: Provider employees are well-dressed and clean. **- SATISFIED**

Average score is 3.9. This variable has the same score with customer expectations. This means that vendors meet the operators' expectations for dressing well. However, as mentioned before, this is one of the lowest expectation scores for customers. Therefore, even if vendors meet expectations, it does not add great value to their services.

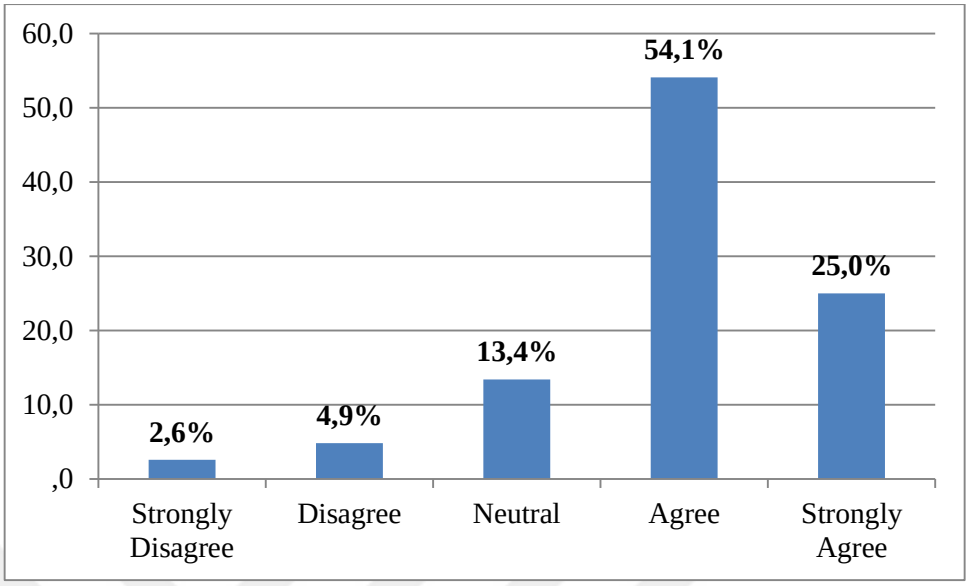

Figure 53 Service Quality Perception Variable-3 Score Result

3.2.4. Perception Variable 4 Analysis

SQPM4: The appearance of documents/facilities that the provider used during service is visually attractive. **- DISSATISFIED**

Average score is 3.8. For the customer expectation score, this variable could not be met by vendors. Perceived score shows that vendors' documentation quality about the service is far from meeting customer expectations.

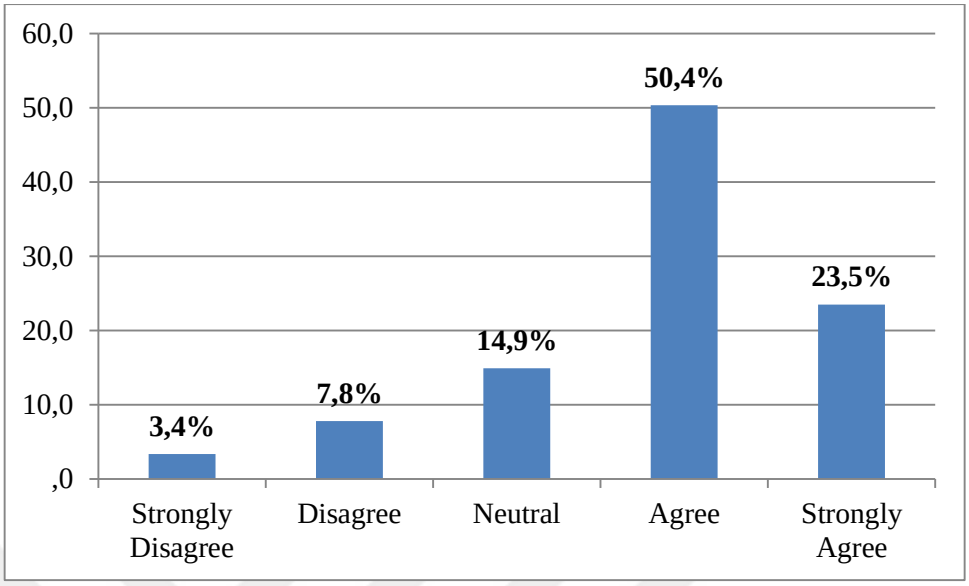

Figure 54 Service Quality Perception Variable-4 Score Result

3.2.5. Perception Variable 5 Analysis

SQPM5: During a problem, provider's employees warmly contact me to solve the problem. **- DISSATISFIED**

Average score is 4.0. This score is also far from the customer expectations scores. Vendors should check with their employees about customer communications. Communication in this context is not limited to technical matters, but includes all communications with the customer. Therefore, vendors should improve the way they contact their customers. By this way, customer perception can be increased for this variable.

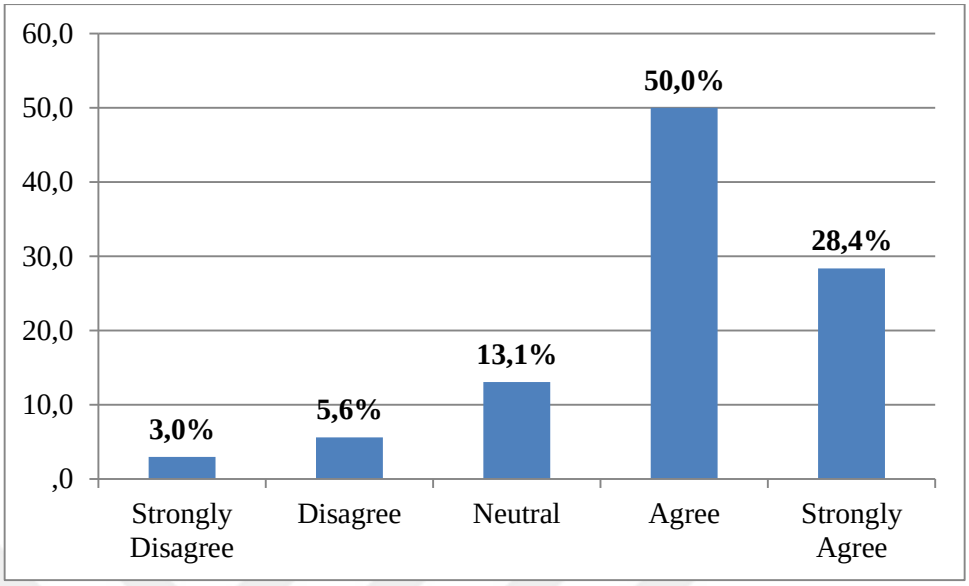

Figure 55 Service Quality Perception Variable-5 Score Result

3.2.6. Perception Variable 6 Analysis

SQPM6: Provider's service employees are dependable. **- DISSATISFIED**

Average score is 4.0. This variable has one of the highest scores for customer expectations. Yet, as results indicate, vendors could not satisfy customer expectations. Of course, this does not mean that service employees are undependable; nevertheless, service employees should make more effort to change customer perceptions about this variable.

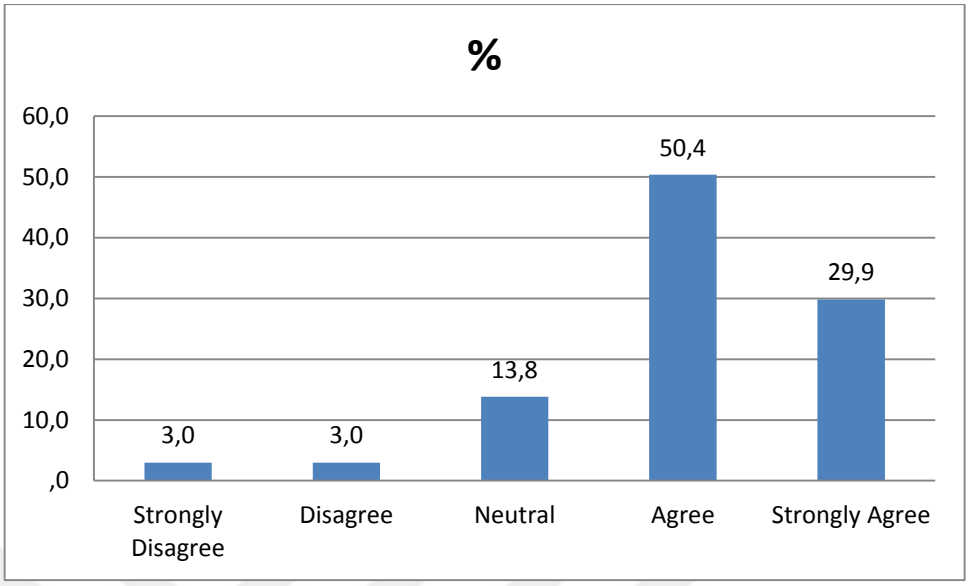

Figure 56 Service Quality Perception Variable-6 Score Result

3.2.7. Perception Variable 7 Analysis

SQPM7: Provider completes their service within the promised timeline. - **DISSATISFIED**

Average score is 3.9. Vendors are also far from meeting the expectations of customers for this variable. It is important for vendors to be trustworthy. If a service cannot be completed within the promised timeline, there will be penalties per contract terms. Customers' perceptions show that vendors should make more effort to make the deadlines.

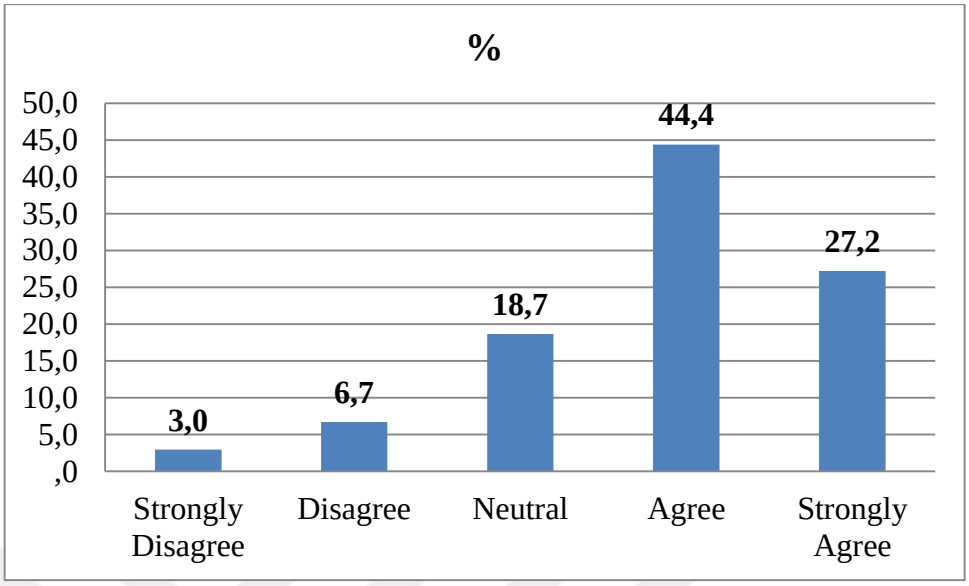

Figure 57 Service Quality Perception Variable-7 Score Result

3.2.8. Perception Variable 8 Analysis

SQPM8: Provider keeps service records accurately. **- DISSATISFIED**

Average score is 3.8. The perception result shows that customer expectations could not be met. Even though most of the service requests are created and followed up through IT systems, it seems like there are still many manual records that must be collected. These records have to be duly recorded. Most of the services given on-site need paper records. Afterwards, all records need to be collected and properly archived by vendors.

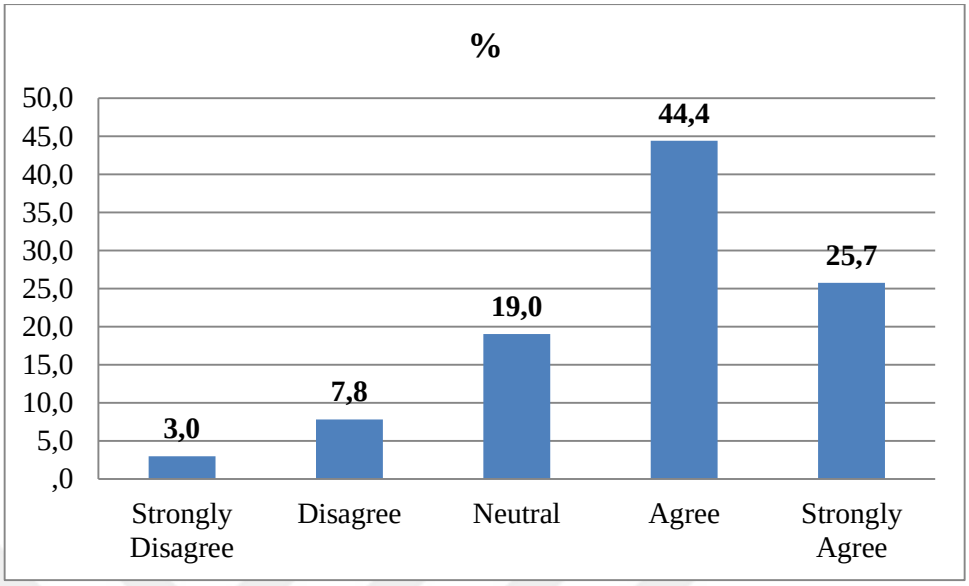

Figure 58 Service Quality Perception Variable-8 Score Result

3.2.9. Perception Variable 9 Analysis

SQPM9: Provider gives information about planned services and tasks accurately.

- DISSATISFIED

Average score is 3.8. In the telecommunications industry, vendors are not allowed to operate on customers' networks without permission and authorization. However, perceived scores for this variable show that vendors still need to improve their capability for this variable. For better archived records, one suggestion would be to use IT systems more to replace paperwork.

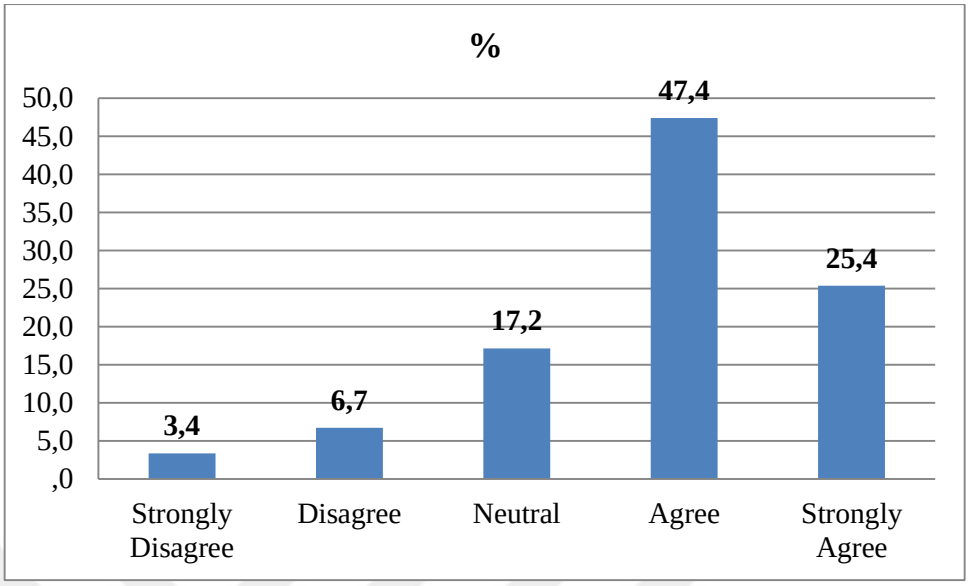

Figure 59 Service Quality Perception Variable-9 Score Result

3.2.10. Perception Variable 10 Analysis

SQPM10: Provider's service employees give fast service. **- DISSATISFIED**

Average score is 3.9. Giving fast service can be formulated with service level agreements (SLA) between customer and vendor. If vendors can meet SLA durations on time, fast service can be achieved. However, according to results for customer perception, vendors could not satisfy the given service times. Giving fast service is related to multiple issues such as the number of service employees, vendors' service center working hours, service employees' knowledge etc.

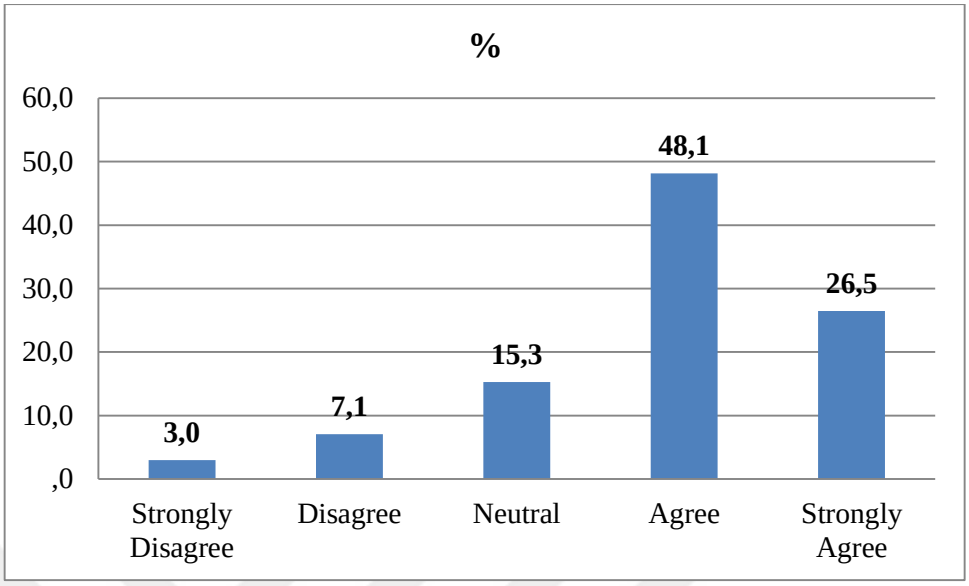

Figure 60 Service Quality Perception Variable-10 Score Result

3.2.11. Perception Variable 11 Analysis

SQPM11: Provider's service employees are always willing to help their customers. **- DISSATISFIED**

Average score is 3.9. Vendors can have big brand names and earn big revenues, yet quality, for most services, is related to vendors' service employees who directly interact with customers. This item is also related to service employees' individual behaviours. Service employees should be trained in customer communication and should show their willingness to help customer.

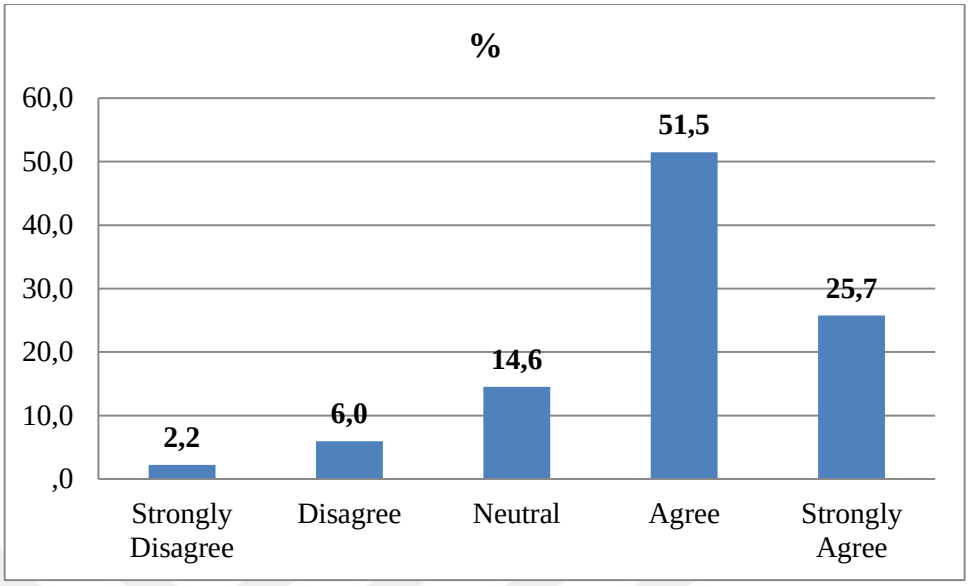

Figure 61 Service Quality Perception Variable-11 Score Result

3.2.12. Perception Variable 12 Analysis

SQPM12: Provider's service center is never too busy to support their customers.

- DISSATISFIED

Average score is 3.8. According to customer perceptions, customers cannot always reach vendors' service centers. Vendors generally try to use their service centers efficiently while supporting multiple operators. They can save OPEX by this way, but if customers cannot get service since service employees are busy, it will affect service quality.

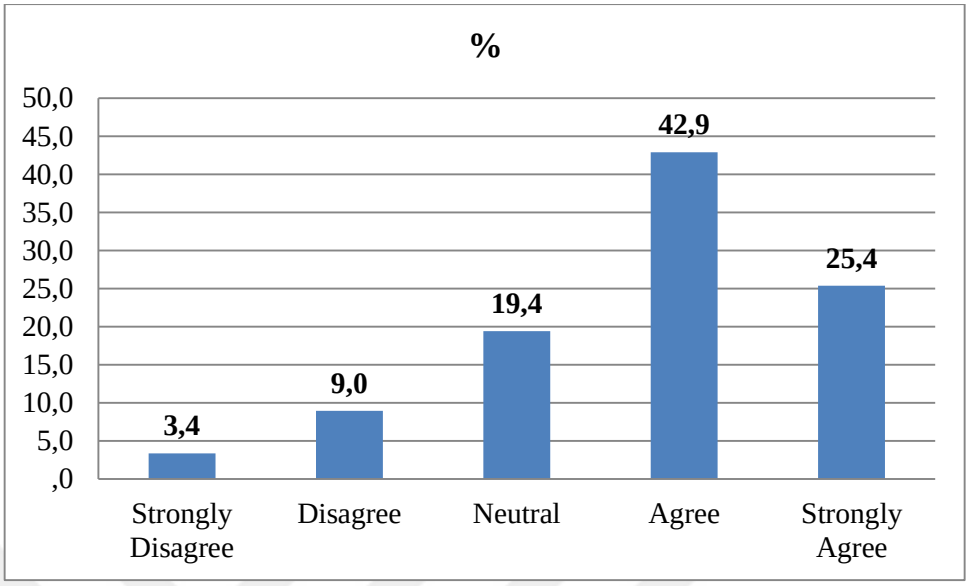

Figure 62 Service Quality Perception Variable-12 Score Result

3.2.13. Perception Variable 13 Analysis

SQPM13: Provider's service employees make the customer able to trust. - **DISSATISFIED**

Average score is 3.9. Service employees' attitudes should make customers trust them. Customer perceptions lower than expectations means that service employees should make more effort to gain the trust of their customers. This is one of the important variables for giving secure service.

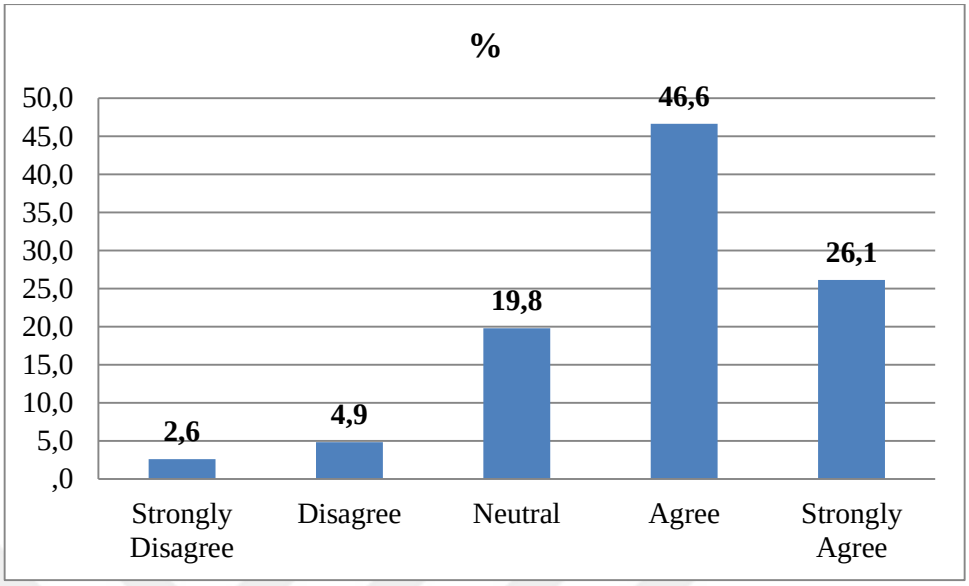

Figure 63 Service Quality Perception Variable-13 Score Result

3.2.14. Perception Variable 14 Analysis

SQPM14: I feel safe in my transactions with the provider's service employees. - **DISSATISFIED**

Average score is 3.9. One of the security variables is related to service employees. Again, customer expectations could not be met. It is strongly recommended that vendors train their employees for cyber security and information security.

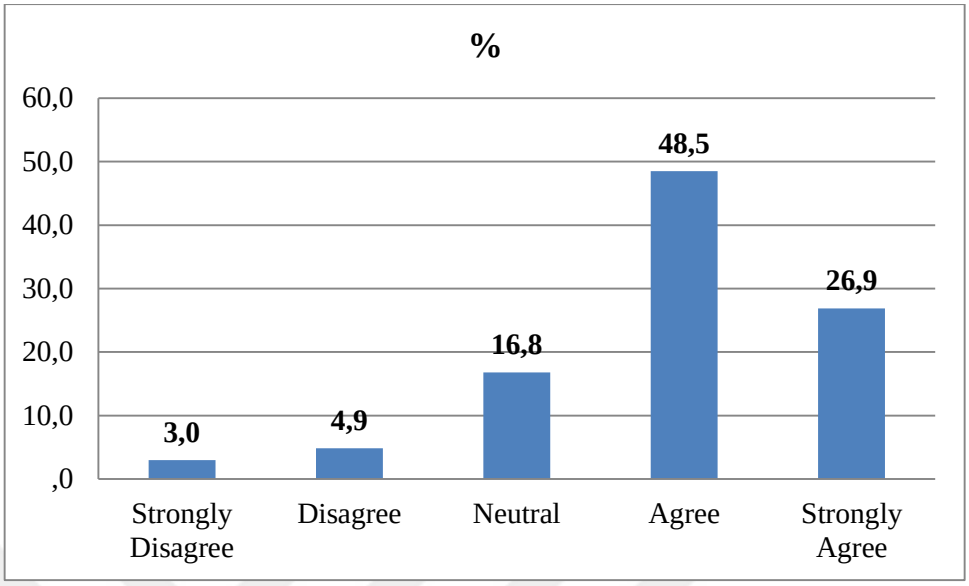

Figure 64 Service Quality Perception Variable-14 Score Result

3.2.15. Perception Variable 15 Analysis

SQPM15: Provider's service employees are polite to their customers. - **DISSATISFIED**

Average score is 4.2. Vendors almost meet customer expectations. However, there is still a small gap between expectation and perception. 2.6% of the respondents still chose to "strongly disagree". Being polite is a personal behaviour, and all service employees should have this a basic interpersonal skill.

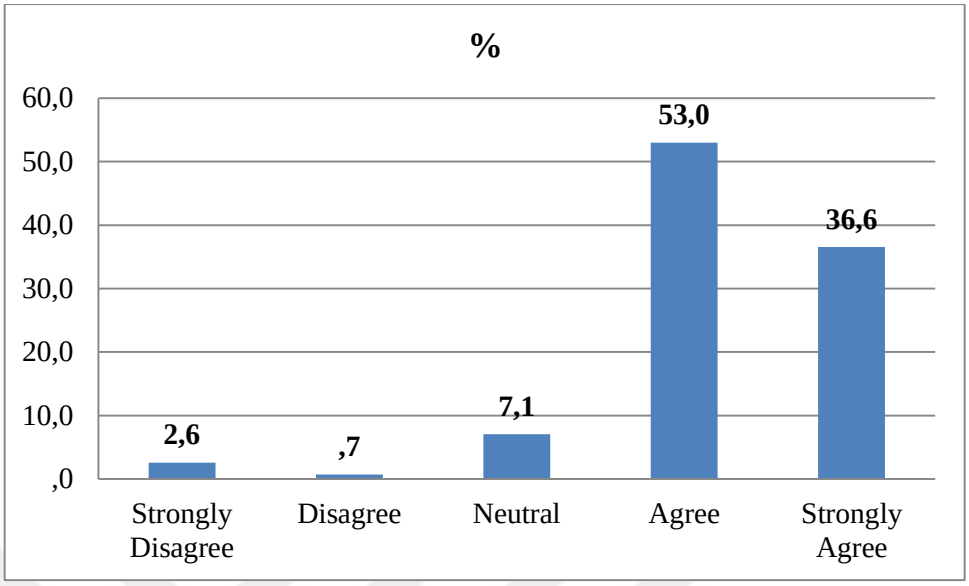

Figure 65 Service Quality Perception Variable-15 Score Result

3.2.16. Perception Variable 16 Analysis

SQPM16: Provider's service employees have enough knowledge to support their customers. **– DISSATISFIED**

Average score is 4.0. Technical knowledge is a very important and indispensable variable for service employees. With this knowledge of their service employees, vendors can give better service. From the customer's point of view, they would like to get service from better qualified or certified service employees. However, according to the perception score, customer expectations could not be met by vendors.

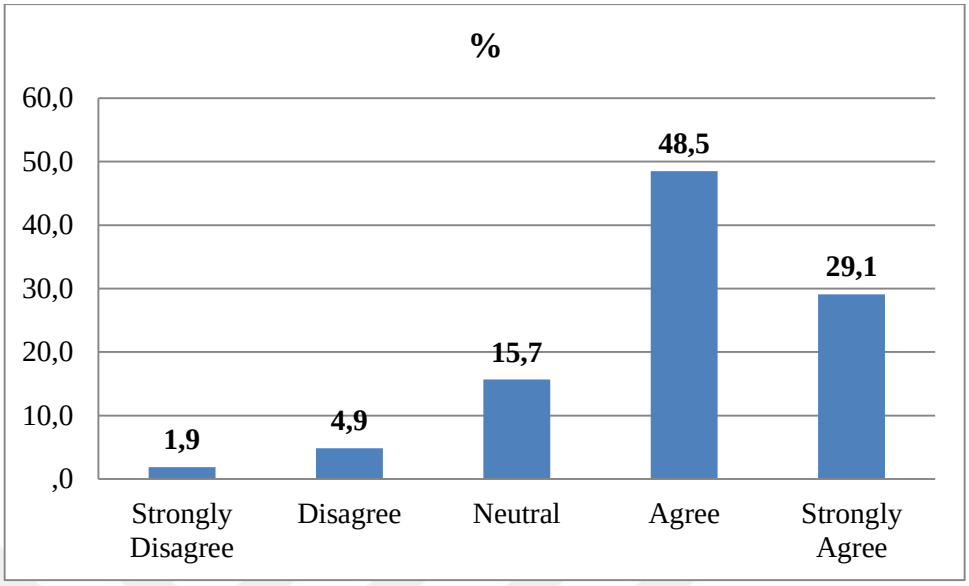

Figure 66 Service Quality Perception Variable-16 Score Result

3.2.17. Perception Variable 17 Analysis

SQPM17: Provider's service employees give individual attention to their customers. **- DISSATISFIED**

Average score is 3.8. Vendors are very close to meeting this variable. However, customer expectation for this variable is one of the lowest score.

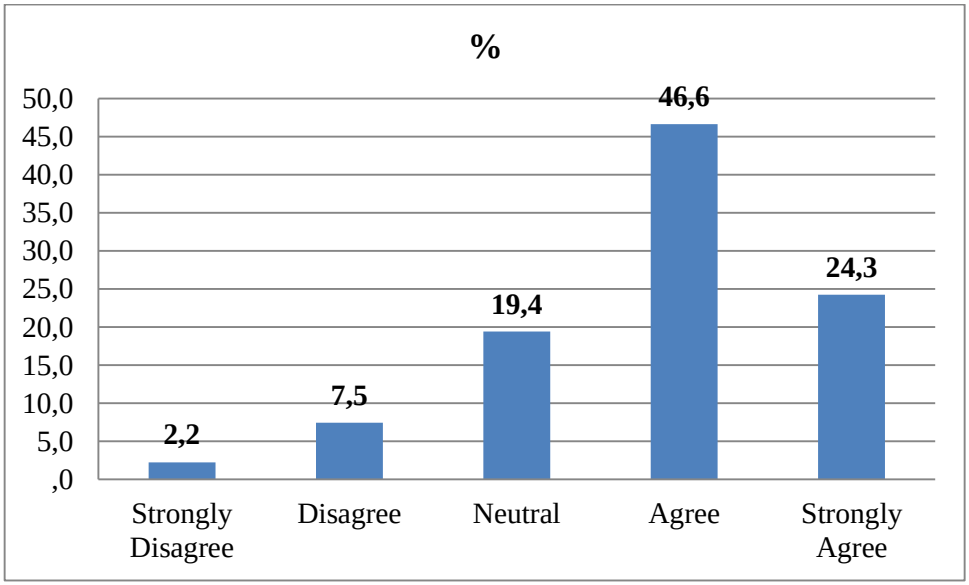

Figure 67 Service Quality Perception Variable-17 Score Result

3.2.18. Perception Variable 18 Analysis

SQPM18: Provider's service employees understand their customers' needs. – **DISSATISFIED**

Average score is 3.9. Without understanding customer needs, rendered services will always be lacking in quality. Service employees in particular should understand their customers well and deliver service accordingly. Results indicate that vendors could not meet the expectations of customers. Again, this is related to service employees' personal behaviours; they should be trained from a commercial perspective.

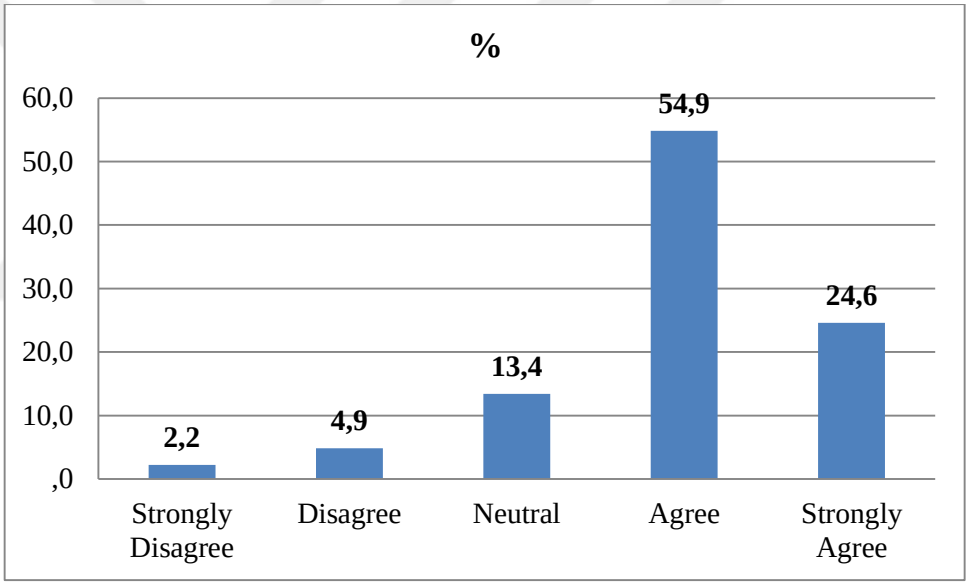

Figure 68 Service Quality Perception Variable-18 Score Result

3.2.19. Perception Variable 19 Analysis

SQPM19: Provider gets your requirements as its service value. - **DISSATISFIED**

Average score is 3.9. This is somehow related to variable eighteen. If the customer thinks that service employees cannot understand their needs as well as they should, it means they cannot get this need as their service value. The same scores for variable eighteen and variable nineteen verify this. Vendors need to work more towards understanding customers' requirements and putting them as their service value.

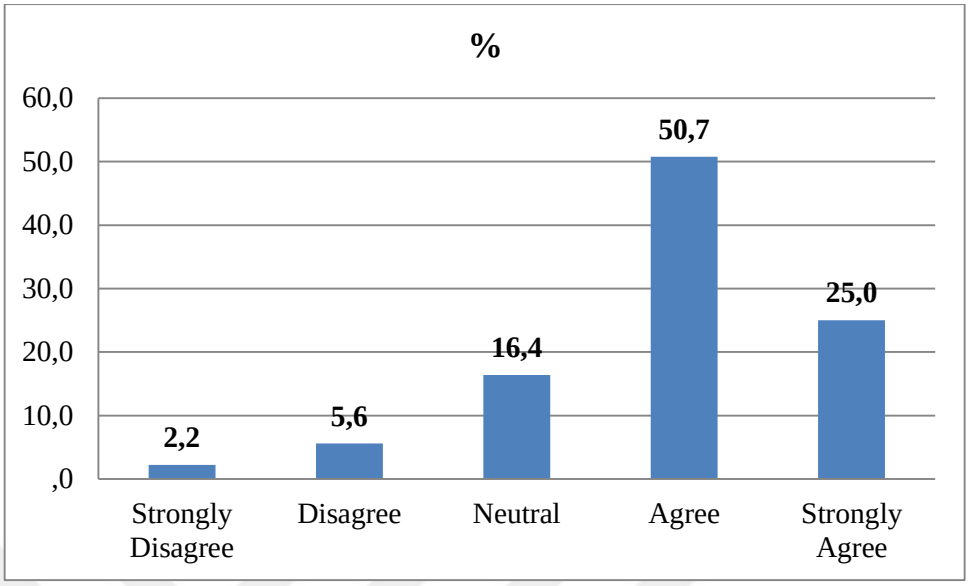

Figure 69 Service Quality Perception Variable-19 Score Result

3.2.20. Perception Variable 20 Analysis

SQPM20: Provider's service center has available operating hours. - **DISSATISFIED**

Average score is 3.9. This result is also far from meeting customer expectations. In today's telecommunication industry, companies work 7/24/365, non-stop regardless of holidays. Yet, it is apparent that operators cannot get this service well from vendors. Of course, to keep this availability, vendors need to hire more service employees, which can affect their costs; however, without this cost, it is evident that service quality will drop.

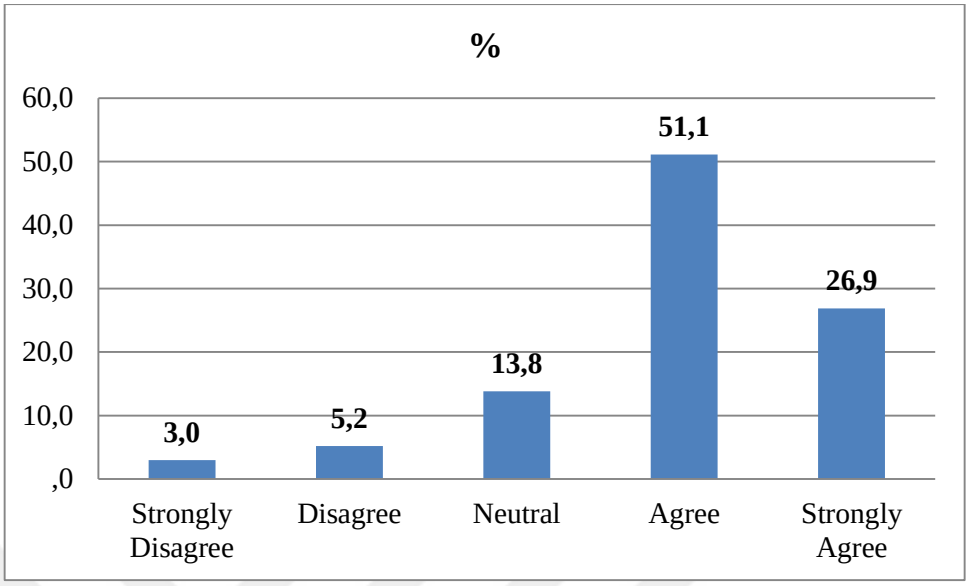

Figure 70 Service Quality Perception Variable-20 Score Result

3.3. GAP ANALYSIS

3.3.1. Gap 1: Expected and Perceived Service Quality Based on Variables

Expected service quality and perceived service quality gap analysis will show us whether expectations were satisfied with perceived scores or not. Results show us that the SERVQUAL overall score does not meet the expectation. There is a gap of -0,5 points between average perceived and average expectation results. Nineteen variables of SERVQUAL are dissatisfied. Only one variable is satisfied with 3.9 for expectation and perceived scores. The cross table below also shows our first hypothesis.

The first hypothesis aims to evaluate the results in their entirety.

H1: There is statically significant difference between expected service quality and perceived service quality.

GAP analysis shows us that vendors could not meet customer expectations. From twenty service quality varibles, only one, which is variable three, is satisfied and it is about being clean and well-dressed. However, for the telecommunications industry, it has low importance for service. The highest two gaps are for variable eight and variable nine, which are related to keeping service records and giving information about planned

services. Particularly with regard to service employees, variables affect service quality. When we check the GAP, we can understand that vendors should give importance to their service employees, as service employees mostly affect customer perceptions. The table shows that vendors do not understand well their customers form a service point of view.

Table 17 Cross Analysis Hypothesis-1 Result Scores

Expectation / Perceived Variables	Average Expectation Results	Average Perceived Results	Gap
Total	**4,4**	**3,9**	**-0,5**
SQEM1 / SQPM1	4,4	3,9	-0,5
SQEM2 / SQPM2	4,6	4,0	-0,6
SQEM3 / SQPM3	3,9	3,9	0,0
SQEM4 / SQPM4	4,4	3,8	-0,6
SQEM5 / SQPM5	4,5	4,0	-0,5
SQEM6 / SQPM6	4,6	4,0	-0,6
SQEM7 / SQPM7	4,5	3,9	-0,6
SQEM8 / SQPM8	4,5	3,8	-0,7
SQEM9 / SQPM9	4,5	3,8	-0,7
SQEM10 / SQPM10	4,4	3,9	-0,5
SQEM11 / SQPM11	4,4	3,9	-0,5
SQEM12 / SQPM12	4,3	3,8	-0,5
SQEM13 / SQPM13	4,5	3,9	-0,6
SQEM14 / SQPM14	4,4	3,9	-0,5
SQEM15 / SQPM15	4,4	4,2	-0,2
SQEM16 / SQPM16	4,5	4,0	-0,5
SQEM17 / SQPM17	3,9	3,8	-0,1
SQEM18 / SQPM18	4,2	3,9	-0,3
SQEM19 / SQPM19	4,3	3,9	-0,4
SQEM20 / SQPM20	4,4	3,9	-0,5

3.3.2. Gap 2: Expected and Perceived Service Quality Based on Dimensions

Expected service quality and perceived service quality gap analysis according to SERVQUAL service dimensions (Tangibility, Reliability, Responsibility, Security,

and Empathy): This analysis will show us whether expectations were satisfied with perceived scores or not according to SERVQUAL dimensions. Results show us that all 5 dimensions of SERVQUAL fail to meet the expectations. The cross table also shows us the result for our second hypothesis.

The second hypothesis aims to evaluate the results according to SERVQUAL service dimensions.

H2: There is statically significant difference between expected service quality and perceived service quality according to SERVQUAL service dimensions (Tangibility, Reliability, Responsibility, Security, and Empathy).

The tangibility dimension, which includes variable one to variable four, is about the appearance of the given service parameters. Expectations of customers for tangibility dimension could not be met by vendors. Services are intangible; however, when we talk about a service's appearance, it is the tangible part of a service which customers can see, such as physical installations of equipment, service employee's dress, service handbooks etc.

The reliability dimension that includes variable five to variable eight is about being trustable. It is the most important and most expected dimension by customers. However, it has the biggest GAP between expectation and perception. Vendors should give more importance to reliability variables so as to increase their service quality.

The responsibility dimension has four variables, from variable nine to variable twelve. This dimension is about availability and timely support. Vendors cannot give fast service and cannot setup their support centers well enough to meet their customers' expectations.

Security also has four variables, from variable thirteen to variable sixteen. This dimension is about the security of the given services. All these four variables are about service employees' personal service skills. It is known that all service employees cannot have the same capacity, but at least they should be trained by vendors to have the basic skills about customer security, customer communication and customer contact. This would increase perceived service quality.

Empathy is the last dimension and has four variables, from variable seventeen to variable twenty. It is generally about understanding your customers' requirements and

setup your service accordingly. The lowest GAP shows that vendors have better service quality for this dimension compared to other four dimensions. Unfortunately, this dimension also could not meet customers' expectations.

Table 18 Cross Analysis Hypothesis-2 Result Scores

Expectation / Perceived Variables	Average Expectation Results	Average Perceived Results	Gap
Tangibility	4,3	3,9	-0,4
Reliability	4,5	3,9	-0,6
Responsibility	4,4	3,9	-0,5
Security	4,4	4,0	-0,4
Empathy	4,2	3,9	-0,3

3.3.3. Gap 3: Expected and Perceived Service Quality Based on Operators

Expected service quality and perceived service quality gap analysis according to different operators: This analysis will show us whether expectations were satisfied with perceived scores or not for different operators. Results show us that all three operators' expectations remained unmet. There is a gap between perceived and expectation scores: -0.5 for Operator 1, -0.6 for Operator 2, and -0.4 for Operator 3. Operators' expectations and perceptions have nearly the same scores.

This cross table also shows us the result for our third hypothesis. The third hypothesis aims to evaluate the results according to different operators' results.

H3: There is statically significant difference between expected service quality and perceived service quality according to different operators' results.

Even in the same industry, different operators can have different service quality expectations and perceptions. Average results show that three different operators have nearly the same scores both for expectations and perceptions. Of course, there are

differences in the details of each variable. However, this result makes vendors' job easier, as vendors can setup their service quality according to average telecommunication industry expectations and thereby satisfy most of the operators. The service quality criterion can be standardized for the telecommunication industry. Yet, results show that vendors could not satisfy any of the three operators' expectations.

Table 19 Cross Analysis Hypothesis-3 Operator-1 Result Scores

	Operator 1		
Expectation / Perceived Variables	**Average Expectation Results**	**Average Perceived Results**	**Gap**
Total	**4,4**	**3,9**	**-0,5**
SQEM1 / SQPM1	4,4	3,9	-0,5
SQEM2 / SQPM2	4,6	4,0	-0,6
SQEM3 / SQPM3	3,9	4,0	0,1
SQEM4 / SQPM4	4,4	3,8	-0,6
SQEM5 / SQPM5	4,4	4,0	-0,4
SQEM6 / SQPM6	4,6	4,0	-0,6
SQEM7 / SQPM7	4,5	3,9	-0,6
SQEM8 / SQPM8	4,5	3,9	-0,6
SQEM9 / SQPM9	4,5	3,9	-0,6
SQEM10 / SQPM10	4,4	3,9	-0,5
SQEM11 / SQPM11	4,4	3,9	-0,5
SQEM12 / SQPM12	4,3	3,8	-0,5
SQEM13 / SQPM13	4,5	3,9	-0,6
SQEM14 / SQPM14	4,4	4,0	-0,4
SQEM15 / SQPM15	4,4	4,2	-0,2
SQEM16 / SQPM16	4,5	4,1	-0,4
SQEM17 / SQPM17	3,9	3,9	0,0
SQEM18 / SQPM18	4,2	4,0	-0,2
SQEM19 / SQPM19	4,3	3,9	-0,4
SQEM20 / SQPM20	4,4	4,0	-0,4

Table 20 Cross Analysis Hypothesis-3 Operator-2 Result Scores

	Operator 2		
Expectation / Perceived Variables	**Average Expectation Results**	**Average Perceived Results**	**Gap**
Total	**4,4**	**3,8**	**-0,6**
SQEM1 / SQPM1	4,5	3,9	-0,6
SQEM2 / SQPM2	4,6	3,8	-0,8
SQEM3 / SQPM3	3,8	3,7	-0,1
SQEM4 / SQPM4	4,3	3,8	-0,5
SQEM5 / SQPM5	4,5	3,8	-0,7
SQEM6 / SQPM6	4,6	3,9	-0,7
SQEM7 / SQPM7	4,5	3,6	-0,9
SQEM8 / SQPM8	4,5	3,6	-0,9
SQEM9 / SQPM9	4,5	3,5	-1,0
SQEM10 / SQPM10	4,3	3,8	-0,5
SQEM11 / SQPM11	4,3	3,8	-0,5
SQEM12 / SQPM12	4,4	3,9	-0,5
SQEM13 / SQPM13	4,5	3,7	-0,8
SQEM14 / SQPM14	4,4	3,7	-0,7
SQEM15 / SQPM15	4,4	4,2	-0,2
SQEM16 / SQPM16	4,5	3,7	-0,8
SQEM17 / SQPM17	3,9	3,7	-0,2
SQEM18 / SQPM18	4,3	3,8	-0,5
SQEM19 / SQPM19	4,4	3,7	-0,7
SQEM20 / SQPM20	4,3	3,9	-0,4

Table 21 Cross Analysis Hypothesis-3 Operator-3 Result Scores

	Operator 3		
Expectation / Perceived Variables	**Average Expectation Results**	**Average Perceived Results**	**Gap**
Total	**4,3**	**3,9**	**-0,4**
SQEM1 / SQPM1	4,4	3,9	-0,5
SQEM2 / SQPM2	4,6	3,8	-0,8
SQEM3 / SQPM3	3,3	3,8	0,5
SQEM4 / SQPM4	4,3	4,0	-0,3
SQEM5 / SQPM5	4,5	3,9	-0,6
SQEM6 / SQPM6	4,5	4,1	-0,4
SQEM7 / SQPM7	4,4	3,9	-0,5
SQEM8 / SQPM8	4,3	3,9	-0,4
SQEM9 / SQPM9	4,5	4,0	-0,5
SQEM10 / SQPM10	4,4	3,7	-0,7
SQEM11 / SQPM11	4,5	4,0	-0,5
SQEM12 / SQPM12	4,3	3,7	-0,6
SQEM13 / SQPM13	4,4	3,9	-0,5
SQEM14 / SQPM14	4,3	3,7	-0,6
SQEM15 / SQPM15	4,3	4,1	-0,2
SQEM16 / SQPM16	4,6	3,7	-0,9
SQEM17 / SQPM17	3,7	3,6	-0,1
SQEM18 / SQPM18	4,2	3,8	-0,4
SQEM19 / SQPM19	4,3	4,0	-0,3
SQEM20 / SQPM20	4,2	3,9	-0,3

3.3.4. Gap 4: Expected and Perceived Service Quality Based on Vendors

Expected service quality and perceived service quality gap analysis according to different vendors: This analysis will show us whether expectations were satisfied with perceived scores or not according to different vendors. Results show us that all of the four vendors fail to meet the expectations. There is a gap between perceived and expectation

scores: -0.3 for Vendor 1, -0.9 for Vendor 2, -0.5 for Vendor 3 and -0.6 for Vendor 4. This cross table also shows us the results for our fourth hypothesis.

The fourth hypothesis aims to evaluate the results according to different vendors' results.

H4: There is statically significant difference between expected service quality and perceived service quality according to different vendors' results.

Different vendors can have different perceived service quality results. As the analysis shows, there is big difference between vendors' perceived service quality. This means that some of the vendors can successfully analyse telecommunication service industry's expectations and setup their services accordingly, while some of them need to up their game for better quality. None of the vendors could meet customers' service quality expectations.

Table 22 Cross Analysis Hypothesis-4 Vendor-1 Result Scores

Expectation / Perceived Variables	Average Expectation Results	Vendor 1 Average Perceived Results	Gap
Total	**4,4**	**4,1**	**-0,3**
SQEM1 / SQPM1	4,4	4,0	-0,4
SQEM2 / SQPM2	4,6	4,2	-0,4
SQEM3 / SQPM3	3,9	4,0	0,1
SQEM4 / SQPM4	4,4	4,0	-0,4
SQEM5 / SQPM5	4,5	4,1	-0,4
SQEM6 / SQPM6	4,6	4,1	-0,5
SQEM7 / SQPM7	4,5	4,1	-0,4
SQEM8 / SQPM8	4,5	4,0	-0,5
SQEM9 / SQPM9	4,5	4,1	-0,4
SQEM10 / SQPM10	4,4	4,1	-0,3
SQEM11 / SQPM11	4,4	4,0	-0,4
SQEM12 / SQPM12	4,3	3,9	-0,4
SQEM13 / SQPM13	4,5	4,0	-0,5
SQEM14 / SQPM14	4,4	4,1	-0,3
SQEM15 / SQPM15	4,4	4,3	-0,1
SQEM16 / SQPM16	4,5	4,2	-0,3
SQEM17 / SQPM17	3,9	4,1	0,2
SQEM18 / SQPM18	4,2	4,1	-0,1
SQEM19 / SQPM19	4,3	4,0	-0,3
SQEM20 / SQPM20	4,4	4,1	-0,3

Table 23 Cross Analysis Hypothesis-4 Vendor -2 Result Scores

Expectation / Perceived Variables	Average Expectation Results	Vendor 2 Average Perceived Results	Gap
Total	**4,4**	**3,5**	**-0,9**
SQEM1 / SQPM1	4,4	3,6	-0,8
SQEM2 / SQPM2	4,6	3,6	-1,0
SQEM3 / SQPM3	3,9	3,7	-0,2
SQEM4 / SQPM4	4,4	3,4	-1,0
SQEM5 / SQPM5	4,5	3,6	-0,9
SQEM6 / SQPM6	4,6	3,6	-1,0
SQEM7 / SQPM7	4,5	3,5	-1,0
SQEM8 / SQPM8	4,5	3,2	-1,3
SQEM9 / SQPM9	4,5	3,3	-1,2
SQEM10 / SQPM10	4,4	3,6	-0,8
SQEM11 / SQPM11	4,4	3,4	-1,0
SQEM12 / SQPM12	4,3	3,6	-0,7
SQEM13 / SQPM13	4,5	3,4	-1,1
SQEM14 / SQPM14	4,4	3,4	-1,0
SQEM15 / SQPM15	4,4	3,8	-0,6
SQEM16 / SQPM16	4,5	3,6	-0,9
SQEM17 / SQPM17	3,9	3,5	-0,4
SQEM18 / SQPM18	4,2	3,6	-0,6
SQEM19 / SQPM19	4,3	3,5	-0,8
SQEM20 / SQPM20	4,4	3,3	-1,1

Table 24 Cross Analysis Hypothesis-4 Vendor -3 Result Scores

Expectation / Perceived Variables	Average Expectation Results	Vendor 3 Average Perceived Results	Gap
Total	**4,4**	**3,9**	**-0,5**
SQEM1 / SQPM1	4,4	3,9	-0,5
SQEM2 / SQPM2	4,6	3,9	-0,7
SQEM3 / SQPM3	3,9	3,9	0,0
SQEM4 / SQPM4	4,4	3,9	-0,5
SQEM5 / SQPM5	4,5	3,9	-0,6
SQEM6 / SQPM6	4,6	4,0	-0,6
SQEM7 / SQPM7	4,5	3,8	-0,7
SQEM8 / SQPM8	4,5	3,9	-0,6
SQEM9 / SQPM9	4,5	3,8	-0,7
SQEM10 / SQPM10	4,4	3,9	-0,5
SQEM11 / SQPM11	4,4	4,0	-0,4
SQEM12 / SQPM12	4,3	3,8	-0,5
SQEM13 / SQPM13	4,5	3,9	-0,6
SQEM14 / SQPM14	4,4	3,9	-0,5
SQEM15 / SQPM15	4,4	4,2	-0,2
SQEM16 / SQPM16	4,5	3,9	-0,6
SQEM17 / SQPM17	3,9	3,7	-0,2
SQEM18 / SQPM18	4,2	3,9	-0,3
SQEM19 / SQPM19	4,3	3,9	-0,4
SQEM20 / SQPM20	4,4	4,0	-0,4

Table 25 Cross Analysis Hypothesis-4 Vendor -4 Result Scores

Expectation / Perceived Variables	Average Expectation Results	Vendor 4 Average Perceived Results	Gap
Total	**4,4**	**3,8**	**-0,6**
SQEM1 / SQPM1	4,4	3,7	-0,7
SQEM2 / SQPM2	4,6	3,9	-0,7
SQEM3 / SQPM3	3,9	3,9	0,0
SQEM4 / SQPM4	4,4	3,4	-1,0
SQEM5 / SQPM5	4,5	3,9	-0,6
SQEM6 / SQPM6	4,6	3,9	-0,7
SQEM7 / SQPM7	4,5	3,7	-0,8
SQEM8 / SQPM8	4,5	3,7	-0,8
SQEM9 / SQPM9	4,5	3,7	-0,8
SQEM10 / SQPM10	4,4	3,4	-1,0
SQEM11 / SQPM11	4,4	3,8	-0,6
SQEM12 / SQPM12	4,3	3,7	-0,6
SQEM13 / SQPM13	4,5	3,8	-0,7
SQEM14 / SQPM14	4,4	3,9	-0,5
SQEM15 / SQPM15	4,4	4,3	-0,1
SQEM16 / SQPM16	4,5	4,0	-0,5
SQEM17 / SQPM17	3,9	3,7	-0,2
SQEM18 / SQPM18	4,2	3,9	-0,3
SQEM19 / SQPM19	4,3	3,7	-0,6
SQEM20 / SQPM20	4,4	3,8	-0,6

3.3.5. Gap 5: Expected and Perceived Service Quality Based on Service Importance

Expected service quality and perceived service quality gap analysis according to service importance answer between "technical support" and the other two options: This analysis will show us whether or not expectations were satisfied with perceived scores according to service importance answers between "technical support" and the other two options. Results show us that, according to the service importance

answer, expectations are not met. There is a gap between perceived and expectation scores: -0.4 for Technical Support selection and -0.5 for the Other two selection.

This cross table shows us the result for our fifth hypothesis.

The fifth hypothesis aims to evaluate the results according to the survey service importance question.

H5: There is statically significant difference between expected service quality and perceived service quality according to the service importance answers between "technical support" and the other two options.

We have already established that better service requires quality services and quality equipment. This GAP model shows us the difference between who gives importance to technical support services. However, according to the results, it is almost the same for both technical support and for others (product quality, product price).

Table 26 Cross Analysis Hypothesis-5 Result Scores

Expectation / Perceived Variables	Technical support Average Expectation Results	Technical support Average Perceived Results	Gap	Others Average Expectation Results	Others Average Perceived Results	Gap
Total	**4,3**	**3,9**	**-0,4**	**4,4**	**3,9**	**-0,5**
SQEM1 / SQPM1	4,4	3,9	-0,5	4,5	3,9	-0,6
SQEM2 / SQPM2	4,5	4,0	-0,5	4,6	4,0	-0,6
SQEM3 / SQPM3	3,8	4,0	0,2	3,9	3,9	0,0
SQEM4 / SQPM4	4,3	3,9	-0,4	4,4	3,8	-0,6
SQEM5 / SQPM5	4,4	4,0	-0,4	4,5	4,0	-0,5
SQEM6 / SQPM6	4,5	4,0	-0,5	4,6	4,0	-0,6
SQEM7 / SQPM7	4,4	3,9	-0,5	4,5	3,8	-0,7
SQEM8 / SQPM8	4,4	3,9	-0,5	4,5	3,8	-0,7
SQEM9 / SQPM9	4,5	3,8	-0,7	4,5	3,9	-0,6
SQEM10 / SQPM10	4,4	3,9	-0,5	4,4	3,9	-0,5
SQEM11 / SQPM11	4,4	3,9	-0,5	4,4	3,9	-0,5
SQEM12 / SQPM12	4,3	3,9	-0,4	4,3	3,7	-0,6
SQEM13 / SQPM13	4,4	3,9	-0,5	4,5	3,9	-0,6
SQEM14 / SQPM14	4,3	3,9	-0,4	4,5	3,9	-0,6
SQEM15 / SQPM15	4,4	4,2	-0,2	4,4	4,2	-0,2
SQEM16 / SQPM16	4,5	4,0	-0,5	4,6	3,9	-0,7
SQEM17 / SQPM17	3,9	3,9	0,0	3,9	3,8	-0,1
SQEM18 / SQPM18	4,2	4,0	-0,2	4,2	3,9	-0,3
SQEM19 / SQPM19	4,3	3,9	-0,4	4,4	3,9	-0,5
SQEM20 / SQPM20	4,3	4,0	-0,3	4,4	3,9	-0,5

3.3.6. Gap 6: Expected and Perceived Service Quality Based on Experience in Years

Expected service quality and perceived service quality gap analysis according to employee experience in years: This analysis will show us whether expectations were satisfied with perceived scores or not according to employee experience in years. Results show us that employee experience does not meet the expectations. There is a gap between perceived and expectation scores: -0.4 for 0-3 years of experience, -0.6 for 4-7 years of experience, -0.3 for 8-11 years of experience, -0.6 for 12-15 years of experience and -0.3 for over 16 years of experience.

This cross table shows us the results for our sixth hypothesis.

The sixth hypothesis aims to evaluate the results according to employee experience in years.

H6: There is statically significant difference between expected service quality and perceived service quality according to employees' experience in years.

Different age groups can have different expectations and different perceptions. Young people can adopt new technologies quickly whereas they also spend the technologies quickly. As ages increase, quality expectation also increases. This change can affect vendors' service quality. Vendors need to adapt their services to satisfy all age groups. Results show that expectation reach the highest score for 12-15 years old with 4.6 average score. None of the other age groups could be satisfied.

Table 27 Cross Analysis Hypothesis-6 0-3 Years Result Scores

Expectation / Perceived Variables	0-3 years Average Expectation Results	0-3 years Average Perceived Results	Gap
Total	**4,3**	**3,9**	**-0,4**
SQEM1 / SQPM1	4,5	3,8	-0,7
SQEM2 / SQPM2	4,6	4,0	-0,6
SQEM3 / SQPM3	3,7	4,0	0,3
SQEM4 / SQPM4	4,4	3,8	-0,6
SQEM5 / SQPM5	4,5	4,0	-0,5
SQEM6 / SQPM6	4,6	4,0	-0,6
SQEM7 / SQPM7	4,4	3,8	-0,6
SQEM8 / SQPM8	4,6	3,7	-0,9
SQEM9 / SQPM9	4,6	3,7	-0,9
SQEM10 / SQPM10	4,3	3,9	-0,4
SQEM11 / SQPM11	4,4	3,9	-0,5
SQEM12 / SQPM12	4,3	3,8	-0,5
SQEM13 / SQPM13	4,5	3,8	-0,7
SQEM14 / SQPM14	4,5	3,8	-0,7
SQEM15 / SQPM15	4,4	4,2	-0,2
SQEM16 / SQPM16	4,4	3,9	-0,5
SQEM17 / SQPM17	3,7	3,7	0,0
SQEM18 / SQPM18	4,2	4,0	-0,2
SQEM19 / SQPM19	4,3	3,9	-0,4
SQEM20 / SQPM20	4,2	3,9	-0,3

Table 28 Cross Analysis Hypothesis-6 4-7 Years Result Scores

Expectation / Perceived Variables	4-7 years Average Expectation Results	4-7 years Average Perceived Results	Gap
Total	**4,4**	**3,8**	**-0,6**
SQEM1 / SQPM1	4,4	3,8	-0,6
SQEM2 / SQPM2	4,6	3,8	-0,8
SQEM3 / SQPM3	4,0	4,0	0,0
SQEM4 / SQPM4	4,4	3,6	-0,8
SQEM5 / SQPM5	4,4	3,8	-0,6
SQEM6 / SQPM6	4,5	3,9	-0,6
SQEM7 / SQPM7	4,5	3,7	-0,8
SQEM8 / SQPM8	4,4	3,7	-0,7
SQEM9 / SQPM9	4,5	3,8	-0,7
SQEM10 / SQPM10	4,5	3,7	-0,8
SQEM11 / SQPM11	4,4	3,8	-0,6
SQEM12 / SQPM12	4,3	3,7	-0,6
SQEM13 / SQPM13	4,5	3,8	-0,7
SQEM14 / SQPM14	4,4	3,8	-0,6
SQEM15 / SQPM15	4,4	4,1	-0,3
SQEM16 / SQPM16	4,5	3,9	-0,6
SQEM17 / SQPM17	4,1	3,8	-0,3
SQEM18 / SQPM18	4,3	3,9	-0,4
SQEM19 / SQPM19	4,3	3,8	-0,5
SQEM20 / SQPM20	4,4	3,8	-0,6

Table 29 Cross Analysis Hypothesis-6 8-11 Years Result Scores

Expectation / Perceived Variables	8-11 years Average Expectation Results	8-11 years Average Perceived Results	Gap
Total	**4,3**	**4,0**	**-0,3**
SQEM1 / SQPM1	4,5	3,8	-0,7
SQEM2 / SQPM2	4,6	3,9	-0,7
SQEM3 / SQPM3	3,6	4,0	0,4
SQEM4 / SQPM4	4,3	3,9	-0,4
SQEM5 / SQPM5	4,4	4,1	-0,3
SQEM6 / SQPM6	4,6	4,2	-0,4
SQEM7 / SQPM7	4,4	4,0	-0,4
SQEM8 / SQPM8	4,4	3,9	-0,5
SQEM9 / SQPM9	4,4	3,7	-0,7
SQEM10 / SQPM10	4,4	4,0	-0,4
SQEM11 / SQPM11	4,4	4,1	-0,3
SQEM12 / SQPM12	4,2	3,8	-0,4
SQEM13 / SQPM13	4,4	4,0	-0,4
SQEM14 / SQPM14	4,3	4,0	-0,3
SQEM15 / SQPM15	4,3	4,3	0,0
SQEM16 / SQPM16	4,6	4,0	-0,6
SQEM17 / SQPM17	3,7	3,9	0,2
SQEM18 / SQPM18	4,0	4,0	0,0
SQEM19 / SQPM19	4,3	4,1	-0,2
SQEM20 / SQPM20	4,3	4,0	-0,3

Table 30 Cross Analysis Hypothesis-6 12-15 Years Result Scores

Expectation / Perceived Variables	12-15 years Average Expectation Results	12-15 years Average Perceived Results	Gap
Total	**4,6**	**4,0**	**-0,6**
SQEM1 / SQPM1	4,8	4,2	-0,6
SQEM2 / SQPM2	4,8	4,2	-0,6
SQEM3 / SQPM3	4,3	3,9	-0,4
SQEM4 / SQPM4	4,6	4,1	-0,5
SQEM5 / SQPM5	4,7	3,9	-0,8
SQEM6 / SQPM6	4,9	3,9	-1,0
SQEM7 / SQPM7	4,6	3,8	-0,8
SQEM8 / SQPM8	4,6	4,1	-0,5
SQEM9 / SQPM9	4,6	4,1	-0,5
SQEM10 / SQPM10	4,4	4,1	-0,3
SQEM11 / SQPM11	4,6	3,9	-0,7
SQEM12 / SQPM12	4,6	4,1	-0,5
SQEM13 / SQPM13	4,7	3,9	-0,8
SQEM14 / SQPM14	4,6	3,8	-0,8
SQEM15 / SQPM15	4,6	4,4	-0,2
SQEM16 / SQPM16	4,7	4,1	-0,6
SQEM17 / SQPM17	4,4	4,1	-0,3
SQEM18 / SQPM18	4,5	3,9	-0,6
SQEM19 / SQPM19	4,6	3,9	-0,7
SQEM20 / SQPM20	4,6	4,2	-0,4

Table 31 Cross Analysis Hypothesis-6 Over 16 Years Result Scores

Expectation / Perceived Variables	over 16 years Average Expectation Results	over 16 years Average Perceived Results	Gap
Total	**4,3**	**4,0**	**-0,3**
SQEM1 / SQPM1	4,4	4,0	-0,4
SQEM2 / SQPM2	4,5	4,1	-0,4
SQEM3 / SQPM3	3,9	3,9	0,0
SQEM4 / SQPM4	4,3	4,0	-0,3
SQEM5 / SQPM5	4,5	4,0	-0,5
SQEM6 / SQPM6	4,6	4,1	-0,5
SQEM7 / SQPM7	4,5	4,0	-0,5
SQEM8 / SQPM8	4,4	4,0	-0,4
SQEM9 / SQPM9	4,5	4,0	-0,5
SQEM10 / SQPM10	4,3	3,9	-0,4
SQEM11 / SQPM11	4,4	4,0	-0,4
SQEM12 / SQPM12	4,3	3,8	-0,5
SQEM13 / SQPM13	4,4	4,0	-0,4
SQEM14 / SQPM14	4,4	4,0	-0,4
SQEM15 / SQPM15	4,4	4,2	-0,2
SQEM16 / SQPM16	4,5	4,1	-0,4
SQEM17 / SQPM17	3,8	3,8	0,0
SQEM18 / SQPM18	4,2	4,0	-0,2
SQEM19 / SQPM19	4,3	3,9	-0,4
SQEM20 / SQPM20	4,3	4,0	-0,3

3.3.7. Gap 7: Expected and Perceived Service Quality Based on Gender

Expected service quality and perceived service quality gap analysis according to employee gender: This analysis will show us whether expectations were satisfied with perceived scores or not according to employee gender. Results show us that, for employee

gender, expectations were not met. There is a gap between perceived and expectation scores: -0.5 for Males and -0.6 for Females.

This cross table shows us the result for our seventh hypothesis.

The seventh hypothesis aims to evaluate the results according to gender.

H7: There is statically significant difference between expected service quality and perceived service quality according to different genders.

According to the GAP analysis, even though men's expectation score was higher than women's expectation score, women's gap is higher than men's gap. From the perception point of view, men's perceived service quality score is higher than women's perceived service quality.

Table 32 Cross Analysis Hypothesis-7 Result Scores

Expectation / Perceived Variables	Man Average Expectation Results	Man Average Perceived Results	Gap	Women Average Expectation Results	Women Average Perceived Results	Gap
Total	**4,4**	**3,9**	**-0,5**	**4,2**	**3,6**	**-0,6**
SQEM1 / SQPM1	4,5	3,9	-0,6	4,2	3,4	-0,8
SQEM2 / SQPM2	4,6	4,0	-0,6	4,3	3,5	-0,8
SQEM3 / SQPM3	3,9	3,9	0,0	3,6	3,9	0,3
SQEM4 / SQPM4	4,4	3,9	-0,5	4,3	3,5	-0,8
SQEM5 / SQPM5	4,5	4,0	-0,5	4,3	3,7	-0,6
SQEM6 / SQPM6	4,6	4,1	-0,5	4,4	3,5	-0,9
SQEM7 / SQPM7	4,5	3,9	-0,6	4,3	3,4	-0,9
SQEM8 / SQPM8	4,5	3,8	-0,7	4,3	3,7	-0,6
SQEM9 / SQPM9	4,5	3,9	-0,6	4,3	3,6	-0,7
SQEM10 / SQPM10	4,4	3,9	-0,5	4,3	3,5	-0,8
SQEM11 / SQPM11	4,4	4,0	-0,4	4,2	3,6	-0,6
SQEM12 / SQPM12	4,3	3,8	-0,5	4,1	3,4	-0,7
SQEM13 / SQPM13	4,5	3,9	-0,6	4,3	3,5	-0,8
SQEM14 / SQPM14	4,4	3,9	-0,5	4,3	3,6	-0,7
SQEM15 / SQPM15	4,4	4,2	-0,2	4,3	4,1	-0,2
SQEM16 / SQPM16	4,5	4,0	-0,5	4,4	3,8	-0,6
SQEM17 / SQPM17	3,9	3,9	0,0	3,7	3,5	-0,2
SQEM18 / SQPM18	4,2	4,0	-0,2	4,1	3,7	-0,4
SQEM19 / SQPM19	4,3	3,9	-0,4	4,3	3,6	-0,7
SQEM20 / SQPM20	4,4	4,0	-0,4	4,2	3,5	-0,7

3.3.8. Gap 8: Expected and Perceived Service Quality Based on Operator & Vendor

Expected service quality and perceived service quality gap analysis according to satisfaction of operators' expectations between the vendors: This analysis will show

us whether expectations were satisfied with perceived scores according to satisfaction of operators' expectations between the vendors. Results show us that operators' perceptions for different vendors mostly do not meet the expectations. For Operator 1, there is a gap between perceived and expectation scores: -0.3 for Vendor 1, -0.7 for Vendor 2, -0.5 for Vendor 3 and -1.2 for Vendor 4. For Operator 2, there is a gap between perceived and expectation scores: -1.0 for Vendor 2 and -0.6 for Vendor 3. Vendor 1 meets the expectation with no gap. Vendor 4 was not selected by Operator 2's employees. For Operator 3, there is a gap between perceived and expectation scores: -1.3 for Vendor 2 and -0.3 for Vendor 3. Vendor 1 meets the expectation with no gap. Vendor 4 was not selected by Operator 3's employees. The cross table shows us the result for our eighth hypothesis.

The eighth hypothesis aims to evaluate the results according to operators' expectation satisfaction between the vendors.

H8: There is statically significant difference according to operators' expectation satisfaction between different vendors.

We have seen the gap for different operators and different vendors. However, even when they are operating in the same industry, different operators' expectations can be satisfied at different levels by different vendors. This gap analysis is important to see which vendor is more satisfactory for which operator. **Table 33** is for Operator 1, and the result shows that none of the vendors satisfy Operator 1's expectations. Moreover, as can be seen, there are different gap values for different vendors. **Table 34** shows Operator 2's results. We can easily see that the vendors' perceived service quality is different than Operator 1's and Vendor 1's perceived service quality, which satisfy Operator 2's expectations. In **Table 35,** Operator 3's perceived service quality gap is also different than Operator 1 and Operator 2. Vendor 1 satisfied Operator 2's expectations according to the results. It is normal that even in the same telecommunications industry when mostly getting similar services from vendors, service quality can differ from operator to operator and vendor to vendor.

Table 33 Cross Analysis Hypothesis-8 Operator-1 Result Scores

Operator 1									
Expectation / Perceived Variables	**Average Expectation Results**	**Vendor 1 Average Perceived Results**	**Gap**	**Vendor 2 Average Perceived Results**	**Gap**	**Vendor 3 Average Perceived Results**	**Gap**	**Vendor 4 Average Perceived Results**	**Gap**
Total	**4,4**	**4,1**	**-0,3**	**3,7**	**-0,7**	**3,9**	**-0,5**	**3,2**	**-1,2**
SQEM1 / SQPM1	4,4	4,0	-0,4	3,9	-0,5	3,9	-0,5	2,7	-1,7
SQEM2 / SQPM2	4,6	4,1	-0,5	3,8	-0,8	4,0	-0,6	3,9	-0,7
SQEM3 / SQPM3	3,9	4,0	0,1	4,0	0,1	4,0	0,1	2,9	-1,0
SQEM4 / SQPM4	4,4	4,0	-0,4	3,4	-1,0	3,8	-0,6	3,4	-1,0
SQEM5 / SQPM5	4,4	4,1	-0,3	3,7	-0,7	3,9	-0,5	2,9	-1,5
SQEM6 / SQPM6	4,6	4,1	-0,5	3,8	-0,8	4,0	-0,6	2,9	-1,7
SQEM7 / SQPM7	4,5	4,1	-0,4	3,8	-0,7	3,9	-0,6	3,7	-0,8
SQEM8 / SQPM8	4,5	3,9	-0,6	3,3	-1,2	3,9	-0,6	2,7	-1,8
SQEM9 / SQPM9	4,5	4,1	-0,4	3,6	-0,9	3,8	-0,7	3,7	-0,8
SQEM10 / SQPM10	4,4	4,0	-0,4	3,9	-0,5	3,9	-0,5	3,4	-1,0
SQEM11 / SQPM11	4,4	4,0	-0,4	3,6	-0,8	4,0	-0,4	2,8	-1,6
SQEM12 / SQPM12	4,3	3,8	-0,5	3,6	-0,7	3,7	-0,6	3,7	-0,6
SQEM13 / SQPM13	4,5	4,0	-0,5	3,6	-0,9	3,9	-0,6	2,8	-1,7
SQEM14 / SQPM14	4,4	4,1	-0,3	3,6	-0,8	4,0	-0,4	2,9	-1,5
SQEM15 / SQPM15	4,4	4,3	-0,1	3,7	-0,7	4,2	-0,2	3,3	-1,1
SQEM16 / SQPM16	4,5	4,2	-0,3	3,6	-0,9	4,0	-0,5	3,0	-1,5
SQEM17 / SQPM17	3,9	4,0	0,1	3,5	-0,4	3,8	-0,1	3,7	-0,2
SQEM18 / SQPM18	4,2	4,1	-0,1	3,7	-0,5	3,9	-0,3	3,9	-0,3
SQEM19 / SQPM19	4,3	4,0	-0,3	3,5	-0,8	4,0	-0,3	2,7	-1,6
SQEM20 / SQPM20	4,4	4,1	-0,3	3,4	-1,0	4,0	-0,4	3,8	-0,6

Table 34 Cross Analysis Hypothesis-8 Operator-2 Result Scores

Operator 2								
Expectation / Perceived Variables	**Average Expectation Results**	**Vendor 1 Average Perceived Results**	**Gap**	**Vendor 2 Average Perceived Results**	**Gap**	**Vendor 3 Average Perceived Results**	**Gap**	**Vendor 4 Average Perceived Results**
Total	**4,4**	**4,4**	**0,0**	**3,4**	**-1,0**	**3,8**	**-0,6**	**N/A**
SQEM1 / SQPM1	4,5	4,3	-0,2	3,5	-1,0	4,0	-0,5	N/A
SQEM2 / SQPM2	4,6	4,5	-0,1	3,6	-1,0	3,8	-0,8	N/A
SQEM3 / SQPM3	3,8	4,3	0,5	3,4	-0,4	3,8	0,0	N/A
SQEM4 / SQPM4	4,3	4,5	0,2	3,5	-0,8	3,9	-0,4	N/A
SQEM5 / SQPM5	4,5	4,3	-0,2	3,5	-1,0	3,9	-0,6	N/A
SQEM6 / SQPM6	4,6	4,5	-0,1	3,5	-1,1	3,9	-0,7	N/A
SQEM7 / SQPM7	4,5	4,5	0,0	3,2	-1,3	3,6	-0,9	N/A
SQEM8 / SQPM8	4,5	4,5	0,0	3,2	-1,3	3,7	-0,8	N/A
SQEM9 / SQPM9	4,5	4,5	0,0	2,9	-1,6	3,7	-0,8	N/A
SQEM10 / SQPM10	4,3	4,3	0,0	3,4	-0,9	3,9	-0,4	N/A
SQEM11 / SQPM11	4,3	4,5	0,2	3,3	-1,0	4,0	-0,3	N/A
SQEM12 / SQPM12	4,4	4,5	0,1	3,6	-0,8	4,0	-0,4	N/A
SQEM13 / SQPM13	4,5	4,5	0,0	3,3	-1,2	3,7	-0,8	N/A
SQEM14 / SQPM14	4,4	4,5	0,1	3,3	-1,1	3,7	-0,7	N/A
SQEM15 / SQPM15	4,4	4,5	0,1	4,1	-0,3	4,2	-0,2	N/A
SQEM16 / SQPM16	4,5	4,5	0,0	3,7	-0,8	3,6	-0,9	N/A
SQEM17 / SQPM17	3,9	4,5	0,6	3,5	-0,4	3,6	-0,3	N/A
SQEM18 / SQPM18	4,3	4,3	0,0	3,6	-0,7	3,9	-0,4	N/A
SQEM19 / SQPM19	4,4	4,5	0,1	3,5	-0,9	3,7	-0,7	N/A
SQEM20 / SQPM20	4,3	4,5	0,2	3,2	-1,1	4,1	-0,2	N/A

Table 35 Cross Analysis Hypothesis-8 Operator-3 Result Scores

Operator 3								
Expectation / Perceived Variables	**Average Expectation Results**	**Vendor 1 Average Perceived Results**	**Gap**	**Vendor 2 Average Perceived Results**	**Gap**	**Vendor 3 Average Perceived Results**	**Gap**	**Vendor 4 Average Perceived Results**
Total	**4,3**	**4,3**	**0,0**	**3,0**	**-1,3**	**4,0**	**-0,3**	**N/A**
SQEM1 / SQPM1	4,4	4,5	0,1	3,0	-1,4	4,0	-0,4	N/A
SQEM2 / SQPM2	4,6	4,5	-0,1	3,0	-1,6	3,8	-0,8	N/A
SQEM3 / SQPM3	3,3	4,0	0,7	3,0	-0,3	3,9	0,6	N/A
SQEM4 / SQPM4	4,3	4,0	-0,3	3,0	-1,3	4,1	-0,2	N/A
SQEM5 / SQPM5	4,5	4,5	0,0	3,0	-1,5	4,0	-0,5	N/A
SQEM6 / SQPM6	4,5	4,0	-0,5	3,0	-1,5	4,2	-0,3	N/A
SQEM7 / SQPM7	4,4	4,0	-0,4	3,0	-1,4	4,0	-0,4	N/A
SQEM8 / SQPM8	4,3	4,5	0,2	3,0	-1,3	3,9	-0,4	N/A
SQEM9 / SQPM9	4,5	4,5	0,0	3,0	-1,5	4,1	-0,4	N/A
SQEM10 / SQPM10	4,4	4,5	0,1	3,0	-1,4	3,7	-0,7	N/A
SQEM11 / SQPM11	4,5	4,5	0,0	3,0	-1,5	4,1	-0,4	N/A
SQEM12 / SQPM12	4,3	4,5	0,2	3,0	-1,3	3,7	-0,6	N/A
SQEM13 / SQPM13	4,4	4,5	0,1	3,0	-1,4	4,0	-0,4	N/A
SQEM14 / SQPM14	4,3	4,0	-0,3	3,0	-1,3	3,8	-0,5	N/A
SQEM15 / SQPM15	4,3	4,5	0,2	3,0	-1,3	4,2	-0,1	N/A
SQEM16 / SQPM16	4,6	4,0	-0,6	3,0	-1,6	3,8	-0,8	N/A
SQEM17 / SQPM17	3,7	4,5	0,8	3,0	-0,7	3,6	-0,1	N/A
SQEM18 / SQPM18	4,2	4,0	-0,2	3,0	-1,2	3,9	-0,3	N/A
SQEM19 / SQPM19	4,3	4,0	-0,3	3,0	-1,3	4,1	-0,2	N/A
SQEM20 / SQPM20	4,2	3,5	-0,7	3,0	-1,2	4,1	-0,1	N/A

CHAPTER 4

4. CONCLUSION & RECOMMENDATIONS

This thesis aimed to find out the service quality of Turkey's telecommunications industry from the operators' point of view by analysing the expectations and perceptions of operators regarding service vendors.

To measure service quality, the SERVQUAL variables were analysed and used to find the correct questions for the telecommunications industry. From twenty-two SERVQUAL variables, twenty variables were included in the questionnaire. However, before administering the survey to the operators, service executives from the telecommunication industry weighted each variable. These weighted scores were part of the TOPSIS model. It was useful to understand the importance of each SERVQUAL variable in the telecommunications industry. These weighted results were compared to operators' expectations later on, and most of them were seen to be similar to executives' weighted results.

To find the sample frame, Cochran's quantitative sampling model was used. However, it was hard to find the exact numbers for each operators' employees. This difficulty was caused by a lack of available information on the exact number of total employees relevant to the study, as all information (for example on the Internet) was for the total number of employees employed by the operators. However, these total numbers could not be used to estimate the sample universe since not all the employees are related to vendors' services. If you are trying to find about the quality of automobiles, it does not make sense to survey people who do not have an automobile. It was hard to get the universe, i.e. the number of people related to vendors' services. Hence, an assumption was made for a total universe of three operators with ten thousand, and sample frame was calculated as two hundred sixty.

One of the difficulties encountered during this thesis was reaching operators' employees. There was no way to send the survey link to all the operators' employees. So, it was started with the known employees, and the snowball model was used. Social media was used to reach the Operators' employees. As a result, two hundred sixty-eight employees took part in the survey.

After getting the survey results, all items of the questionnaire's detailed results were shared in the thesis and relevant comments specific to the telecommunication industry were made. Employees from various age groups, cities, job levels and departments participated in the survey. It was seen that the telecommunications industry in general and the operators in particular were dominated by men with 91%. Considering that most jobs in the telecommunications services industry are technical, most employees are engineers or technicians. Therefore, this result should not be surprising for us. It was found that while Vendor 1, Vendor 2 and Vendor 3 are selected by all three operators, Vendor 4 was selected only by Operator 1. Operators prefer to work with multiple vendors for competition and for high service quality.

Expected service quality results show us that operators really need high service quality. Actually, when we check the telecommunication needs of subscribers, it is normal for operators to expect high service quality from vendors. Results also inform us that being dependable and 7/24/365 support are very important for the telecommunications industry. Perceived service quality results show that, overall, customer expectations could not be satisfied.

The SERVQUAL GAP model was used to outline the service quality results by comparing perceived and expected service quality. Eight main hypothesis results were used to show the service quality results. Overall, results indicate that operators are not satisfied with the current service quality. From twenty variables, only one variable was satisfied. No variables resulted in "overly satisfied". It was also shown that service quality result can be different for different operators. Even when providing similar services, different operators have different expectations and perceptions. Also, for the same vendor, service quality results can be different for different operators, and the actual results from the study prove this assumption. Comparison of service quality results between vendors

reveals that Vendor 1 > Vendor 3> Vendor 4 > Vendor 2. Another important result is that none of the SERVQUAL dimensions were satisfied.

Overall, as perceived service quality < expected service quality, we can say that the result for the telecommunications industry from an operators' point of view is **low quality**. This result can be due to high competition between operators and between vendors. Day by day, operators and vendors try to decrease their OPEX costs, which are directly related to service costs. This cost mostly affects the quality of provided services. As most of the variables could not be satisfied, it can be argued that vendors do not have enough knowledge about their customers' expectations.

As a recommendation based on these results, it is important for vendors to understand customer expectations well and work towards satisfying these expectations. Since most service quality variables are directly related to service employees, vendors should also make sure that their employees are familiar with these quality variables, and train them to satisfy the expectations. It is highly probable that many service employees merely solve the problems but do not have enough knowledge about service quality variables or satisfaction of customer expectations. Service jobs should be driven by customer expectations, and vendors should set customer expectations as their main service quality values. Vendors should not just make surveys about service quality, but should also outline the results and put in place some action plans to improve them, making sure that they check the results with new surveys for the same variables to see the improvements.

This study can contribute to telecommunication operators, telecommunication service providers and also future telecommunication service quality studies. This study was modelled for the three largest operators and the four largest vendors in Turkey. For follow-up studies, this model can be enlarged in scope to include more operators and other service providers in Turkey..

Table 36 Hypothesis Conclusion

No	Hypothesis	Result	Remark
H1	There is statically significant difference between expected service quality and perceived service quality	Accepted	GAP 1 shows that, -0,5 points gap between average perceived and average expectation results
H2	There is statically significant difference between expected service quality and perceived service quality according to SERVQUAL service dimensions (Tangibility, Reliability, Responsibility, Security, and Empathy)	Accepted	GAP 2 shows that, gaps for the dimensions, tangibility: -0,4, reliability: -0,6, responsibility: -0,5, Security: -0,4, empathy: -0,3.
H3	There is statically significant difference between expected service quality and perceived service quality according to different operators' results	Accepted	GAP 3 shows that gaps are, for Operator 1: -0,5, for Operator 2: -0,6, for Operator 3: -0,4.
H4	There is statically significant difference between expected service quality and perceived service quality according to different vendors' results	Accepted	GAP 4 shows that gaps are, for Vendor 1: -0,3 , for Vendor 2: -0,9 , for Vendor 3: -0,5, for Vendor 4: -0,6.
H5	There is statically significant difference between expected service quality and perceived service quality according to service importance answer between "technical support" and other two options	Accepted	GAP 5 shows that gaps are, for Technical Support selection: -0,4, for Other two selection(Product Quality&Product Price): -0,5

Table 36 (Cont.) Hypothesis Conclusion

H6	There is statically significant difference between expected service quality and perceived service quality according to employees experience in years	Accepted	GAP 6 shows that gaps are, -0,4 for 0-3 years' experience, -0,6 for 4-7 years' experience, -0,3 for 8-11 years' experience, -0,6 for 12-15 years' experience and -0,3 for over 16 years' experience
H7	There is statically significant difference between expected service quality and perceived service quality according to different gender	Accepted	GAP 7 shows that gaps are,for Man: -0,5, for Women: -0,6.
H8	There is statically significant difference according to operators' expectation satisfaction between different vendors	Accepted	GAP 8 shows that, for Operator 1 there is gap between perceived and expectation scores -0,3 for Vendor 1, -0,7 for Vendor 2, -0,5 for Vendor 3 and -1,2 for Vendor 4. For Operator 2 there is gap between perceived and expectation scores -1,0 for Vendor 2 and -0,6 for Vendor 3. Vendor 1 meet the expectation with 0 gap. Vendor 4 did not selected by Operator 2 employees. For Operator 3 there is gap between perceived and expectation scores -1,3 for Vendor 2 and -0,3 for Vendor 3. Vendor 1 meet the expectation with no gap. Vendor 4 did not selected by Operator 3 employees.

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APPENDIX A. QUESTIONNAIRE FOR CRITERIA

Telekomünikasyon Firmalarının Servis Kalitesi Algı Analizi

Merhabalar,

Anketimize katıldığınız için teşekkür ederiz.

Anketimiz "Telekomünikasyon Firmalarının Servis Kalitesi Algı Analizi" adlı Çankaya Üniversitesi, İşletme Yüksek Lisans, tezi kapsamında yapılmaktadır.

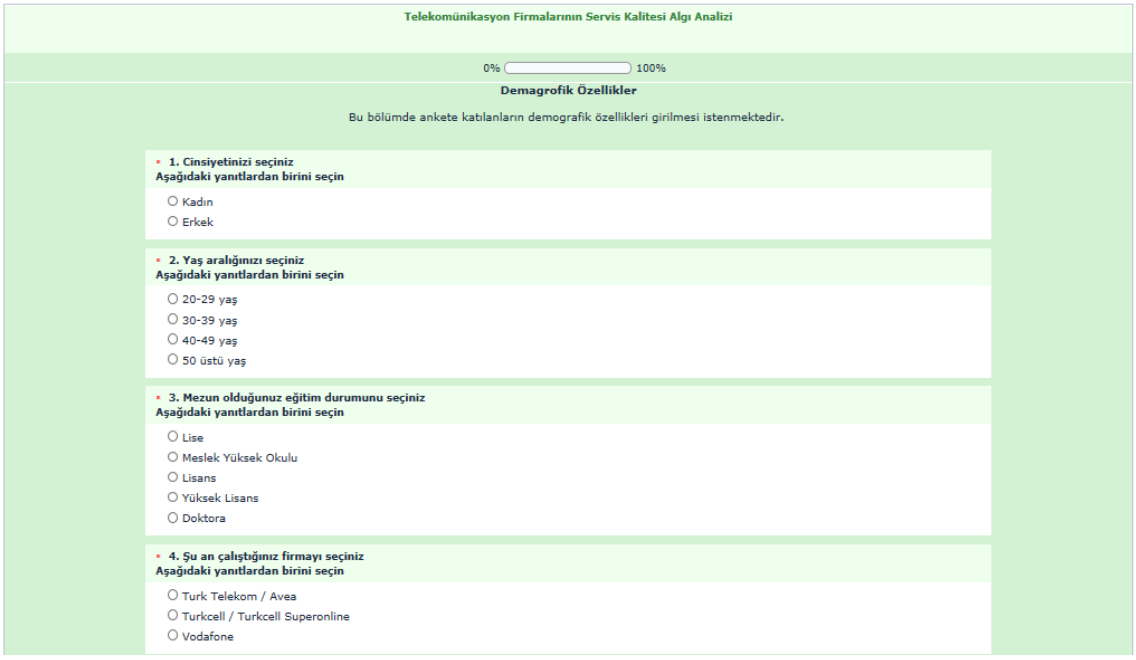
Anketimiz kesinlikle ticari bir amaç için yapılmamaktadır.

Anketimiz herhangi bir firma adına düzenlenmemektedir.

Anketimizde katılanların hiç bir şekilde ad, soyad vb. şahsi bilgileri istenmemektedir.

Ankete konu olan telekomünikasyon operatör ve üretici firmaların, kurum adları tez içerisinde yer almayacaktır.

Kaydedilmiş Anketi Yükleyin | Sonraki | Çıkın ve anketi temizleyin



Telekomünikasyon Firmalarının Servis Kalitesi Algı Analizi

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Demagrofik Özellikler

Bu bölümde ankete katılanların demografik özellikleri girilmesi istenmektedir.

* **1. Cinsiyetinizi seçiniz**
Aşağıdaki yanıtlardan birini seçin

○ Kadın
○ Erkek

* **2. Yaş aralığınızı seçiniz**
Aşağıdaki yanıtlardan birini seçin

○ 20-29 yaş
○ 30-39 yaş
○ 40-49 yaş
○ 50 üstü yaş

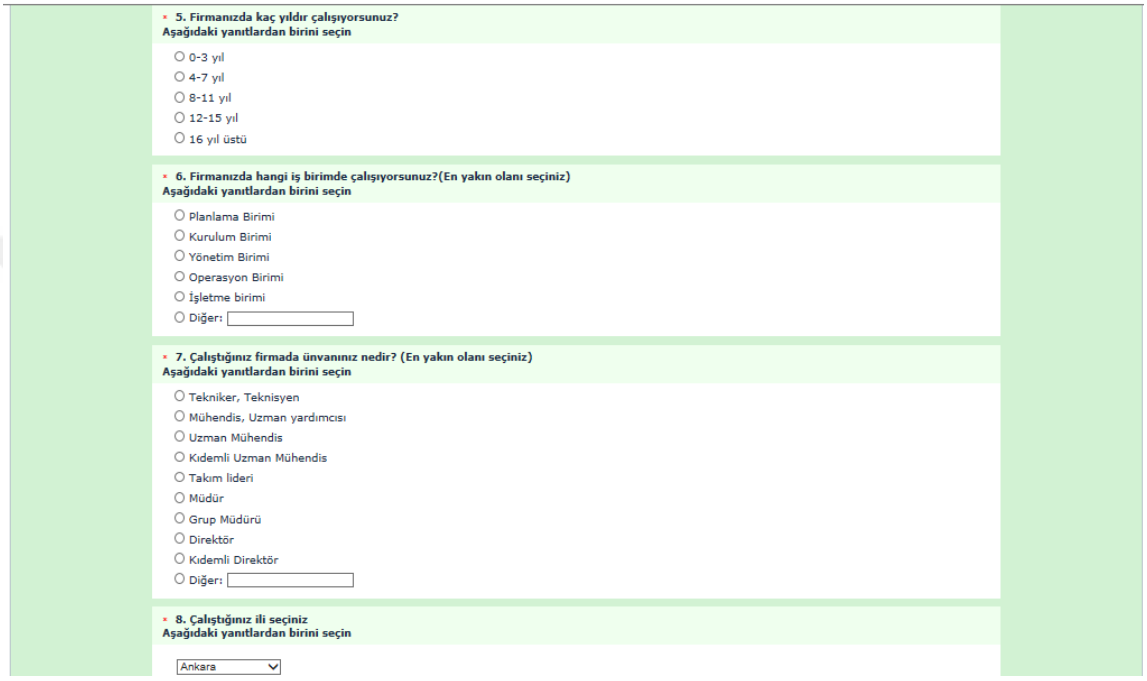
* **3. Mezun olduğunuz eğitim durumunu seçiniz**
Aşağıdaki yanıtlardan birini seçin

○ Lise
○ Meslek Yüksek Okulu
○ Lisans
○ Yüksek Lisans
○ Doktora

* **4. Şu an çalıştığınız firmayı seçiniz**
Aşağıdaki yanıtlardan birini seçin

○ Turk Telekom / Avea
○ Turkcell / Turkcell Superonline
○ Vodafone

APPENDIX A. (CONT.) QUESTIONNAIRE FOR CRITERIA



* 5. Firmanızda kaç yıldır çalışıyorsunuz?
Aşağıdaki yanıtlardan birini seçin

- 0-3 yıl
- 4-7 yıl
- 8-11 yıl
- 12-15 yıl
- 16 yıl üstü

* 6. Firmanızda hangi iş birimde çalışıyorsunuz?(En yakın olanı seçiniz)
Aşağıdaki yanıtlardan birini seçin

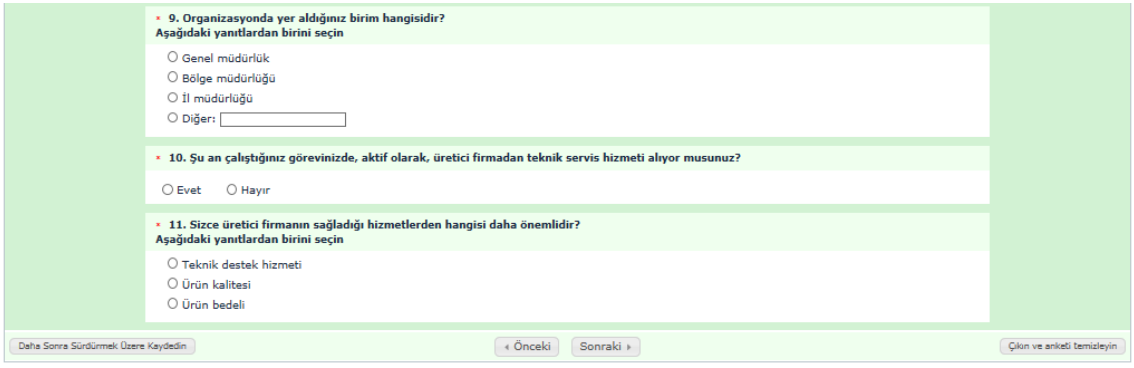
- Planlama Birimi
- Kurulum Birimi
- Yönetim Birimi
- Operasyon Birimi
- İşletme birimi
- Diğer:

* 7. Çalıştığınız firmada ünvanınız nedir? (En yakın olanı seçiniz)
Aşağıdaki yanıtlardan birini seçin

- Tekniker, Teknisyen
- Mühendis, Uzman yardımcısı
- Uzman Mühendis
- Kıdemli Uzman Mühendis
- Takım lideri
- Müdür
- Grup Müdürü
- Direktör
- Kıdemli Direktör
- Diğer:

* 8. Çalıştığınız ili seçiniz
Aşağıdaki yanıtlardan birini seçin

Ankara



* 9. Organizasyonda yer aldığınız birim hangisidir?
Aşağıdaki yanıtlardan birini seçin

- Genel müdürlük
- Bölge müdürlüğü
- İl müdürlüğü
- Diğer:

* 10. Şu an çalıştığınız görevinizde, aktif olarak, üretici firmadan teknik servis hizmeti alıyor musunuz?

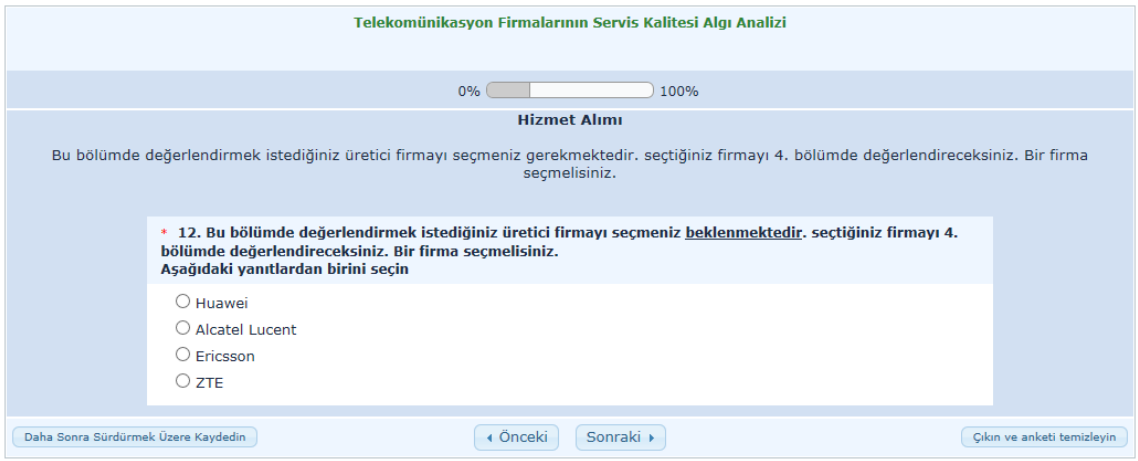
- Evet
- Hayır

* 11. Sizce üretici firmanın sağladığı hizmetlerden hangisi daha önemlidir?
Aşağıdaki yanıtlardan birini seçin

- Teknik destek hizmeti
- Ürün kalitesi
- Ürün bedeli

Daha Sonra Sürdürmek Üzere Kaydedin | ‹ Önceki | Sonraki › | Çıkın ve anketi temizleyin

APPENDIX A. (CONT.) QUESTIONNAIRE FOR CRITERIA



Telekomünikasyon Firmalarının Servis Kalitesi Algı Analizi

0% 100%

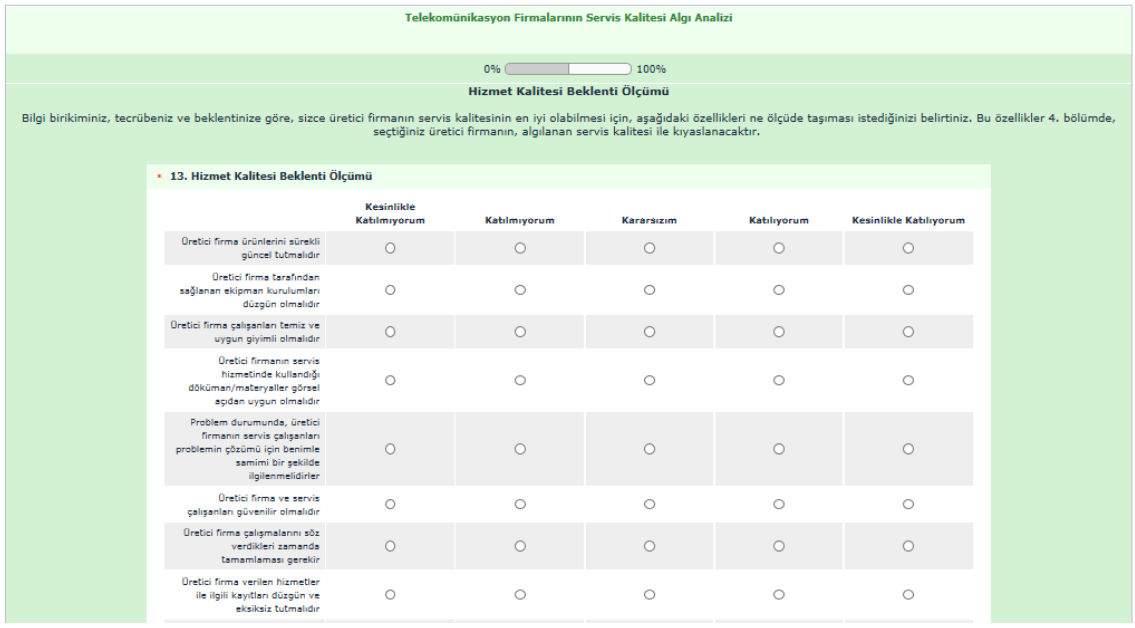
Hizmet Alımı

Bu bölümde değerlendirmek istediğiniz üretici firmayı seçmeniz gerekmektedir. seçtiğiniz firmayı 4. bölümde değerlendireceksiniz. Bir firma seçmelisiniz.

* **12. Bu bölümde değerlendirmek istediğiniz üretici firmayı seçmeniz beklenmektedir. seçtiğiniz firmayı 4. bölümde değerlendireceksiniz. Bir firma seçmelisiniz.**
Aşağıdaki yanıtlardan birini seçin

- ○ Huawei
- ○ Alcatel Lucent
- ○ Ericsson
- ○ ZTE

Daha Sonra Sürdürmek Üzere Kaydedin | ◂ Önceki | Sonraki ▸ | Çıkın ve anketi temizleyin



Telekomünikasyon Firmalarının Servis Kalitesi Algı Analizi

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Hizmet Kalitesi Beklenti Ölçümü

Bilgi birikiminiz, tecrübeniz ve beklentinize göre, sizce üretici firmanın servis kalitesinin en iyi olabilmesi için, aşağıdaki özellikleri ne ölçüde taşıması istediğinizi belirtiniz. Bu özellikler 4. bölümde, seçtiğiniz üretici firmanın, algılanan servis kalitesi ile kıyaslanacaktır.

* **13. Hizmet Kalitesi Beklenti Ölçümü**

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
Üretici firma ürünlerini sürekli güncel tutmalıdır	○	○	○	○	○
Üretici firma tarafından sağlanan ekipman kurulumları düzgün olmalıdır	○	○	○	○	○
Üretici firma çalışanları temiz ve uygun giyimli olmalıdır	○	○	○	○	○
Üretici firmanın servis hizmetinde kullandığı döküman/materyaller görsel açıdan uygun olmalıdır	○	○	○	○	○
Problem durumunda, üretici firmanın servis çalışanları problemin çözümü için benimle samimi bir şekilde ilgilenmelidirler	○	○	○	○	○
Üretici firma ve servis çalışanları güvenilir olmalıdır	○	○	○	○	○
Üretici firma çalışmalarını söz verdikleri zamanda tamamlaması gerekir	○	○	○	○	○
Üretici firma verilen hizmetler ile ilgili kayıtları düzgün ve eksiksiz tutmalıdır	○	○	○	○	○

APPENDIX A. (CONT.) QUESTIONNAIRE FOR CRITERIA

Üretici firma verilecek/yapılacak olan hizmetler/çalışmalar için zamanında ve tam olarak bilgi vermelidir	○	○	○	○	○
Üretici firma servis hizmeti çalışanları hızlı bir şekilde servis vermelidir	○	○	○	○	○
Üretici firma servis hizmeti çalışanları her zaman müşterilerine yardım etmeye istekli olmalıdır	○	○	○	○	○
Üretici firma servis hizmeti merkezi, asla müşterilerine destek veremeyecek kadar meşgul olmamalıdırlar	○	○	○	○	○
Üretici firma servis hizmeti çalışanları müşterilerde güven duygusu uyandırmalıdır	○	○	○	○	○
Üretici firma servis hizmeti çalışanları ile yapılan görüşmelerde kendimi güvende hissetmeliyim	○	○	○	○	○
Üretici firma servis hizmeti çalışanları müşterilerine karşı saygılı olmalıdır	○	○	○	○	○
Üretici firma servis hizmeti çalışanları müşterilerine destek verebilecek yeterli bilgiye sahip olmalıdır	○	○	○	○	○
Üretici firma servis hizmeti çalışanları müşterilerine bireysel olarak ilgi göstermelidir	○	○	○	○	○
Üretici firma servis hizmeti çalışanlarının, müşterilerinin ne istediğini anlamaları beklenir	○	○	○	○	○
Üretici firma sizin isteklerinizi kendi servis hizmeti değeri olarak görmelidir	○	○	○	○	○
Üretici firma servis hizmeti merkezi müşterileri için elverişli çalışma saatlerine sahip olmalıdır	○	○	○	○	○

Daha Sonra Sürdürmek Üzere Kaydedin ‹ Önceki Sonraki › Çıkın ve anketi temizleyin

Telekomünikasyon Firmalarının Servis Kalitesi Algı Analizi

0% 100%

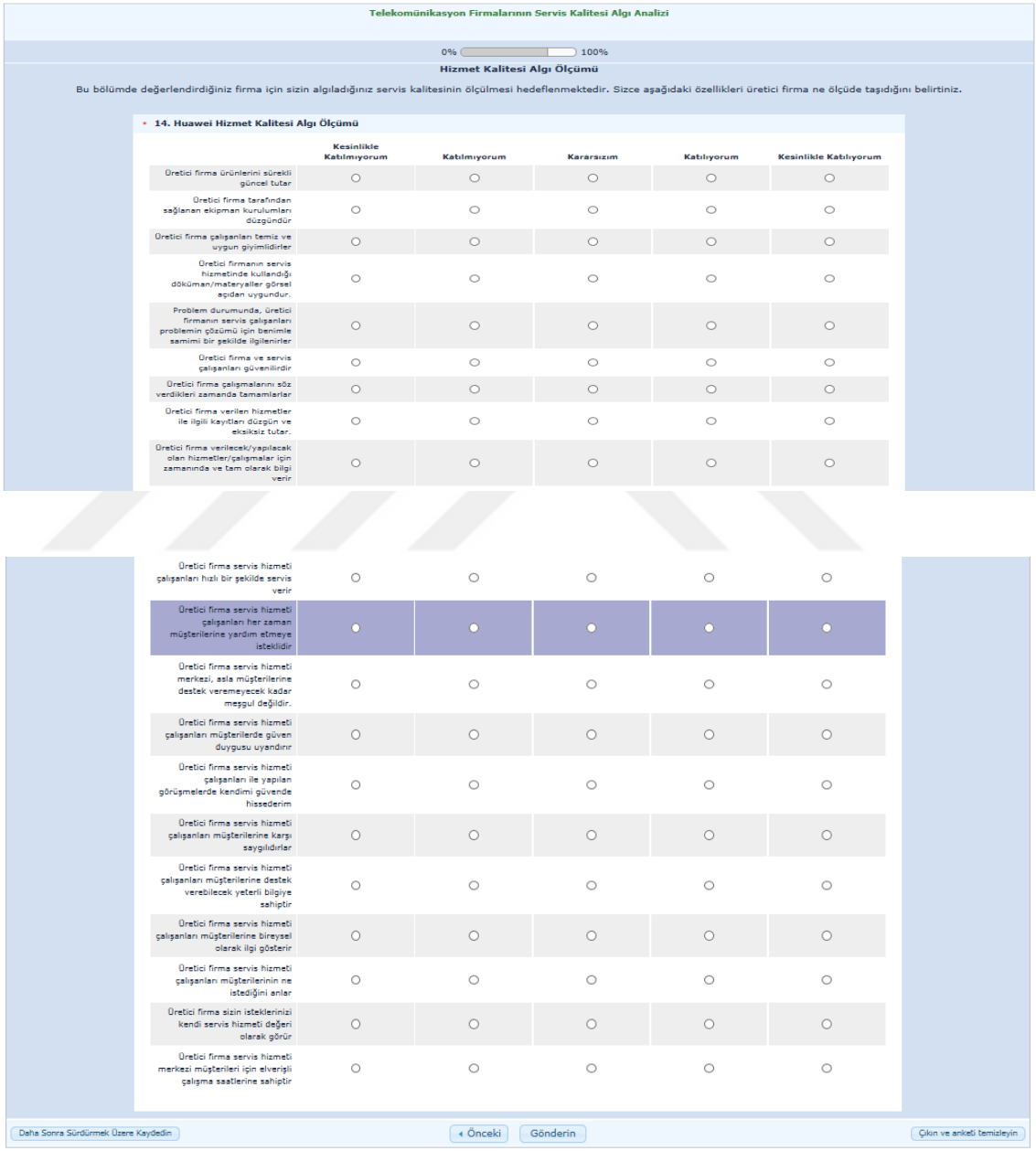
Hizmet Kalitesi Algı Ölçümü

Bu bölümde değerlendirdiğiniz firma için sizin algıladığınız servis kalitesinin ölçülmesi hedeflenmektedir. Sizce aşağıdaki özellikleri üretici firma ne ölçüde taşıdığını belirtiniz.

*** 14. Huawei Hizmet Kalitesi Algı Ölçümü**

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
Üretici firma ürünlerini sürekli güncel tutar	○	○	○	○	○
Üretici firma tarafından sağlanan ekipman kurulumları düzgündür	○	○	○	○	○
Üretici firma çalışanları temiz ve uygun giyimlidirler	○	○	○	○	○
Üretici firmanın servis hizmetinde kullandığı döküman/materyaller görsel açıdan uygundur.	○	○	○	○	○
Problem durumunda, üretici firmanın servis çalışanları problemin çözümü için benimle samimi bir şekilde ilgilenirler	○	○	○	○	○
Üretici firma ve servis çalışanları güvenilirdir	○	○	○	○	○
Üretici firma çalışmalarını söz verdikleri zamanda tamamlarlar	○	○	○	○	○
Üretici firma verilen hizmetler ile ilgili kayıtları düzgün ve eksiksiz tutar.	○	○	○	○	○
Üretici firma verilecek/yapılacak olan hizmetler/çalışmalar için zamanında ve tam olarak bilgi verir	○	○	○	○	○

APPENDIX A. (CONT.) QUESTIONNAIRE FOR CRITERIA



Telekomünikasyon Firmalarının Servis Kalitesi Algı Analizi

0% 100%

Hizmet Kalitesi Algı Ölçümü

Bu bölümde değerlendirdiğiniz firma için sizin algıladığınız servis kalitesinin ölçülmesi hedeflenmektedir. Sizce aşağıdaki özellikleri üretici firma ne ölçüde taşıdığını belirtiniz.

14. Huawei Hizmet Kalitesi Algı Ölçümü

	Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılıyorum	Kesinlikle Katılıyorum
Üretici firma ürünlerini sürekli güncel tutar	○	○	○	○	○
Üretici firma tarafından sağlanan ekipman kurulumları düzgündür	○	○	○	○	○
Üretici firma çalışanları temiz ve uygun giyimlidirler	○	○	○	○	○
Üretici firmanın servis hizmetinde kullandığı döküman/materyaller görsel açıdan uygundur.	○	○	○	○	○
Problem durumunda, üretici firmanın servis çalışanları problemin çözümü için benimle samimi bir şekilde ilgilenirler	○	○	○	○	○
Üretici firma ve servis çalışanları güvenilirdir	○	○	○	○	○
Üretici firma çalışmalarını söz verdikleri zamanda tamamlarlar	○	○	○	○	○
Üretici firma verilen hizmetler ile ilgili kayıtları düzgün ve eksiksiz tutar.	○	○	○	○	○
Üretici firma verilecek/yapılacak olan hizmetler/çalışmalar için zamanında ve tam olarak bilgi verir	○	○	○	○	○
Üretici firma servis hizmeti çalışanları hızlı bir şekilde servis verir	○	○	○	○	○
Üretici firma servis hizmeti çalışanları her zaman müşterilerine yardım etmeye isteklidir	○	○	○	○	○
Üretici firma servis hizmeti merkezi, asla müşterilerine destek veremeyecek kadar meşgul değildir.	○	○	○	○	○
Üretici firma servis hizmeti çalışanları müşterilerde güven duygusu uyandırır	○	○	○	○	○
Üretici firma servis hizmeti çalışanları ile yapılan görüşmelerde kendimi güvende hissederim	○	○	○	○	○
Üretici firma servis hizmeti çalışanları müşterilerine karşı saygılıdırlar	○	○	○	○	○
Üretici firma servis hizmeti çalışanları müşterilerine destek verebilecek yeterli bilgiye sahiptir	○	○	○	○	○
Üretici firma servis hizmeti çalışanları müşterilerine bireysel olarak ilgi gösterir	○	○	○	○	○
Üretici firma servis hizmeti çalışanları müşterilerinin ne istediğini anlar	○	○	○	○	○
Üretici firma sizin isteklerinizi kendi servis hizmeti değeri olarak görür	○	○	○	○	○
Üretici firma servis hizmeti merkezi müşterileri için elverişli çalışma saatlerine sahiptir	○	○	○	○	○

Daha Sonra Sürdürmek Üzere Kaydedin | Önceki | Gönderin | Çıkın ve anketi temizleyin

Anketimize katıldığınız için teşekkür ederiz.

APPENDIX B. EXECUTIVES WEIGHTED SCORES OF SERVQUAL VARIABLES

Customer Support Technical Director	**Executive 1**
Assurance & Managed Services Director	**Executive 2**
Customer Support Operation Director	**Executive 3**
Delivery & Service Director	**Executive 4**
Delivery & Service Director	**Executive 5**
Network Performance & Technical Services Director	**Executive 6**

	Tangibility			
	SQWC1	SQWC2	SQWC3	SQWC4
Executive 1	5	4	3	4
Executive 2	4	4	2	4
Executive 3	1	3	4	3
Executive 4	5	4	4	4
Executive 5	2	5	2	5
Executive 6	5	4	4	4
Average:	3,7	4,0	3,2	4,0

	Reliability			
	SQWC5	SQWC6	SQWC7	SQWC8
Executive 1	5	5	5	5
Executive 2	5	5	5	5
Executive 3	5	5	5	4
Executive 4	5	5	5	5
Executive 5	5	5	5	5
Executive 6	5	5	5	5
Average:	5,0	5,0	5,0	4,8

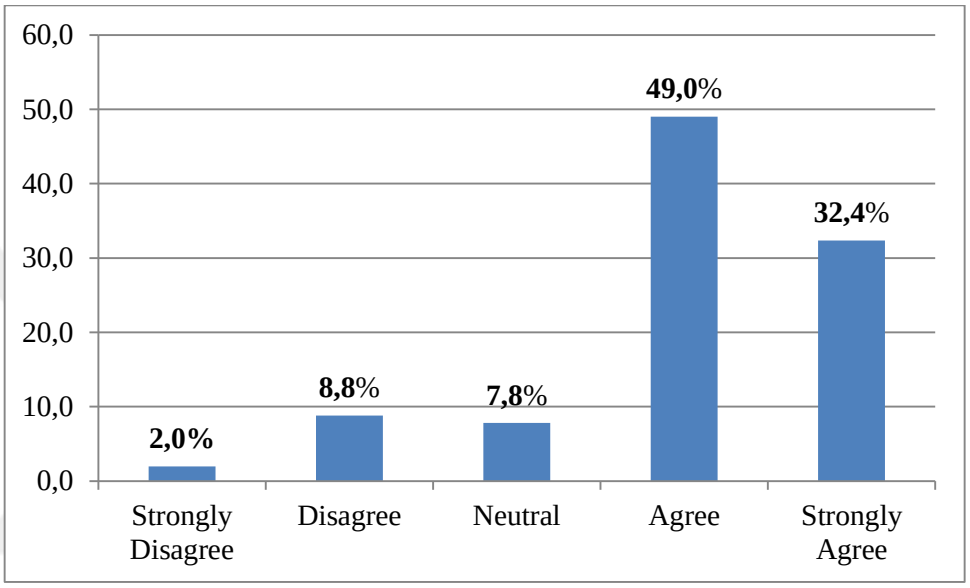
APPENDIX B. (CONT.) EXECUTIVES WEIGHTED SCORES OF SERVQUAL VARIABLES

	Responsibility			
	SQWC9	SQWC10	SQWC11	SQWC12
Executive 1	5	5	5	5
Executive 2	3	5	5	5
Executive 3	4	4	5	4
Executive 4	5	5	5	5
Executive 5	3	1	1	3
Executive 6	5	5	5	5
Average:	4,2	4,2	4,3	4,5

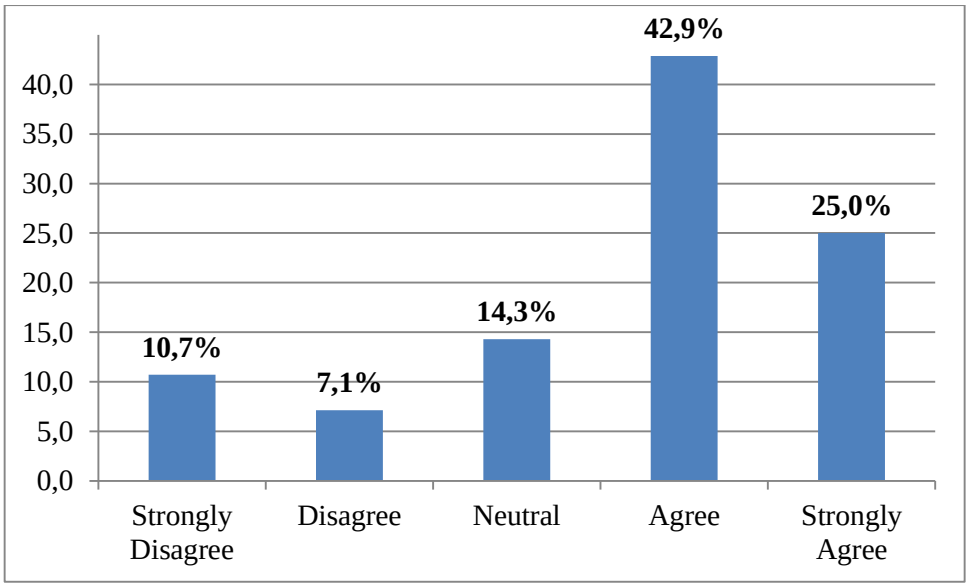
	Security			
	SQWC13	SQWC14	SQWC15	SQWC16
Executive 1	5	5	5	5
Executive 2	5	5	4	5
Executive 3	5	3	4	5
Executive 4	5	4	5	5
Executive 5	5	5	5	5
Executive 6	5	4	5	4
Average:	5,0	4,3	4,7	4,8

	Empathy			
	SQWC17	SQWC18	SQWC19	SQWC20
Executive 1	3	4	3	4
Executive 2	3	4	5	3
Executive 3	5	4	5	4
Executive 4	4	4	3	3
Executive 5	2	2	5	3
Executive 6	4	5	4	5
Average:	3,5	3,8	4,2	3,7

APPENDIX C. PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

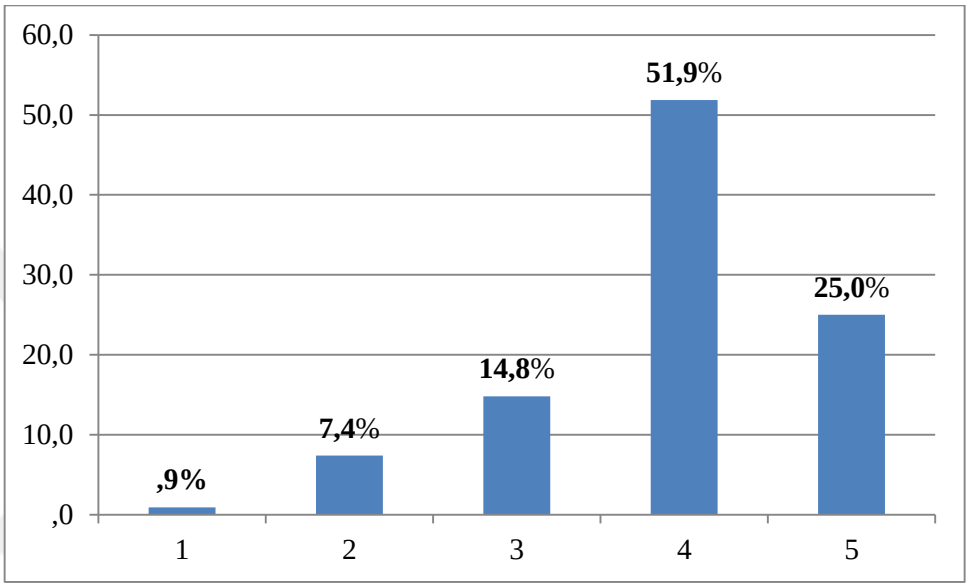


SQPM1 Vendor-1 Score Result

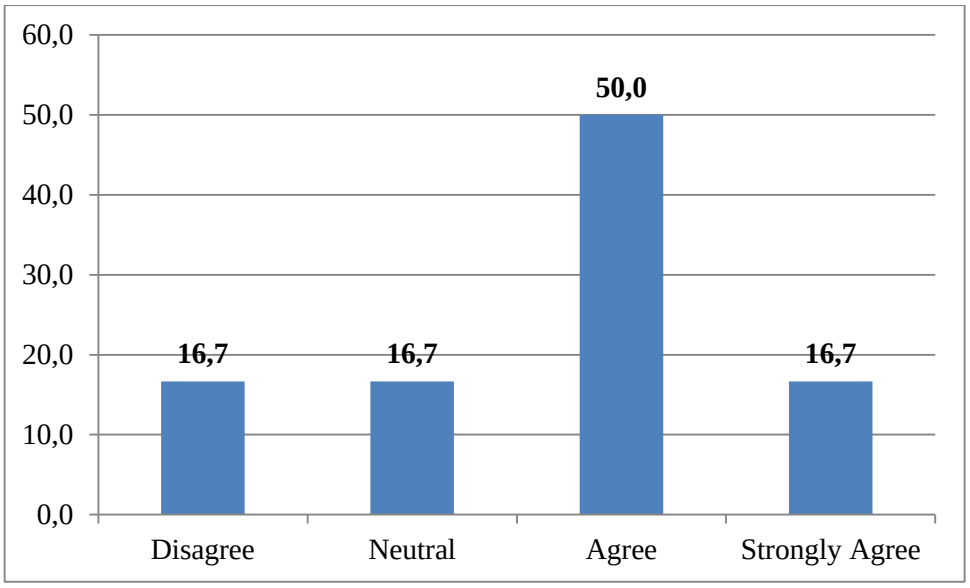


SQPM1 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

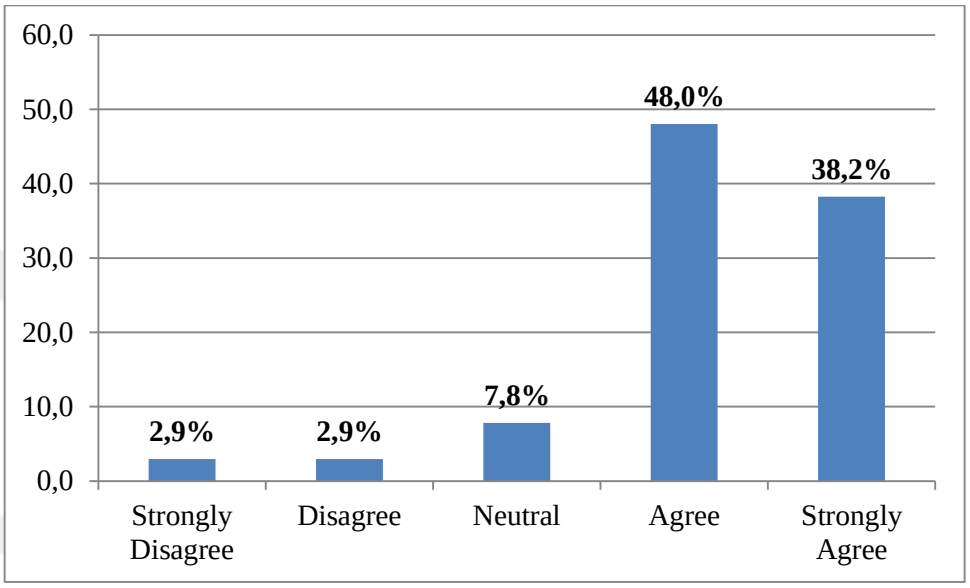


SQPM1 Vendor-3 Score Result

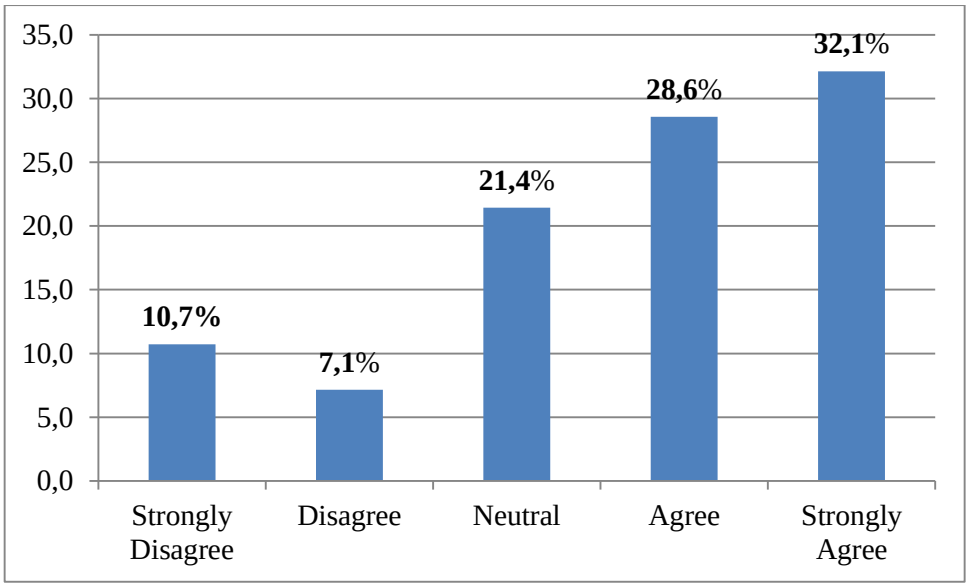


SQPM1 Vendor-4 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

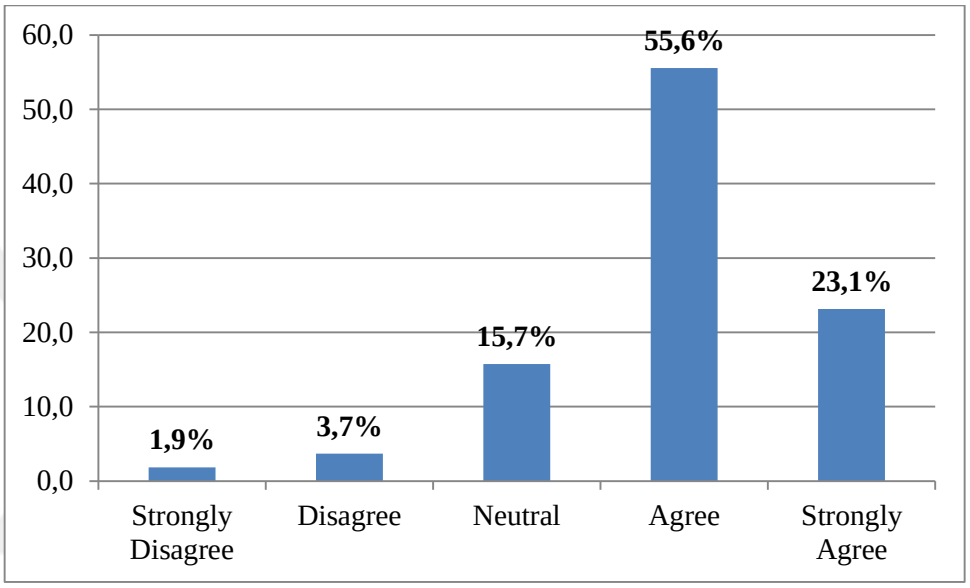


SQPM2 Vendor-1 Score Result

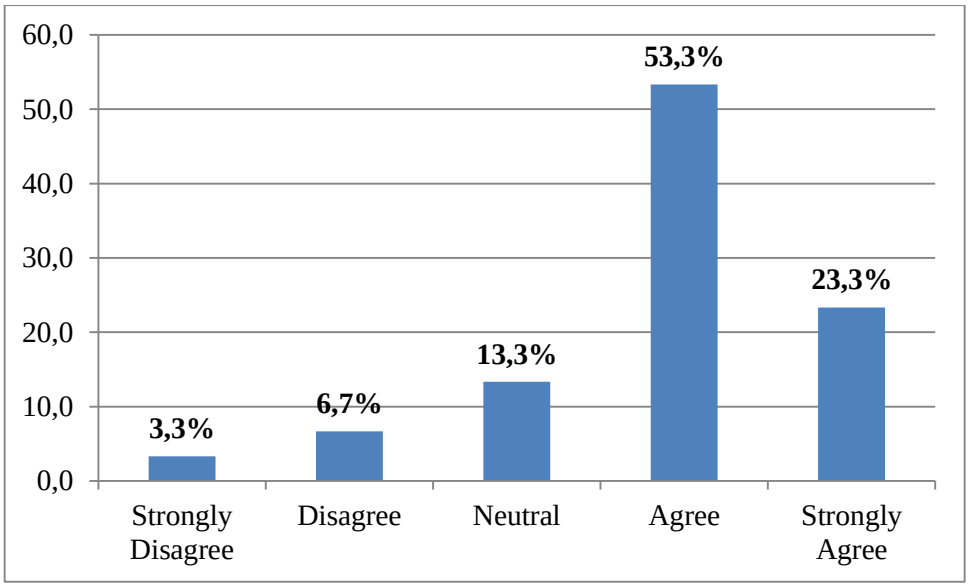


SQPM2 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

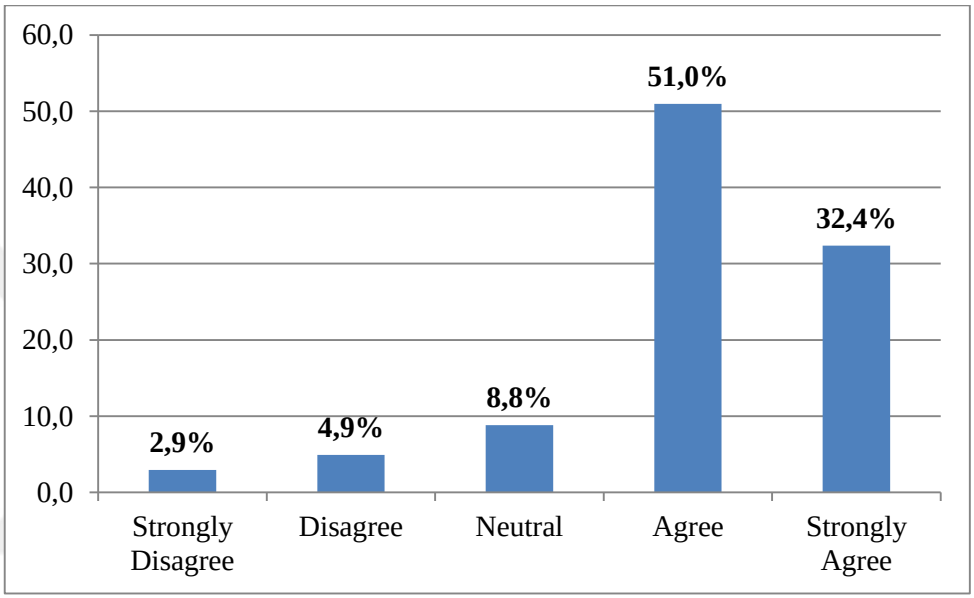


SQPM2 Vendor-3 Score Result

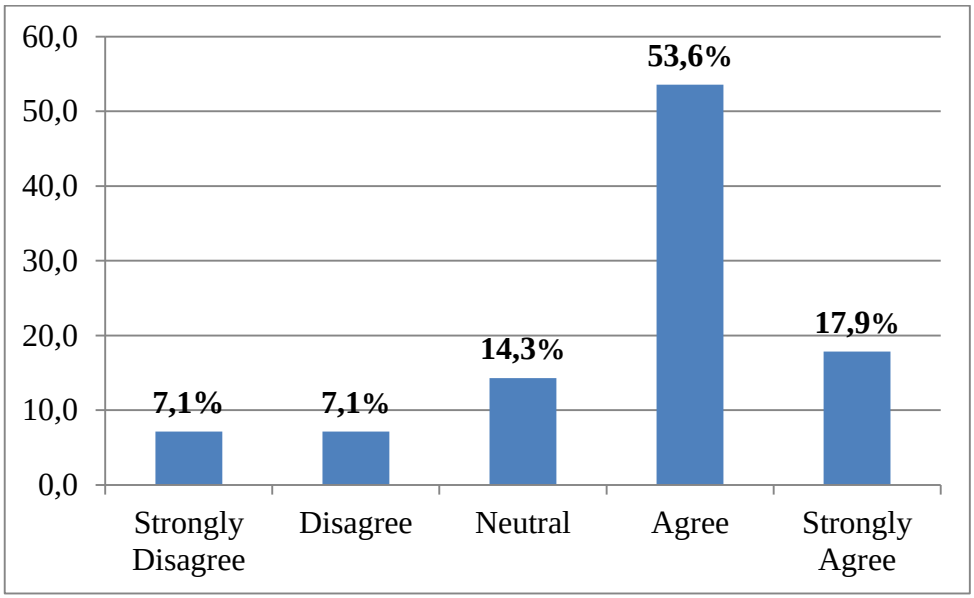


SQPM2 Vendor-4 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

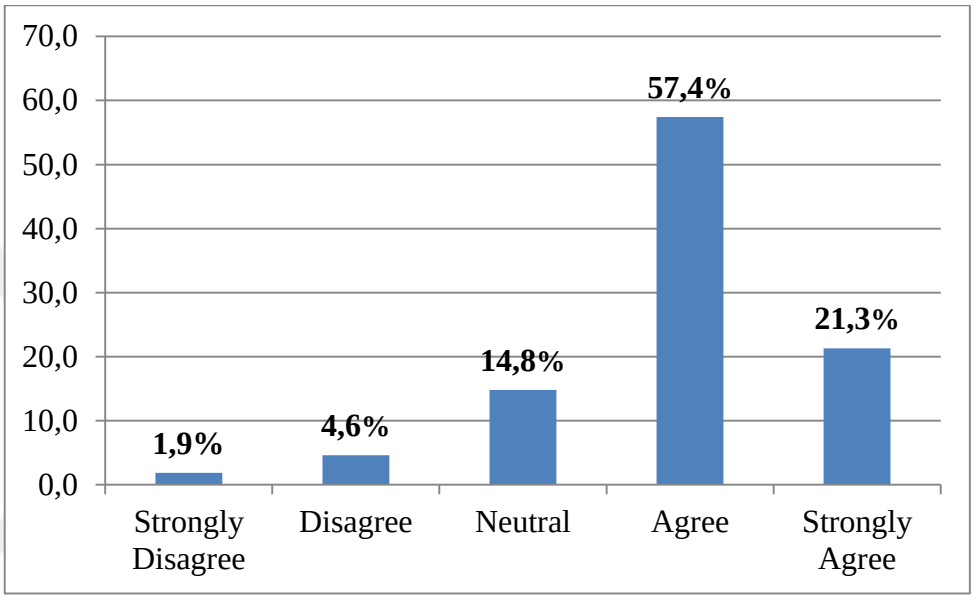


SQPM3 Vendor-1 Score Result

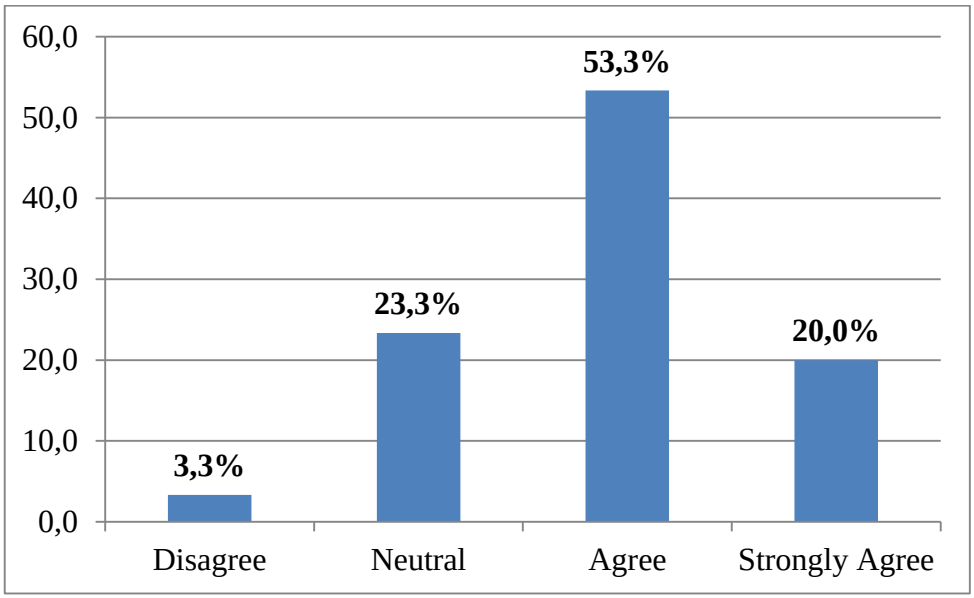


SQPM3 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

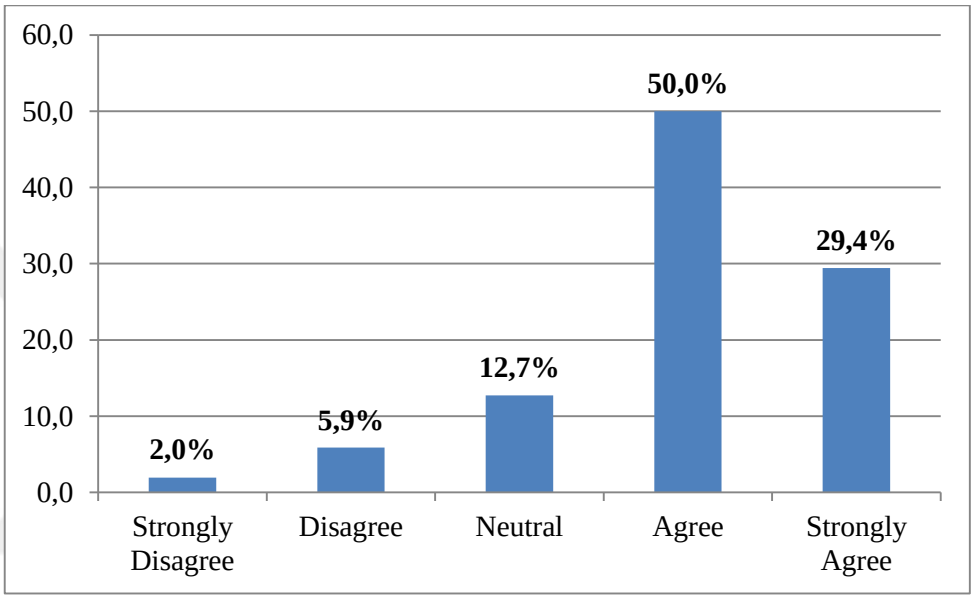


SQPM3 Vendor-3 Score Result

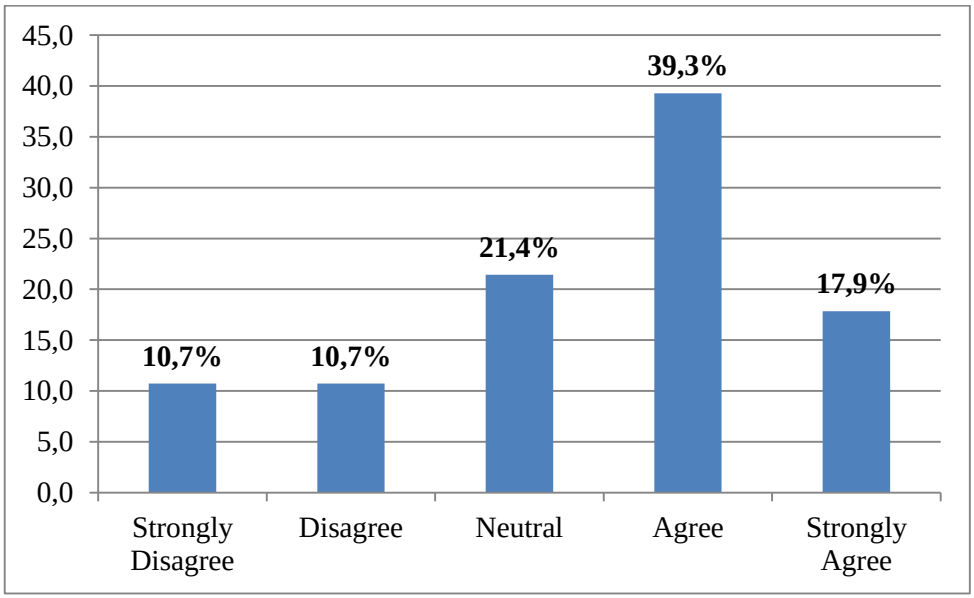


SQPM3 Vendor-4 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

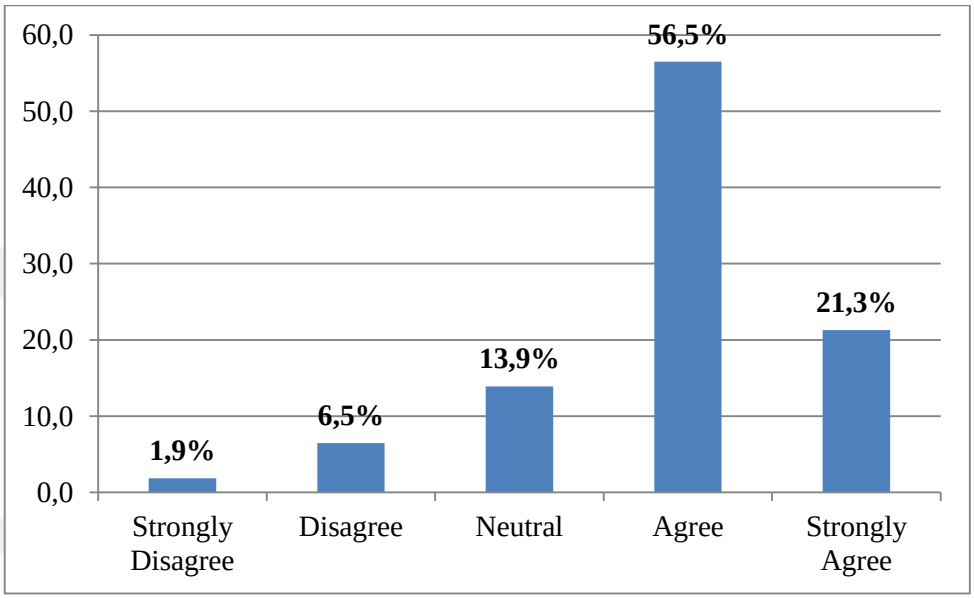


SQPM4 Vendor-1 Score Result

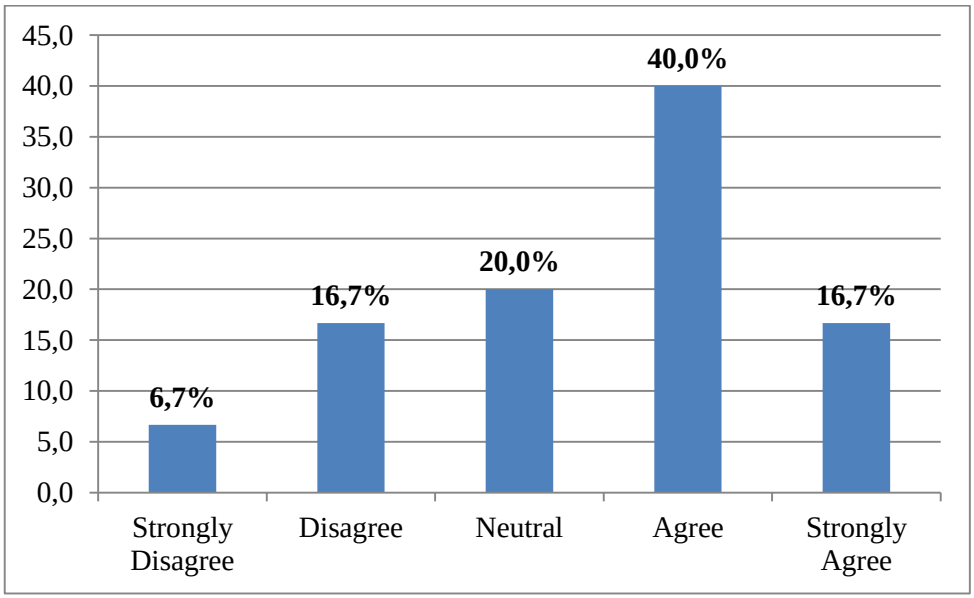


SQPM4 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

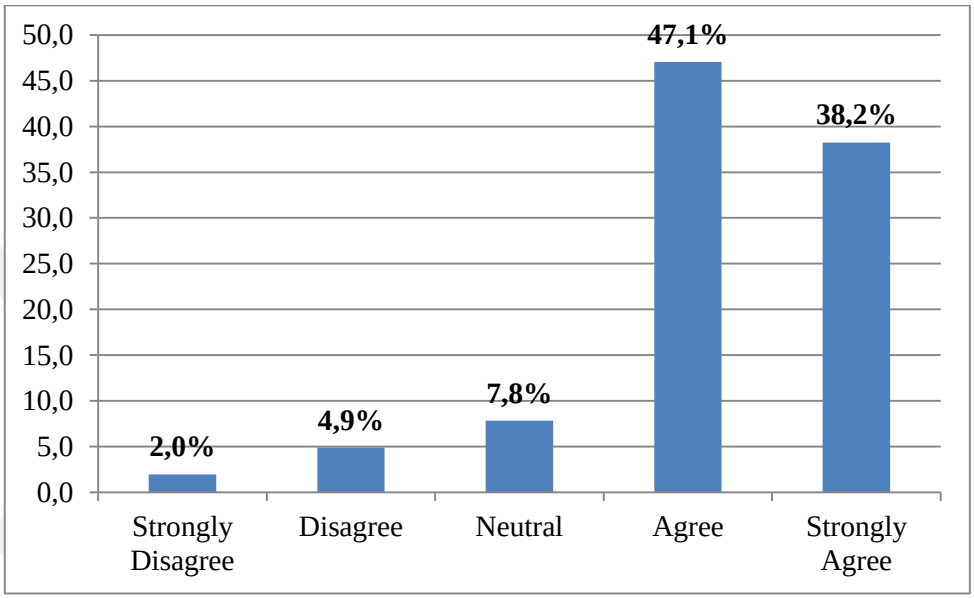


SQPM4 Vendor-3 Score Result

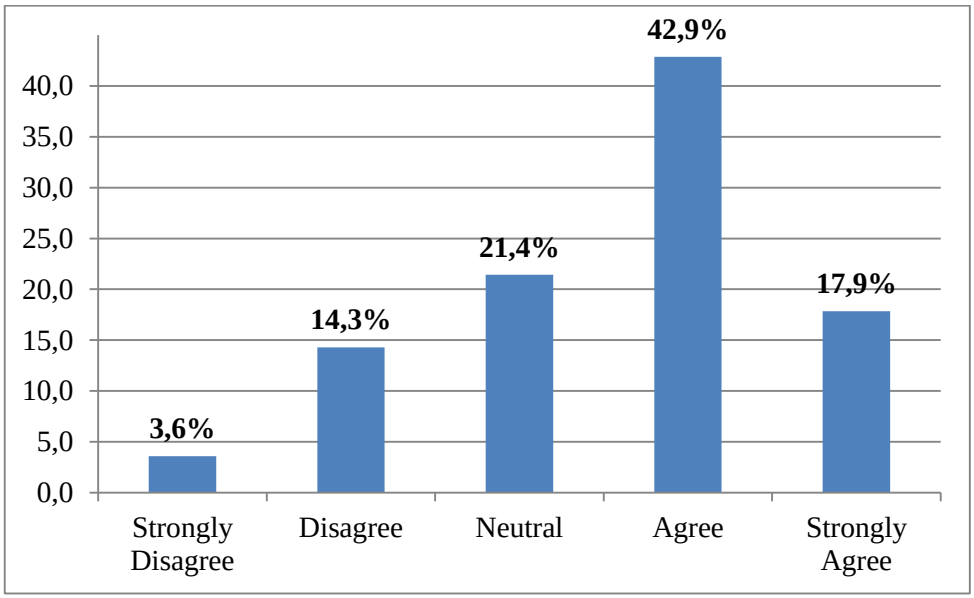


SQPM4 Vendor-4 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

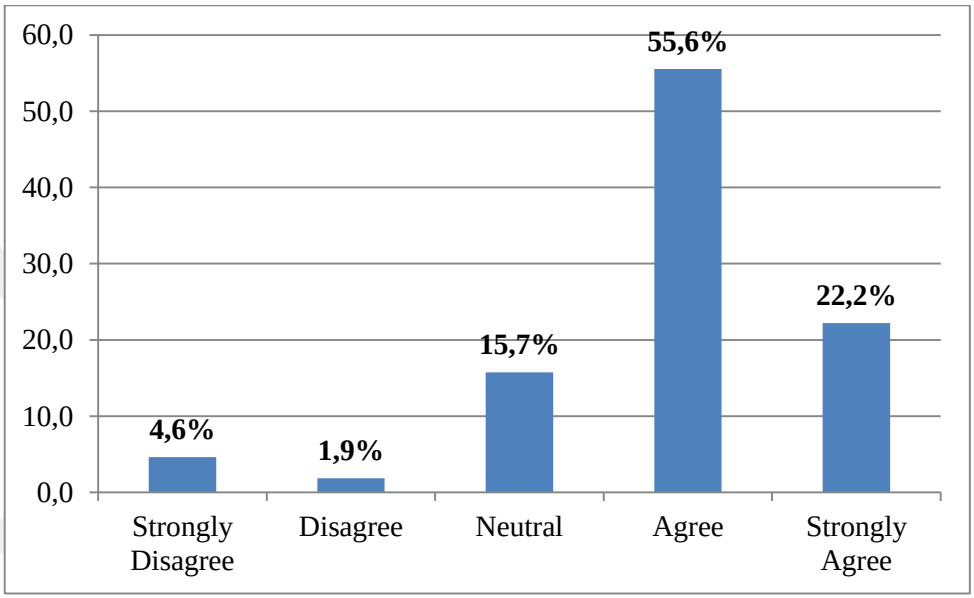


SQPM5 Vendor-1 Score Result

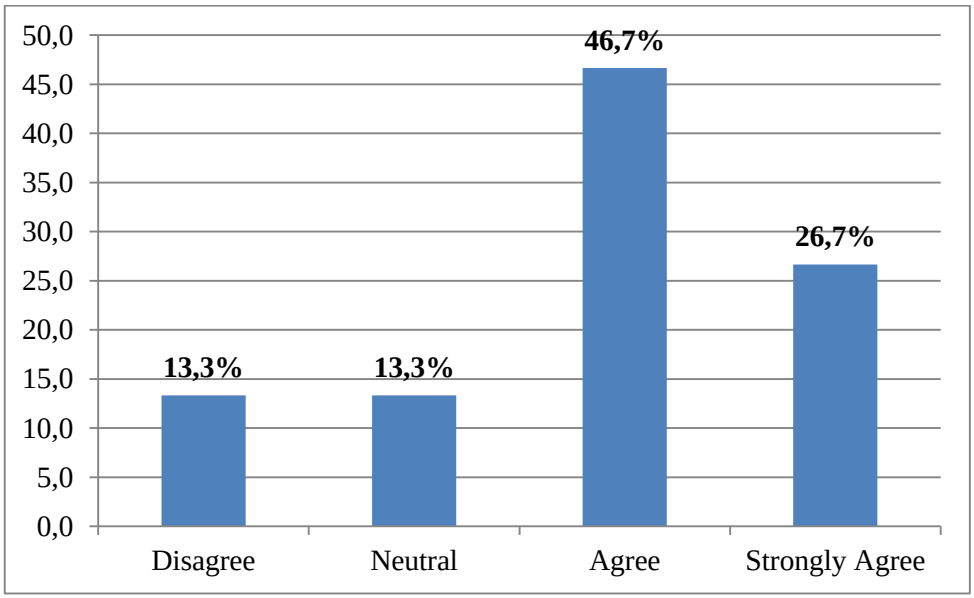


SQPM5 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

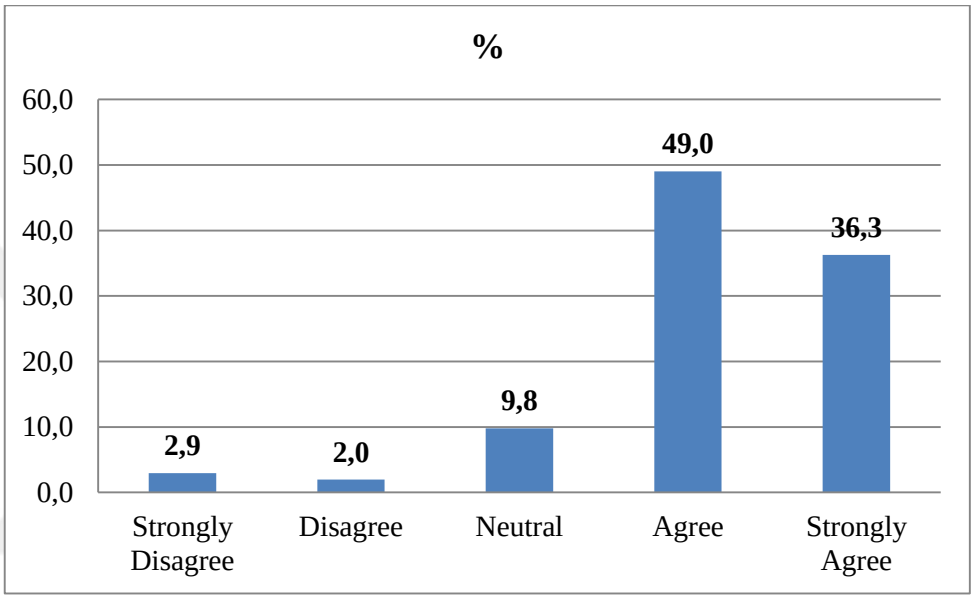


SQPM5 Vendor-3 Score Result

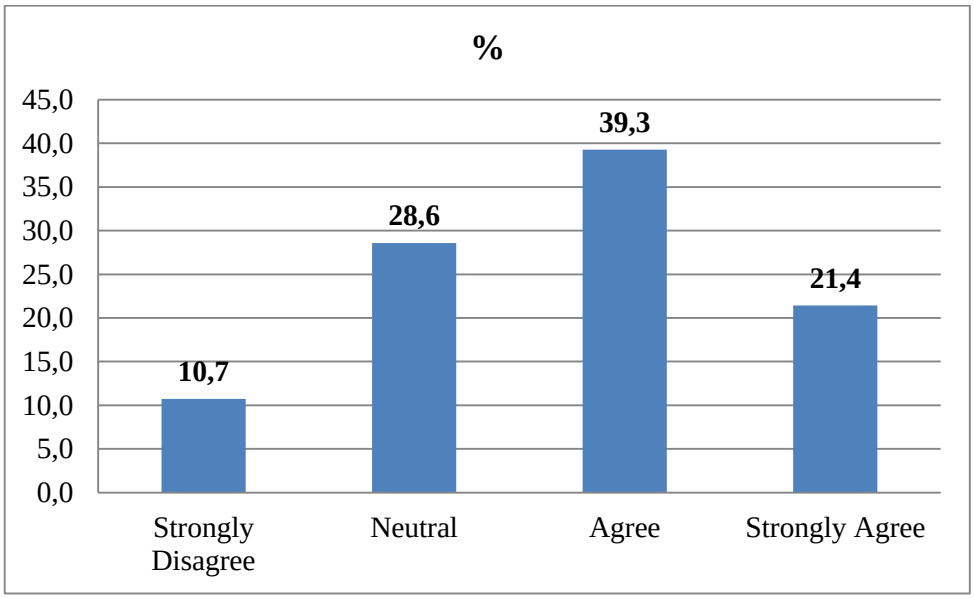


SQPM5 Vendor-4 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

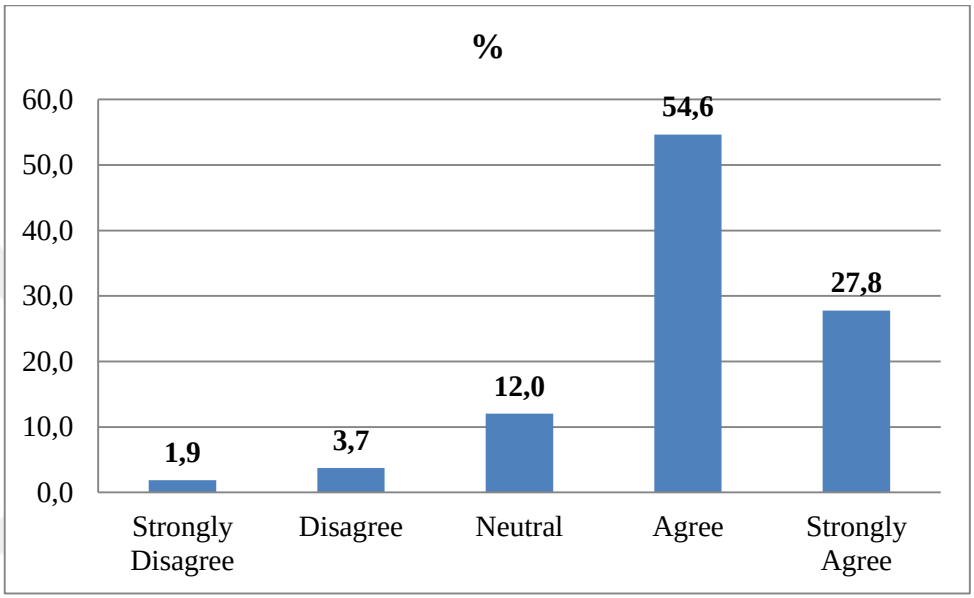


SQPM6 Vendor-1 Score Result



SQPM6 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS



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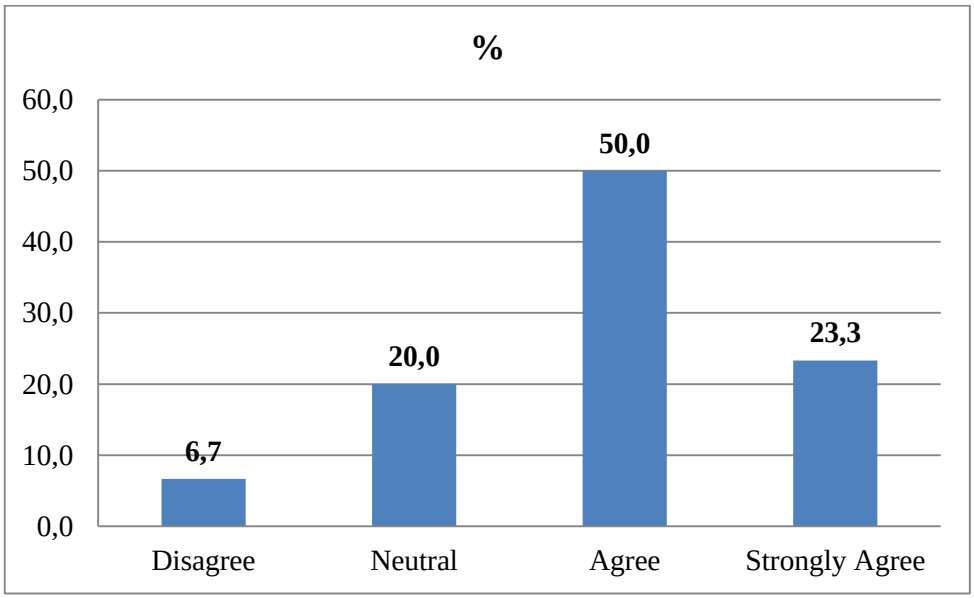
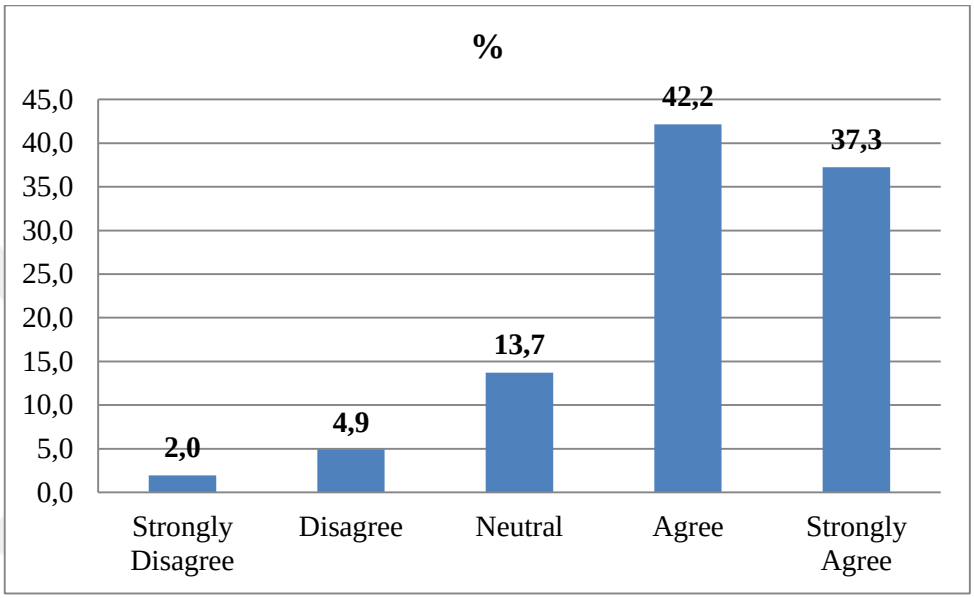
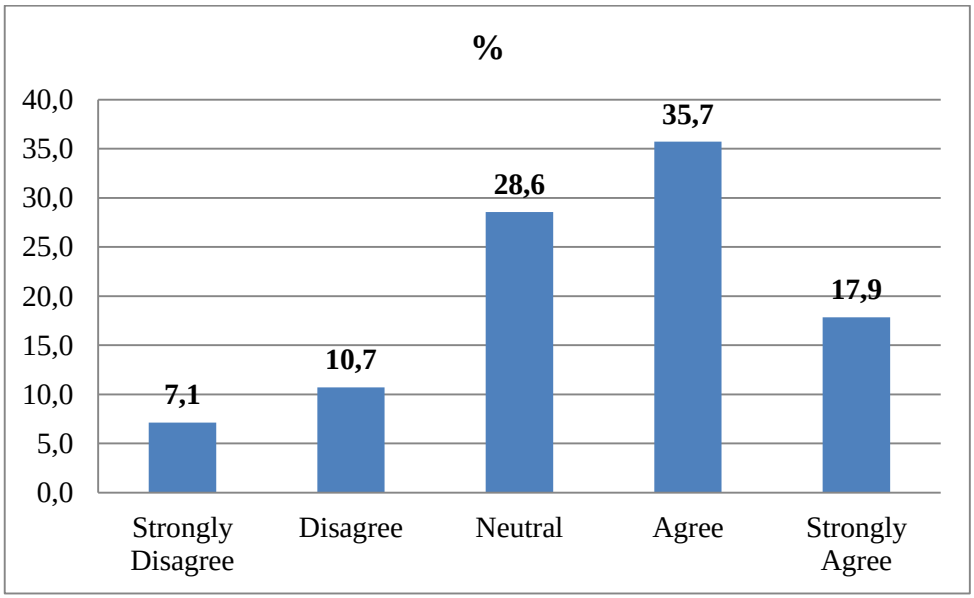


SQPM6 Vendor-4 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

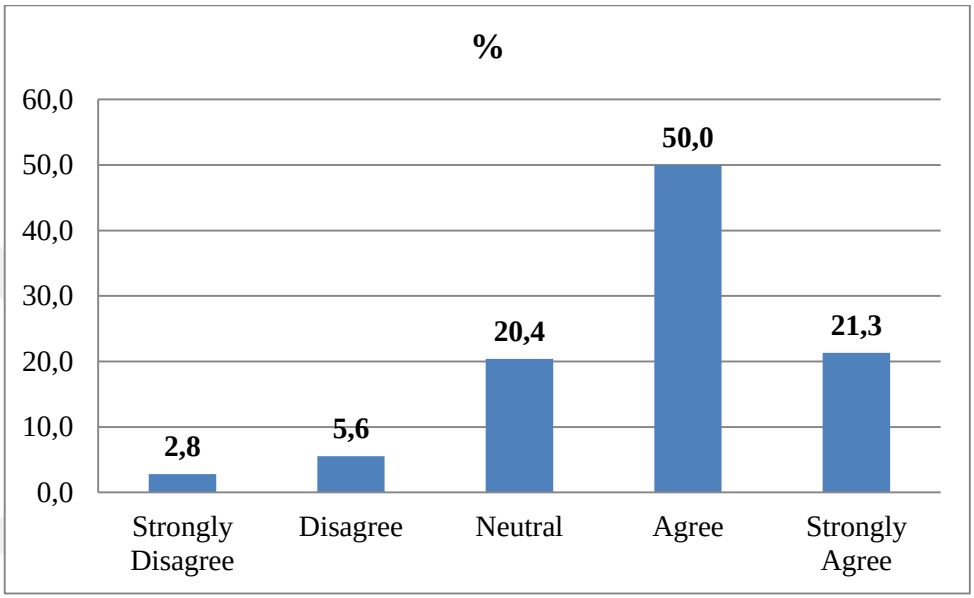


SQPM7 Vendor-1 Score Result



SQPM7 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS



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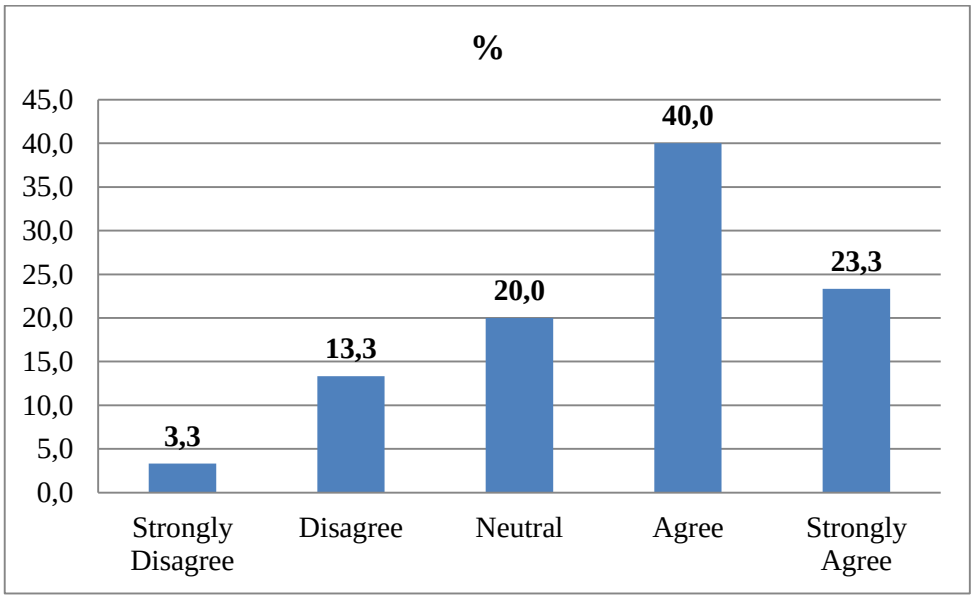
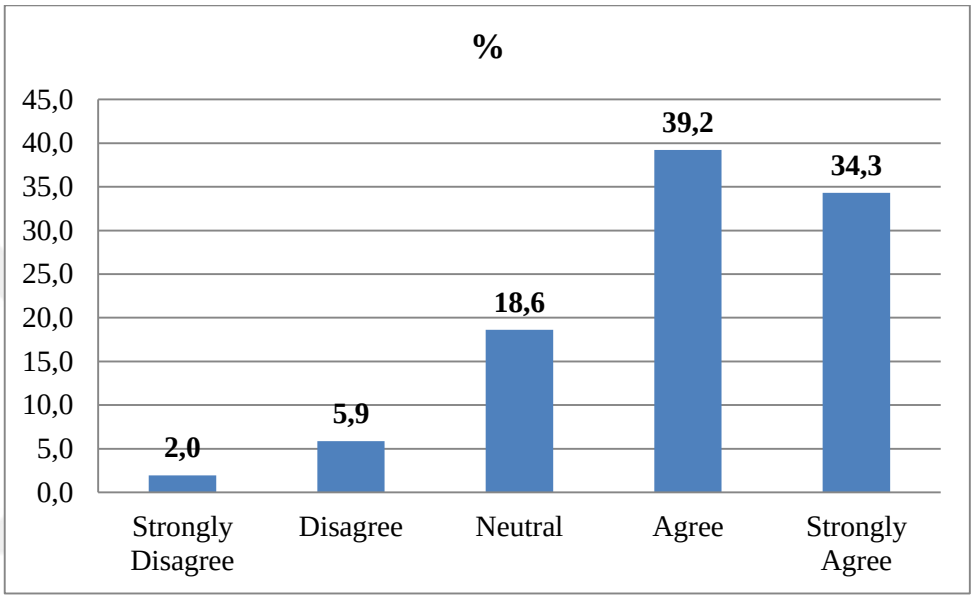
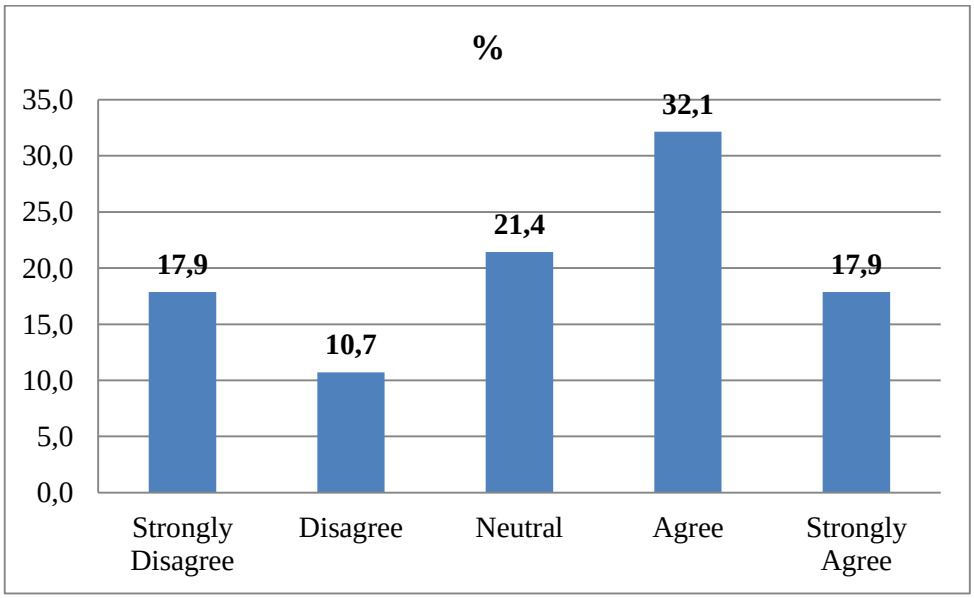


SQPM7 Vendor-4 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

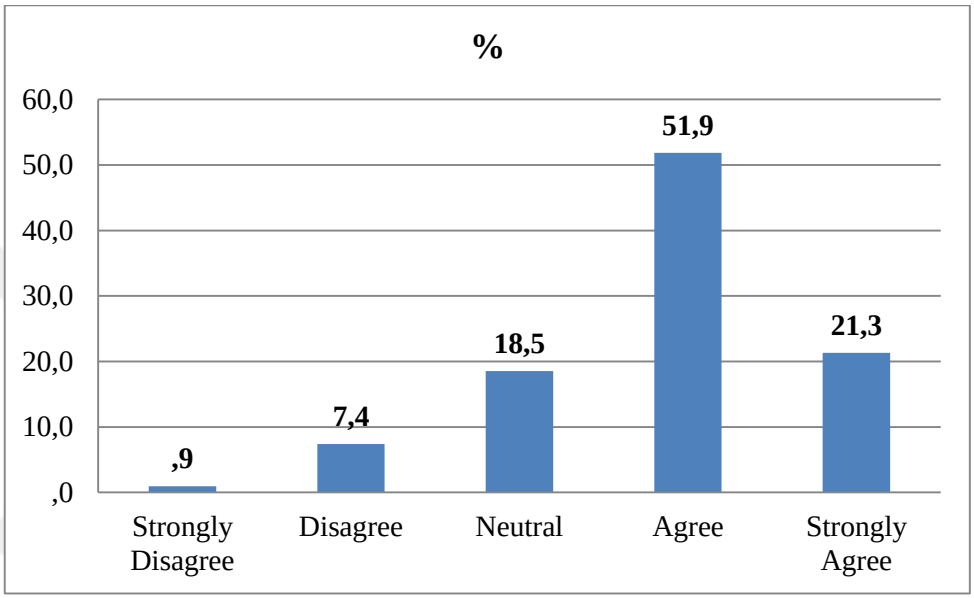


SQPM8 Vendor-1 Score Result

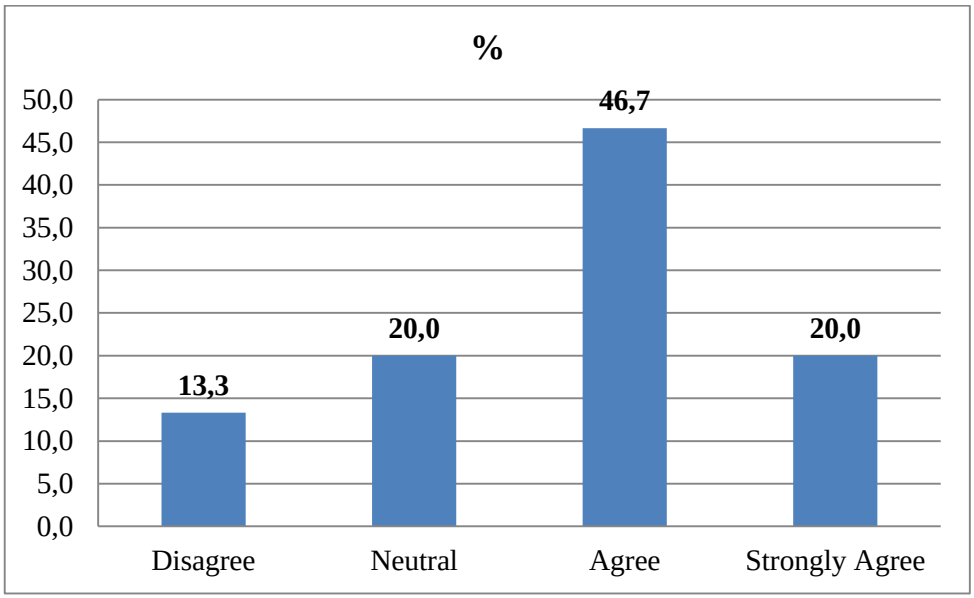


SQPM8 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

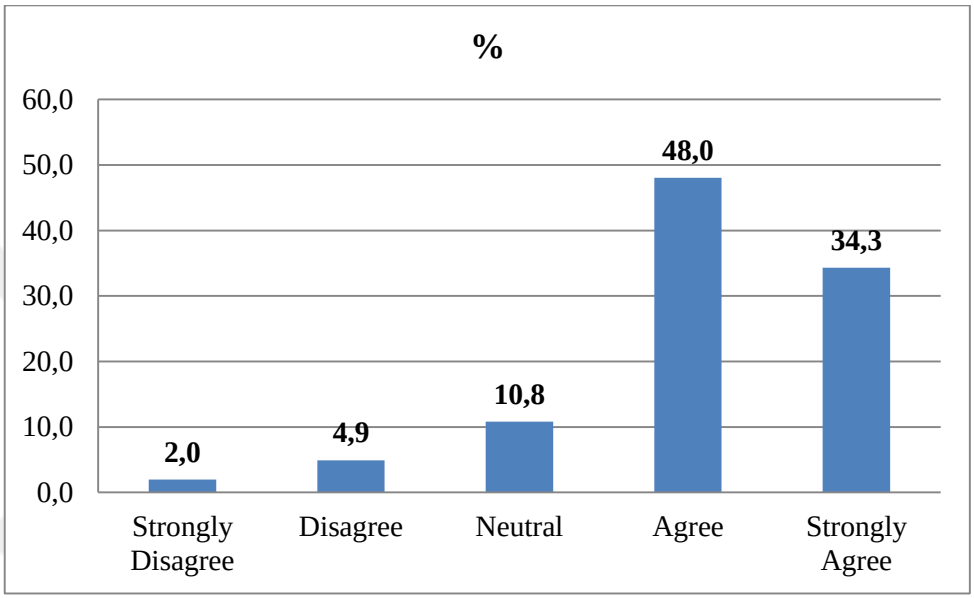


SQPM8 Vendor-3 Score Result

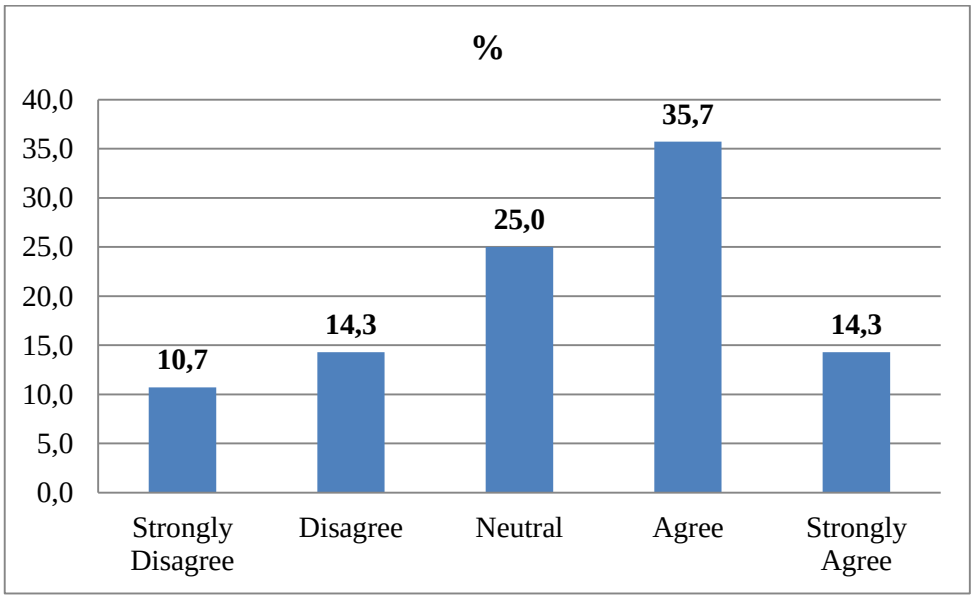


SQPM8 Vendor-4 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

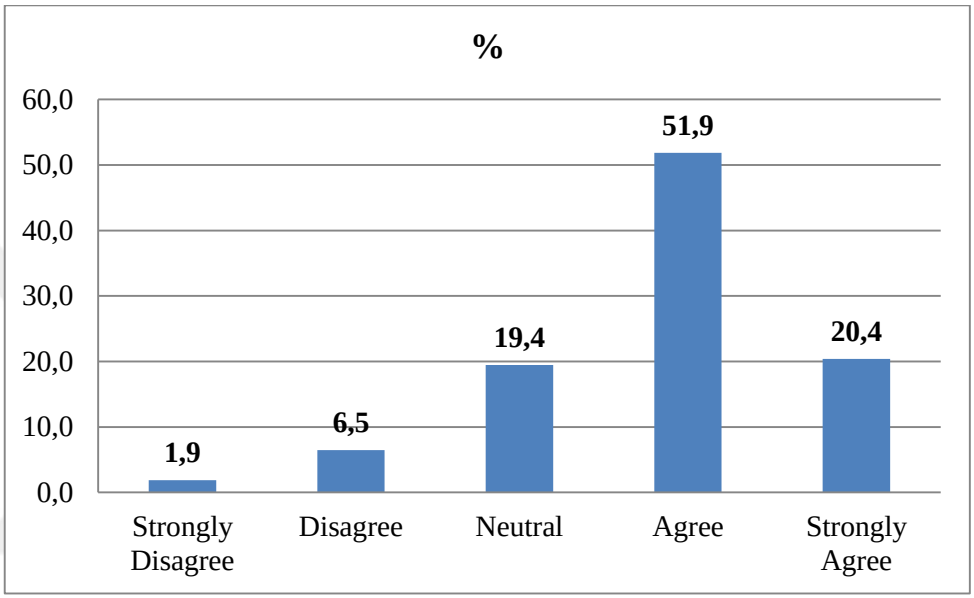


SQPM9 Vendor-1 Score Result

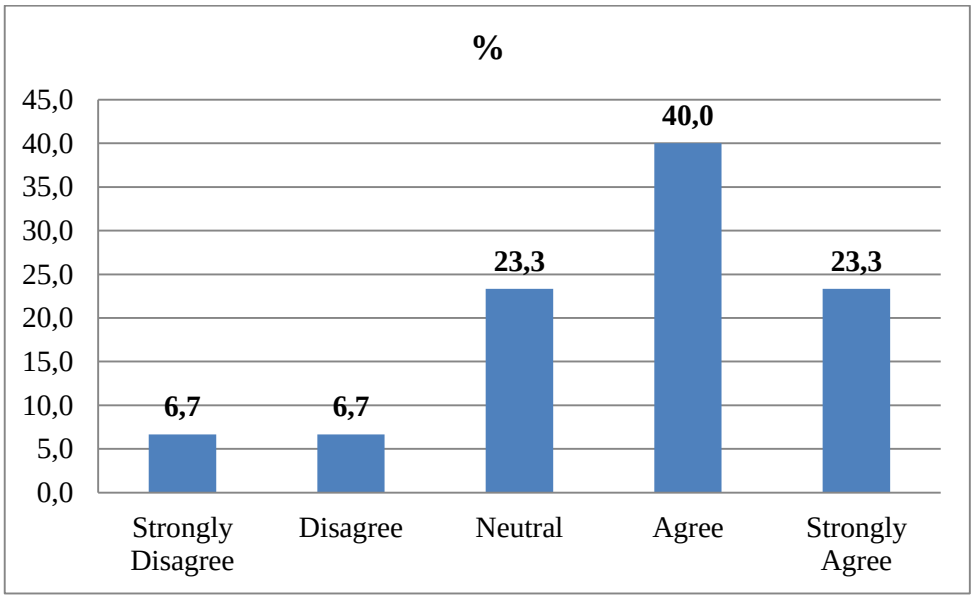


SQPM9 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

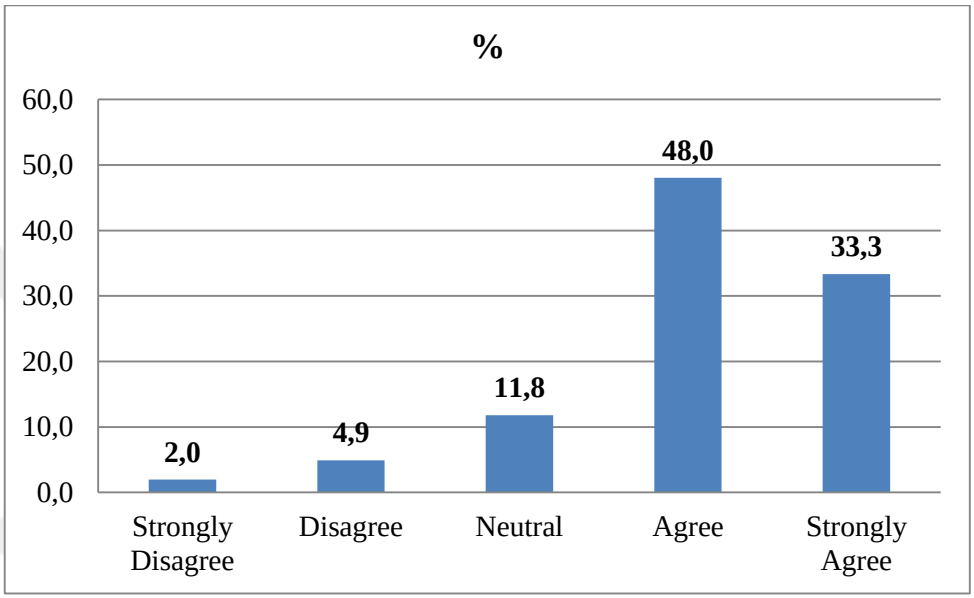


SQPM9 Vendor-3 Score Result

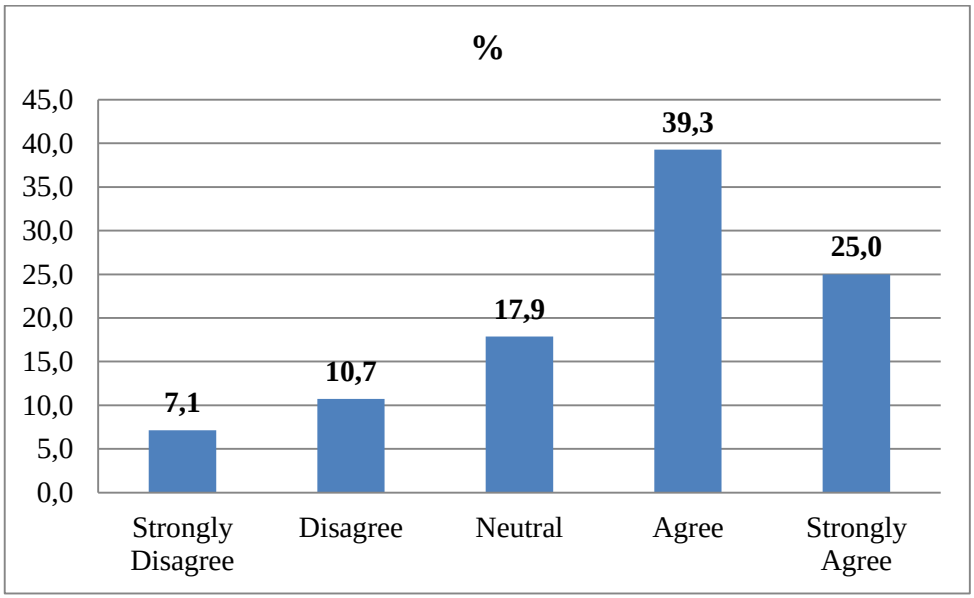


SQPM9 Vendor-4 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

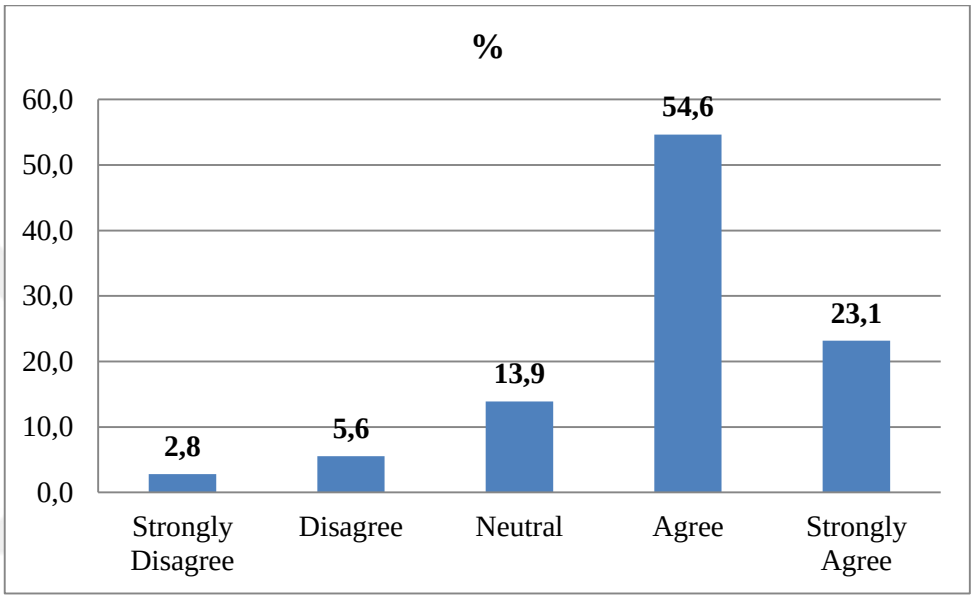


SQPM10 Vendor-1 Score Result

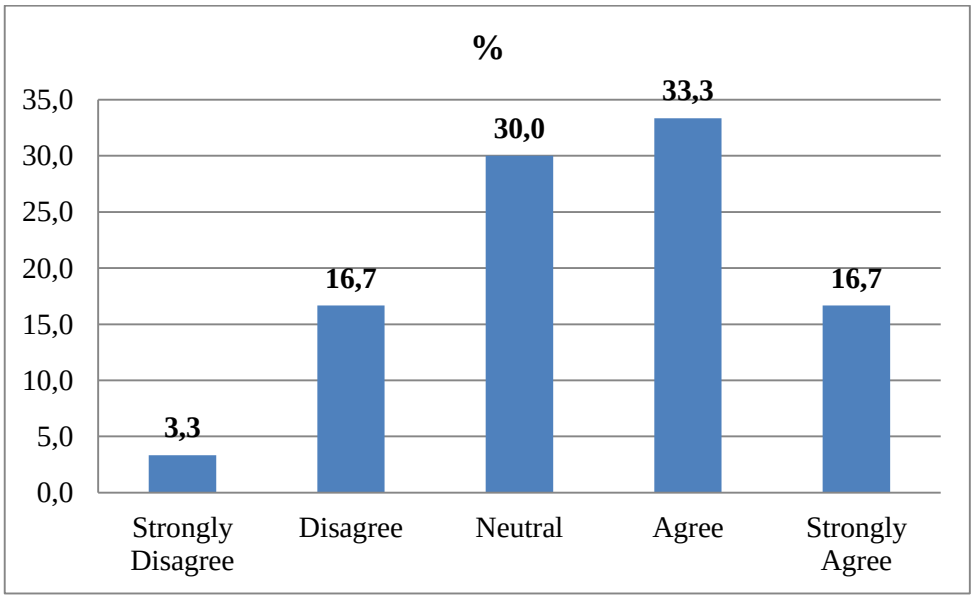


SQPM10 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

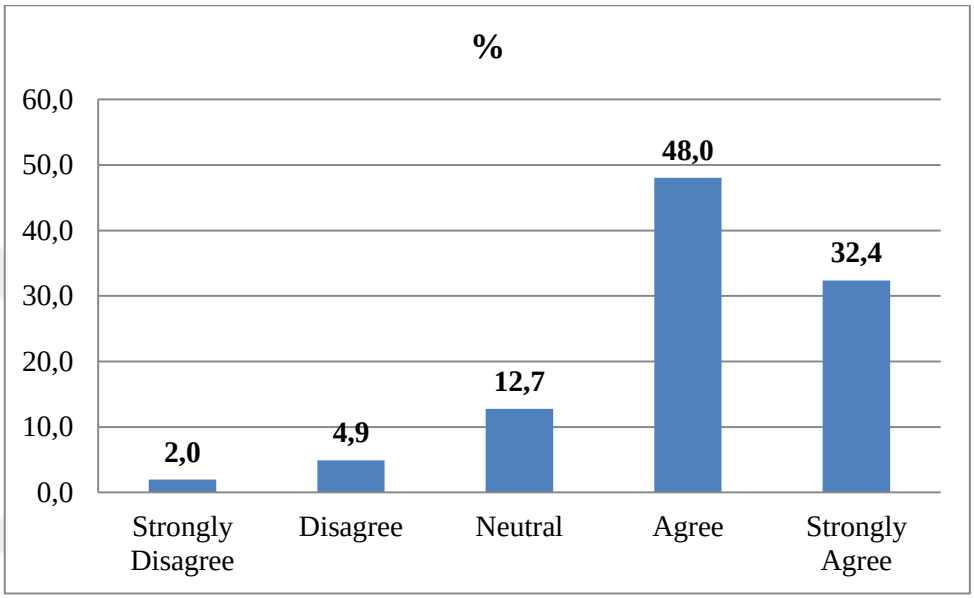


SQPM10 Vendor-3 Score Result

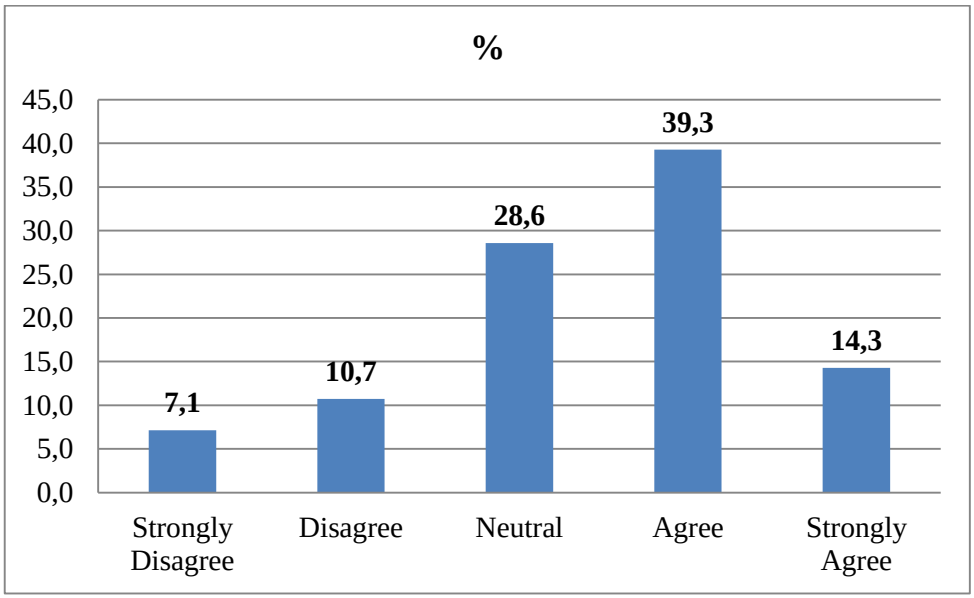


SQPM10 Vendor-4 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

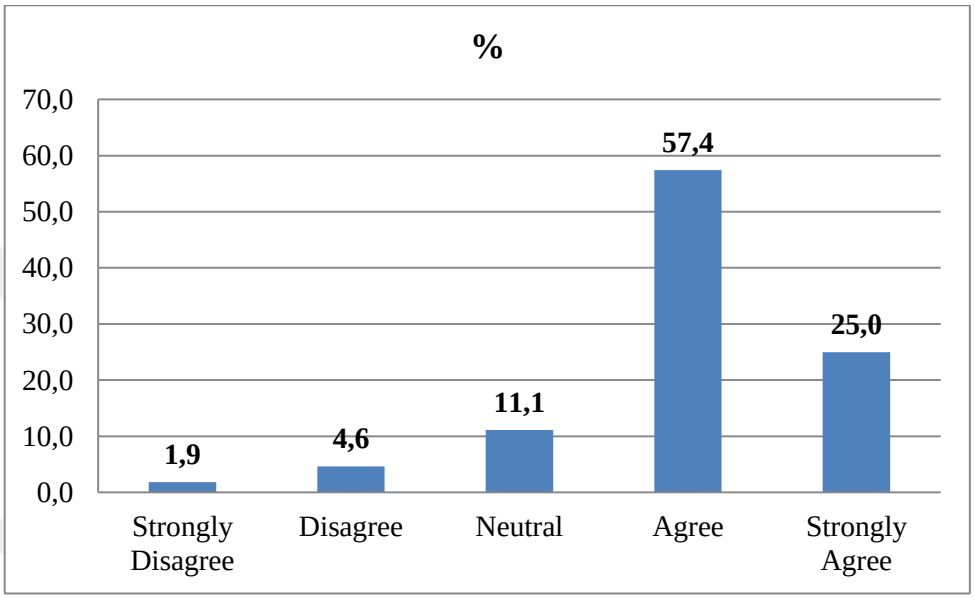


SQPM11 Vendor-1 Score Result

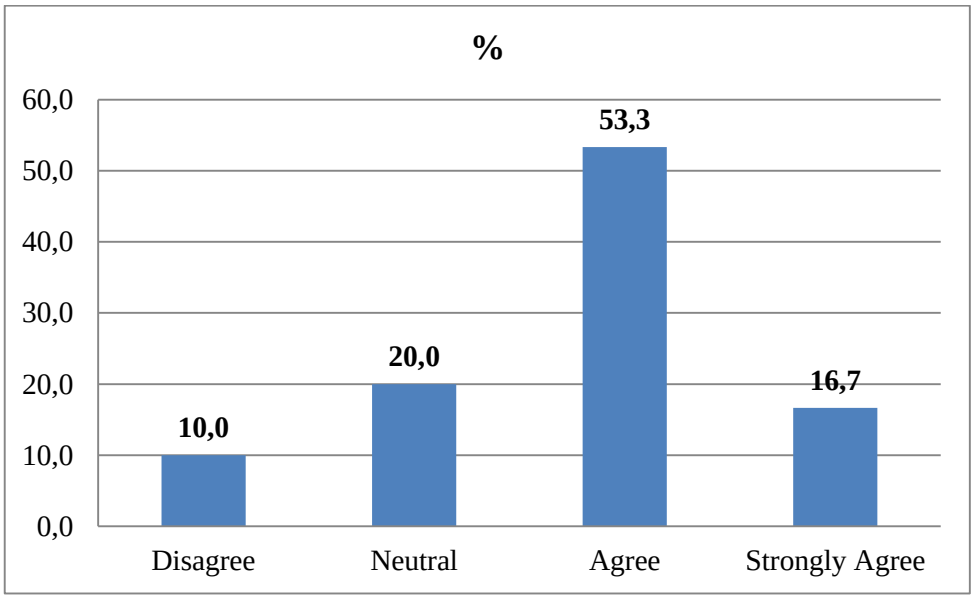


SQPM11 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

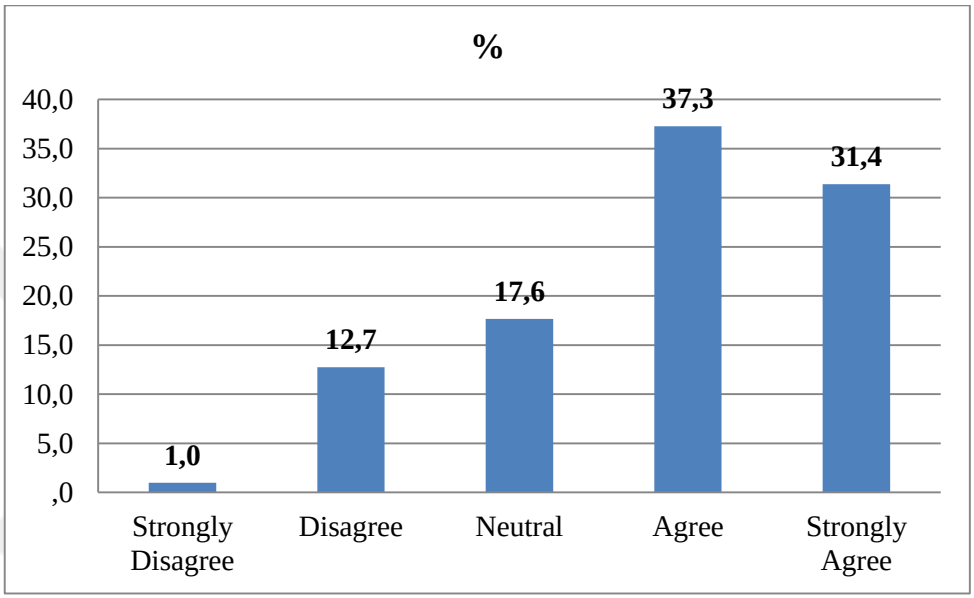


SQPM11 Vendor-3 Score Result

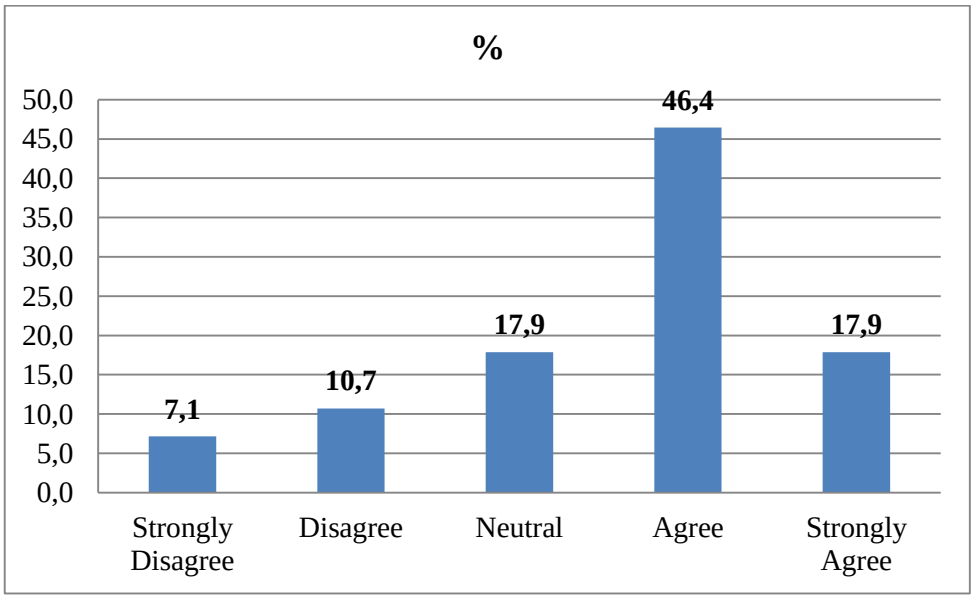


SQPM11 Vendor-4 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

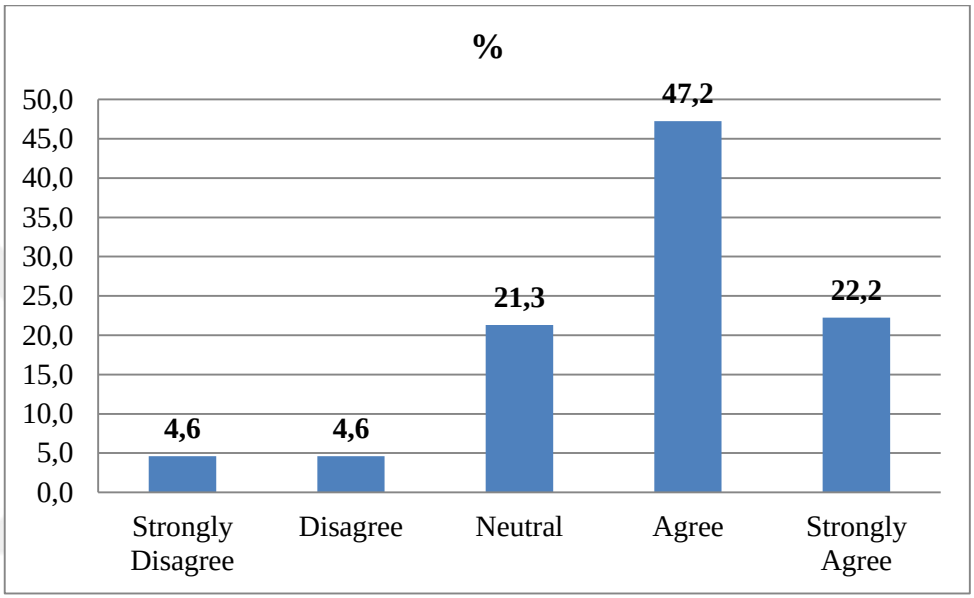


SQPM12 Vendor-1 Score Result

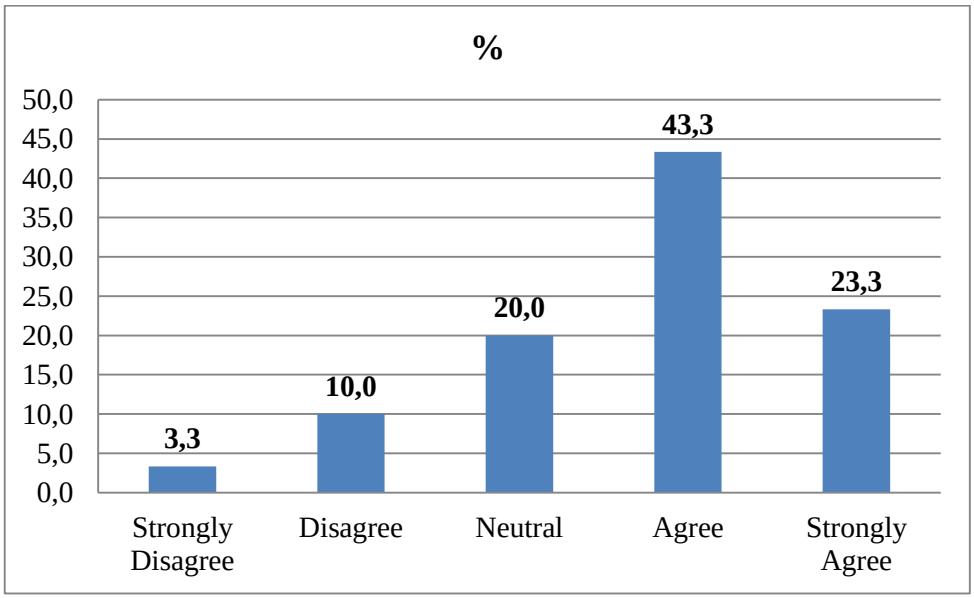


SQPM12 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

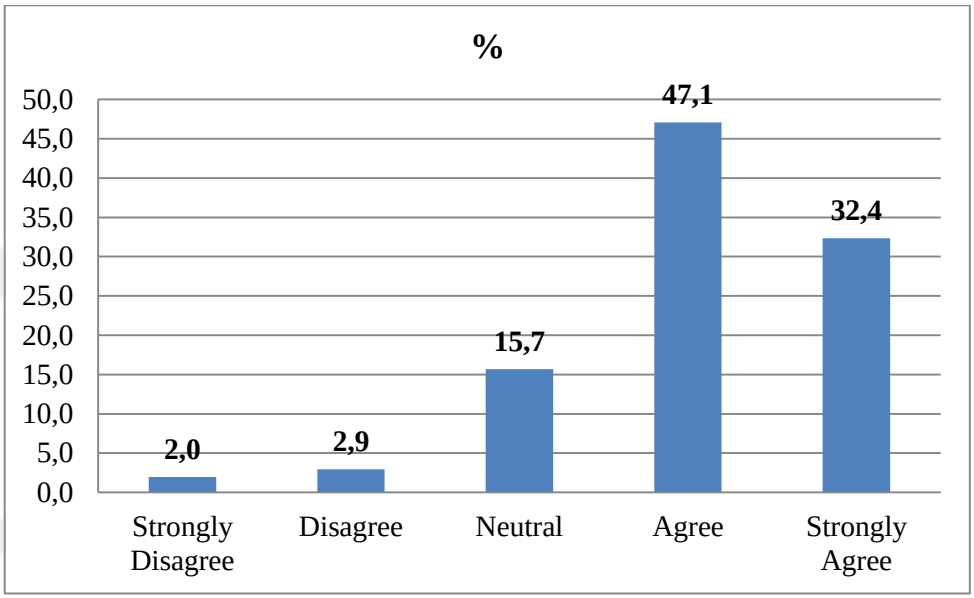


SQPM12 Vendor-3 Score Result

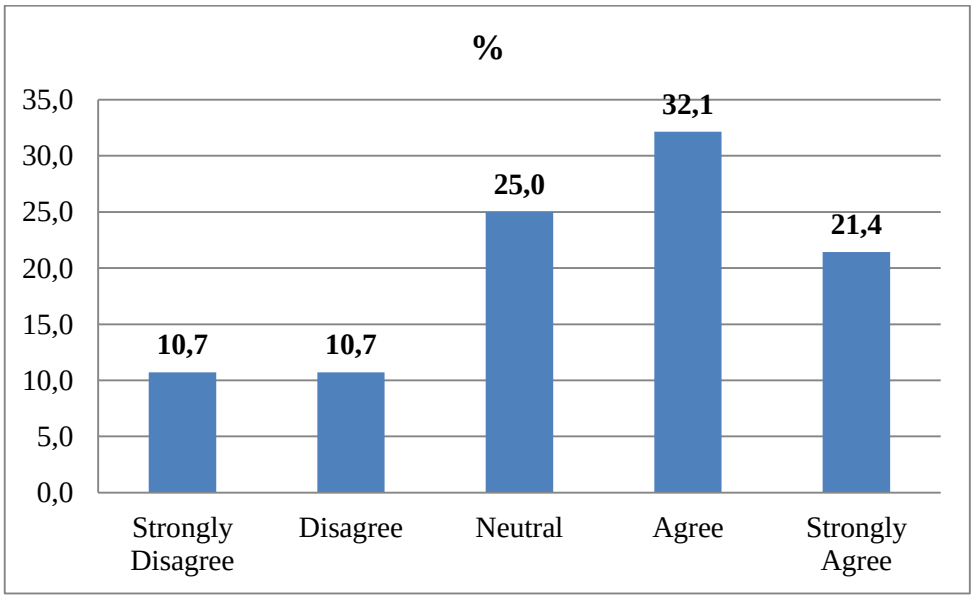


SQPM12 Vendor-4 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

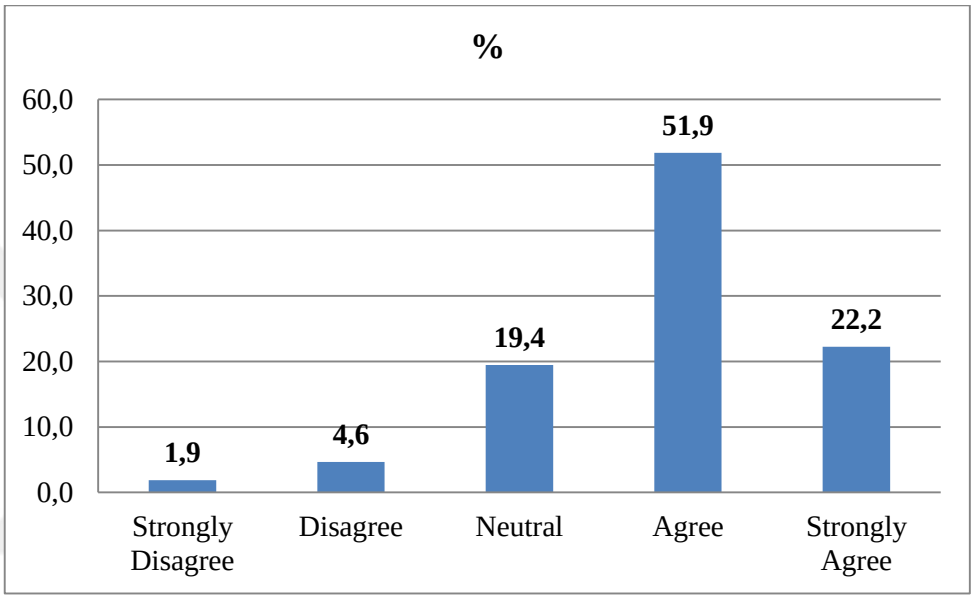


SQPM13 Vendor-1 Score Result



SQPM13 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS



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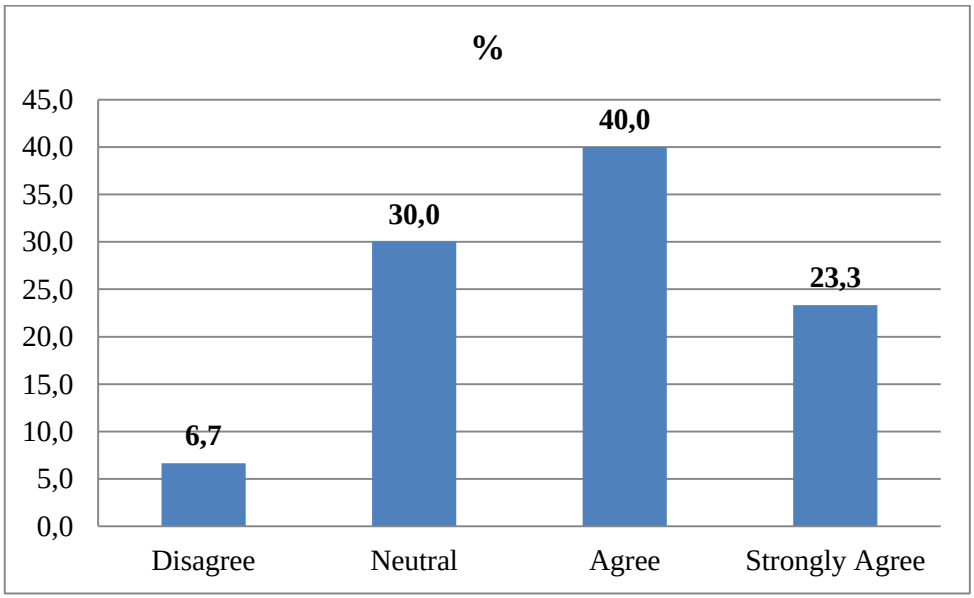

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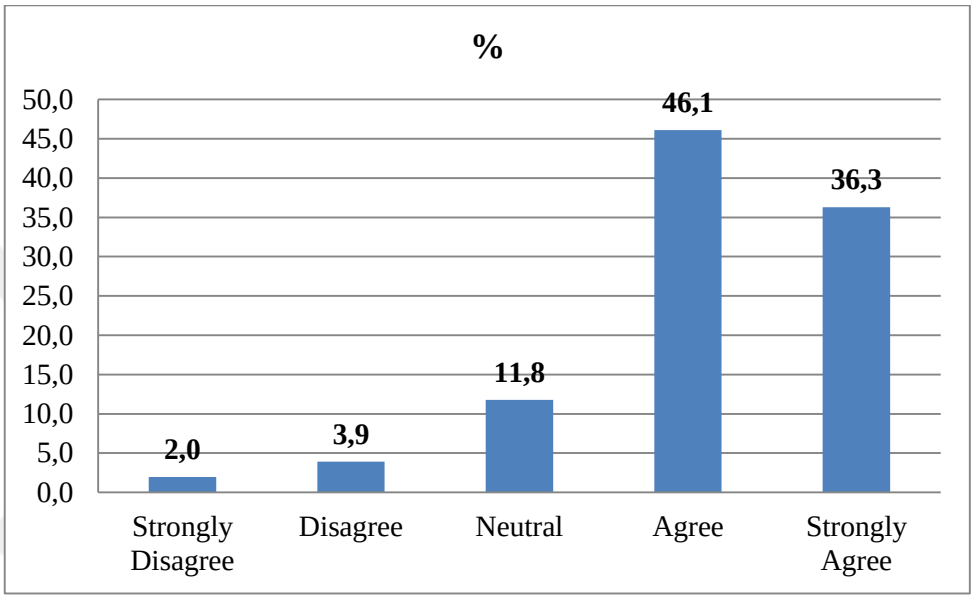
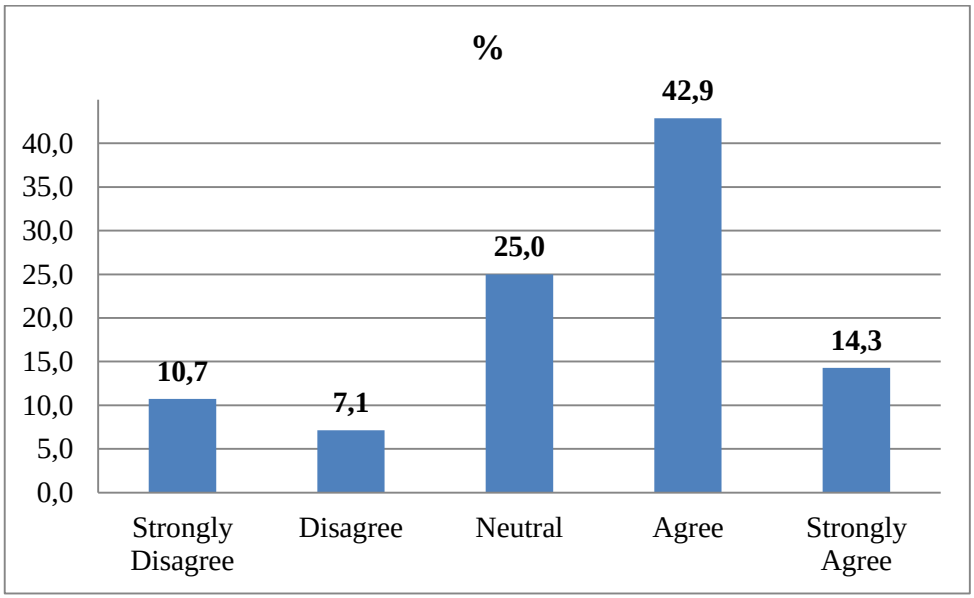
APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

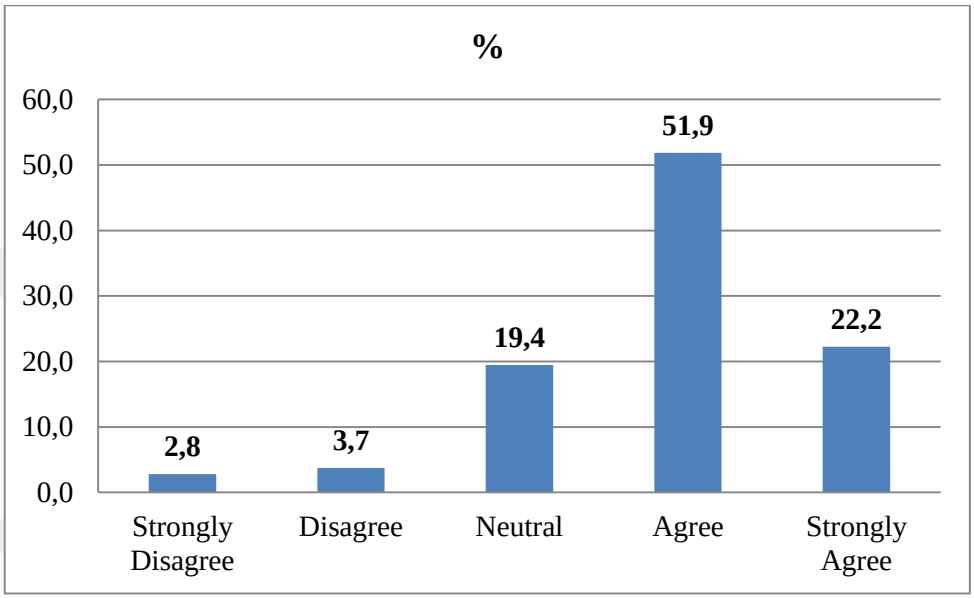


SQPM14 Vendor-1 Score Result



SQPM14 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS



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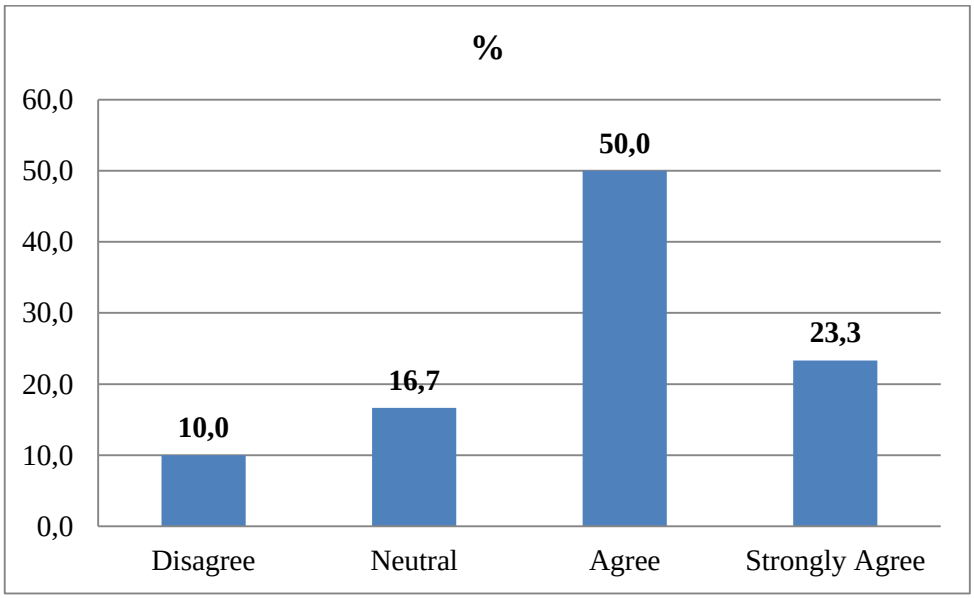

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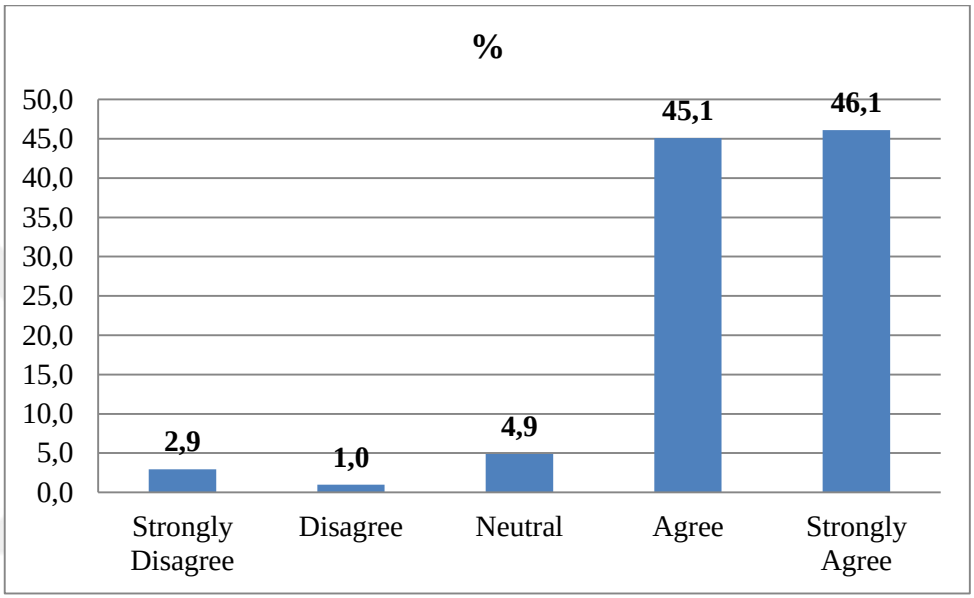
APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS



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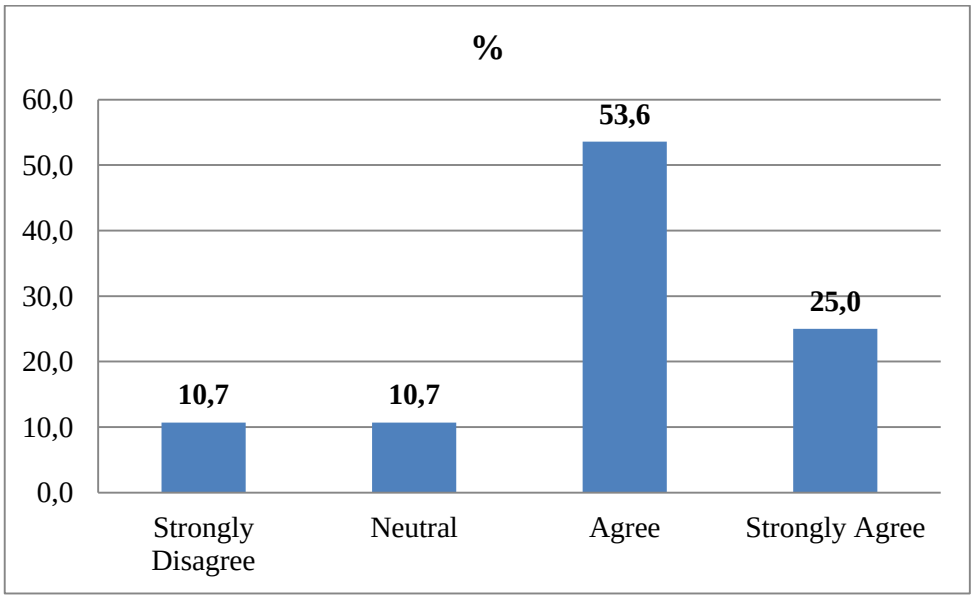
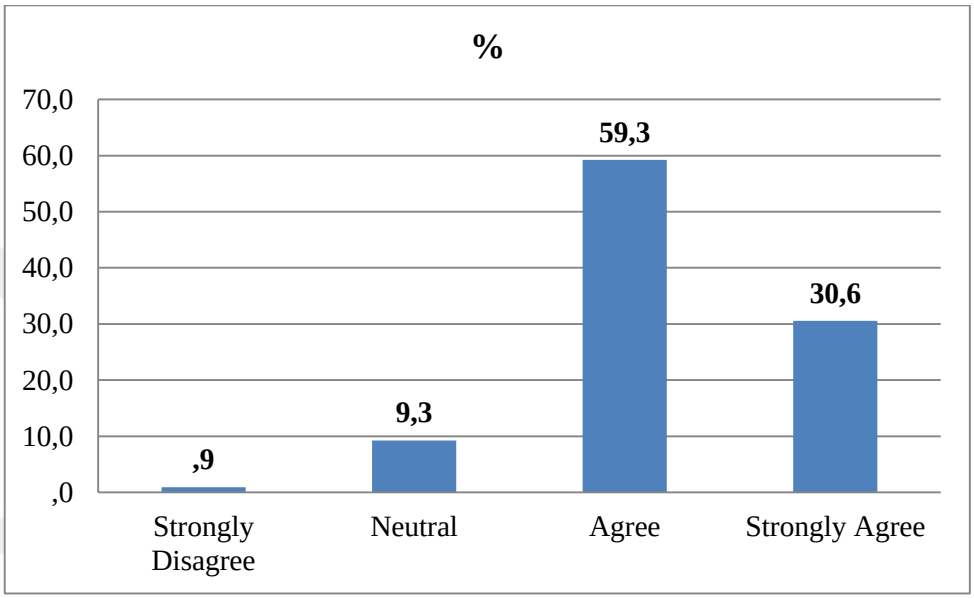


SQPM15 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS



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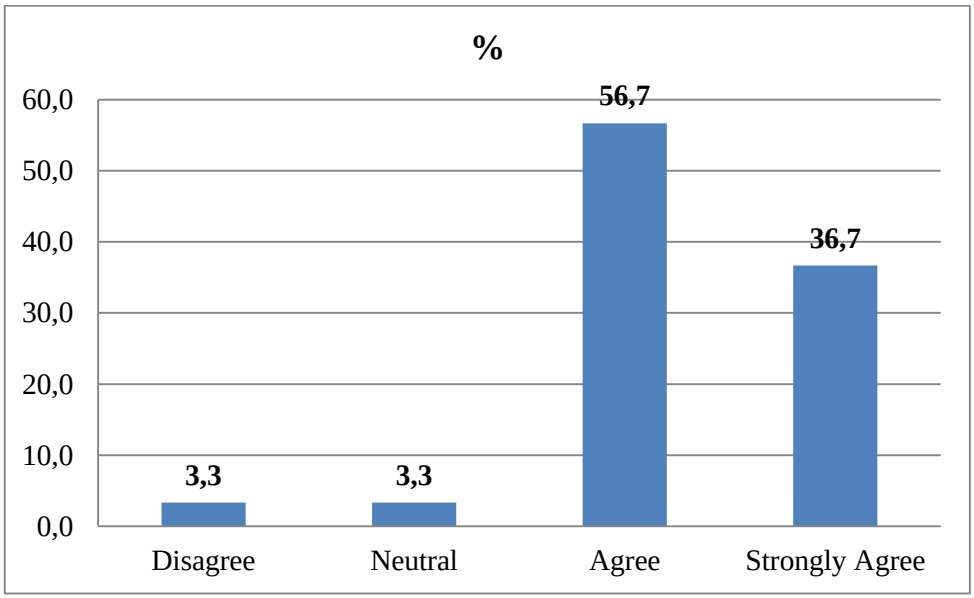

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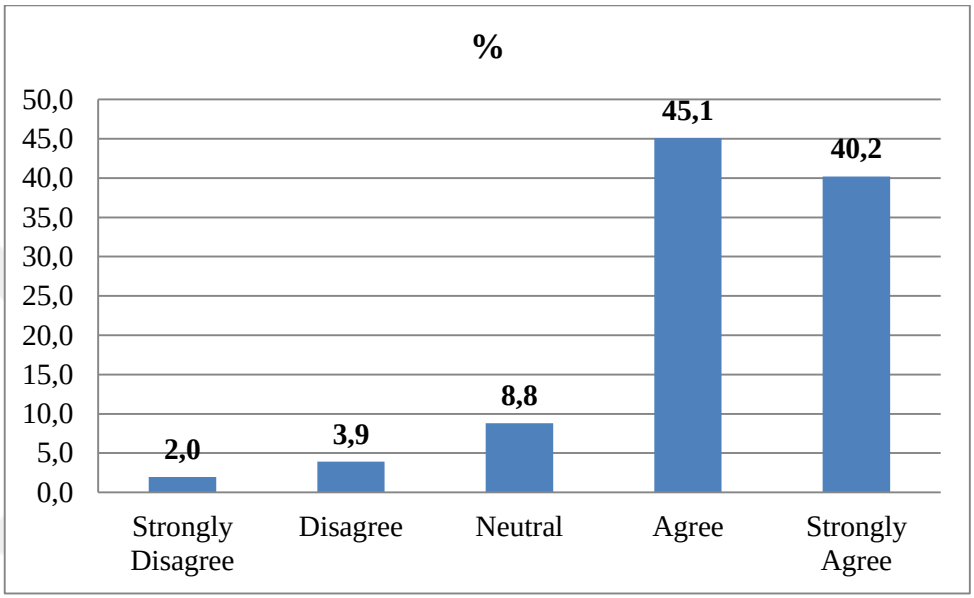
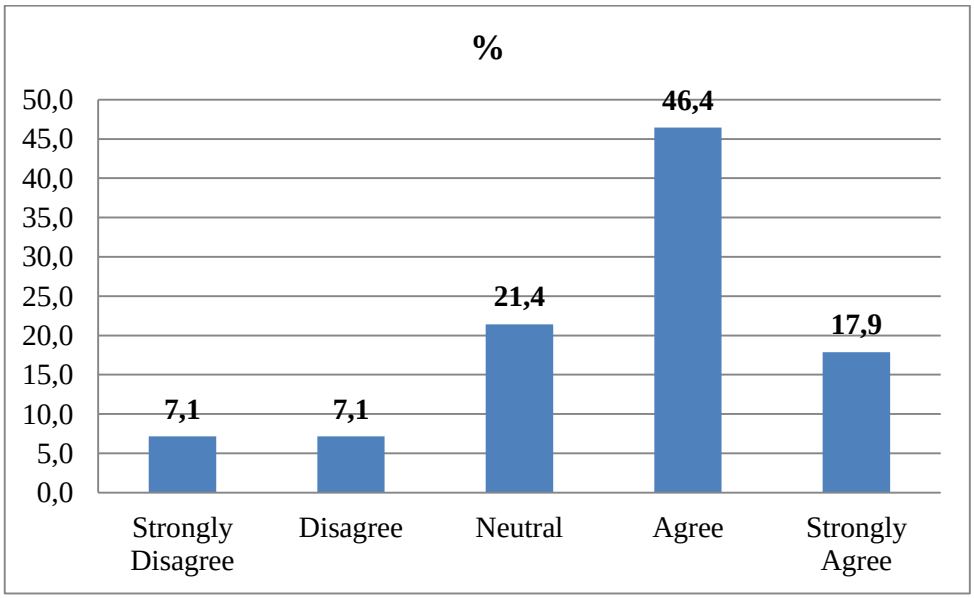
APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS



SQPM16 Vendor-1 Score Result



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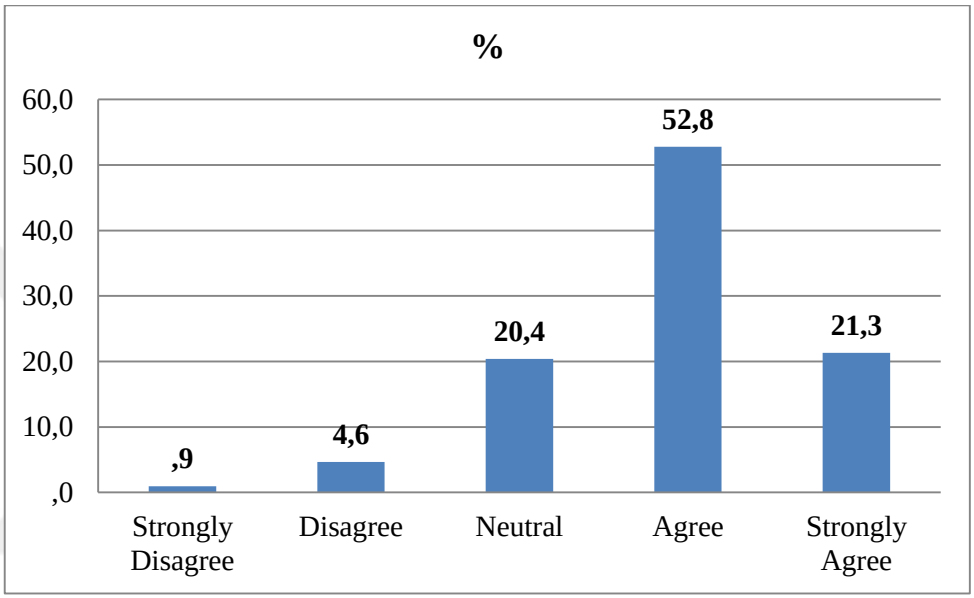
APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS



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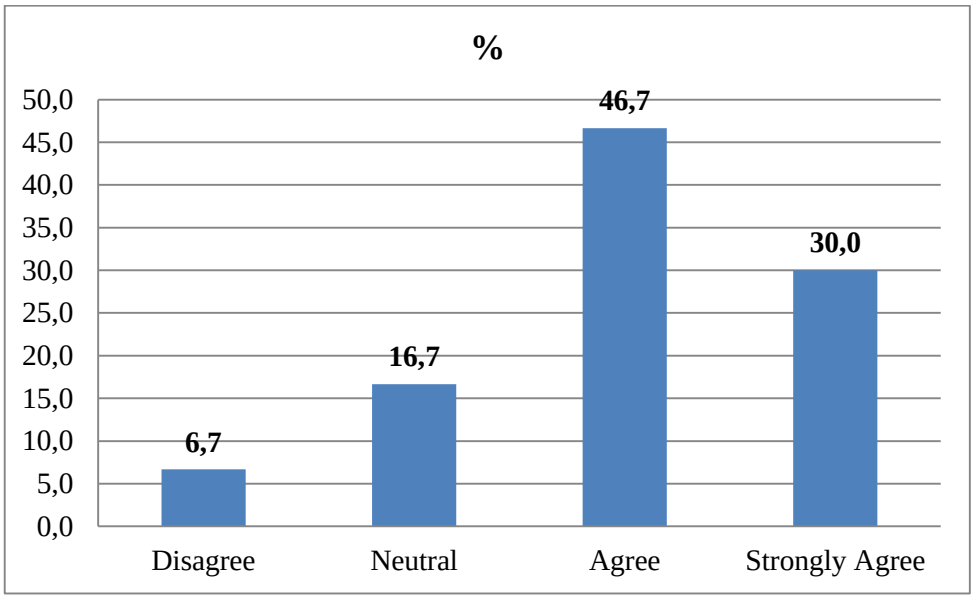

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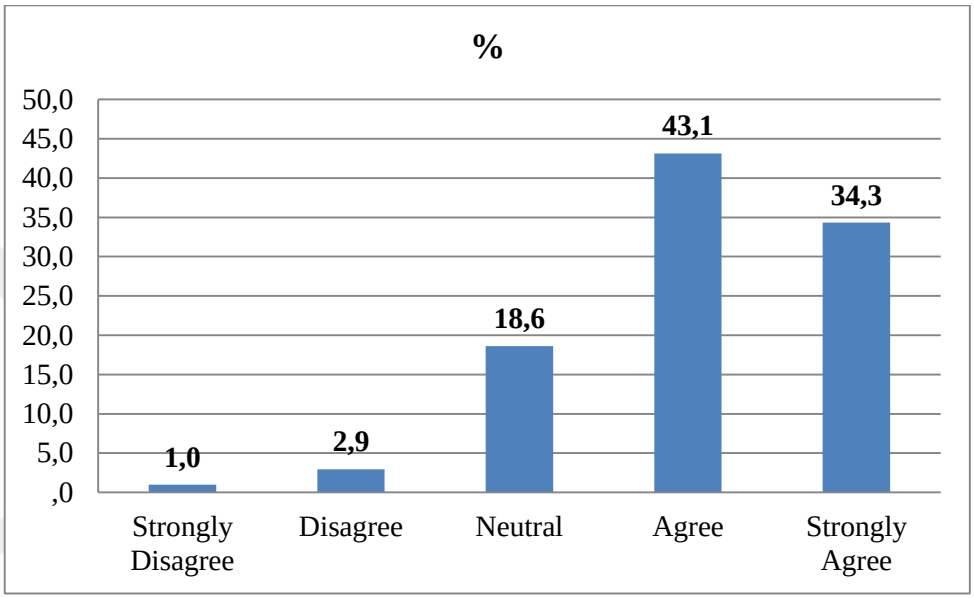
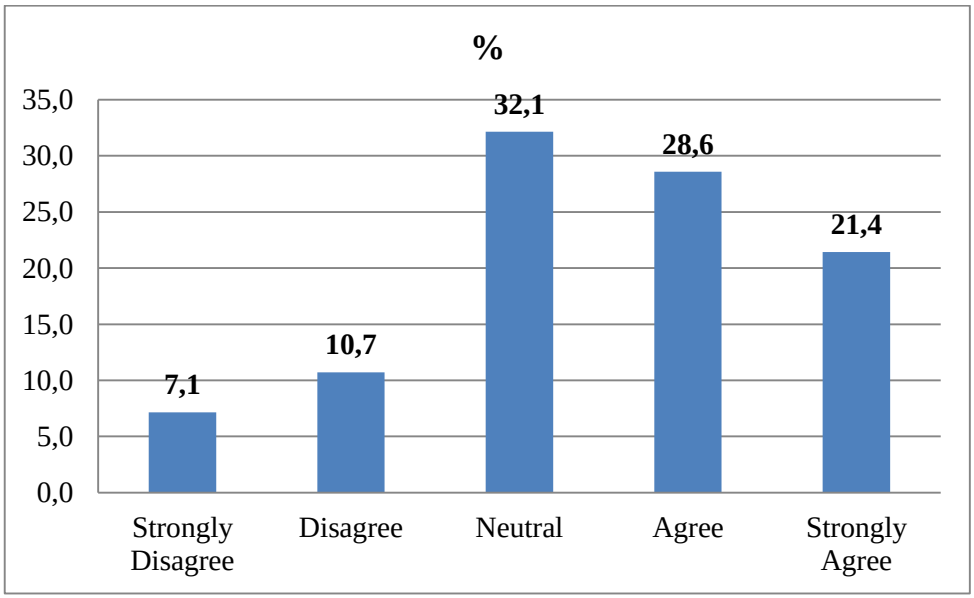
APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS

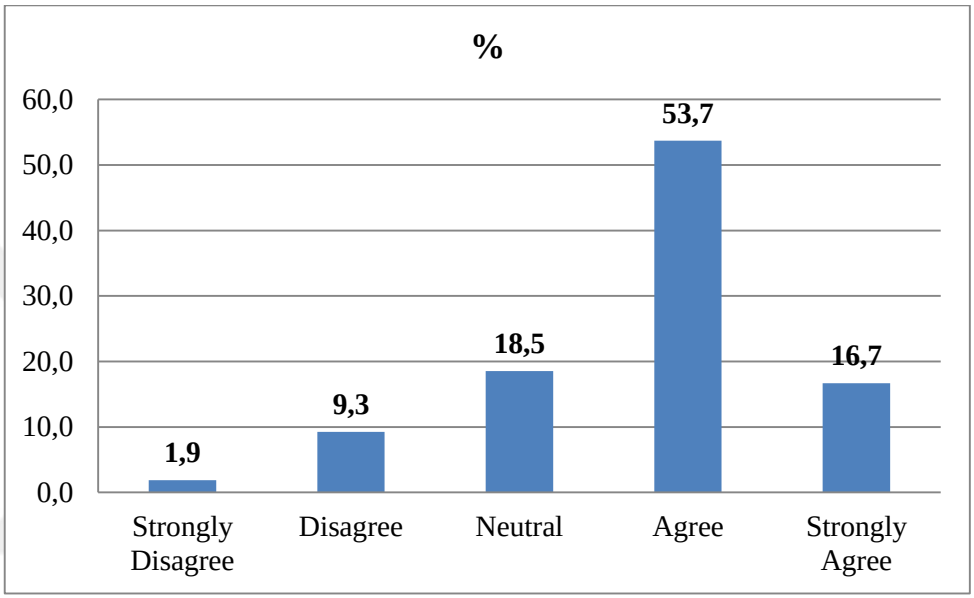


SQPM17 Vendor-1 Score Result



SQPM17 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS



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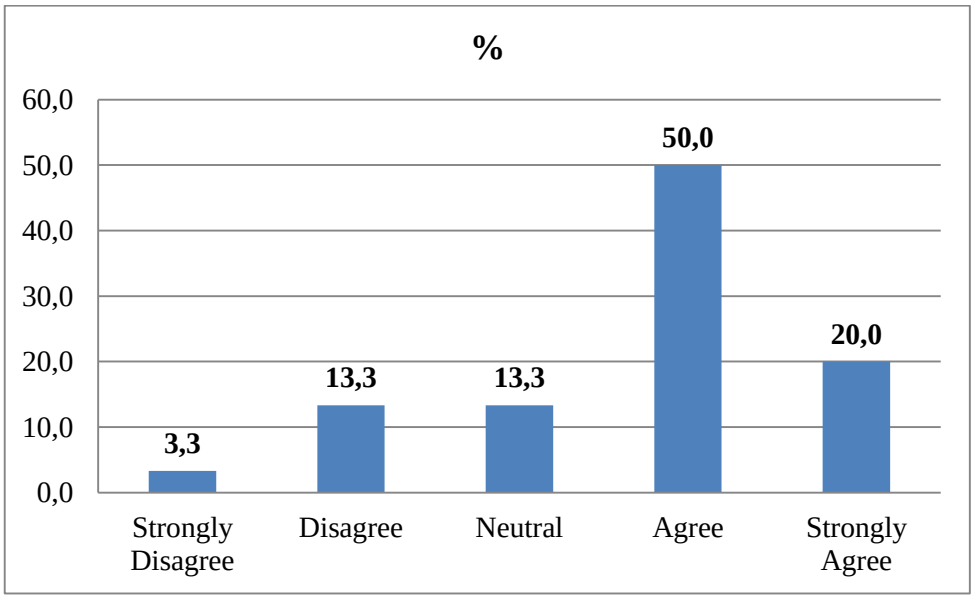
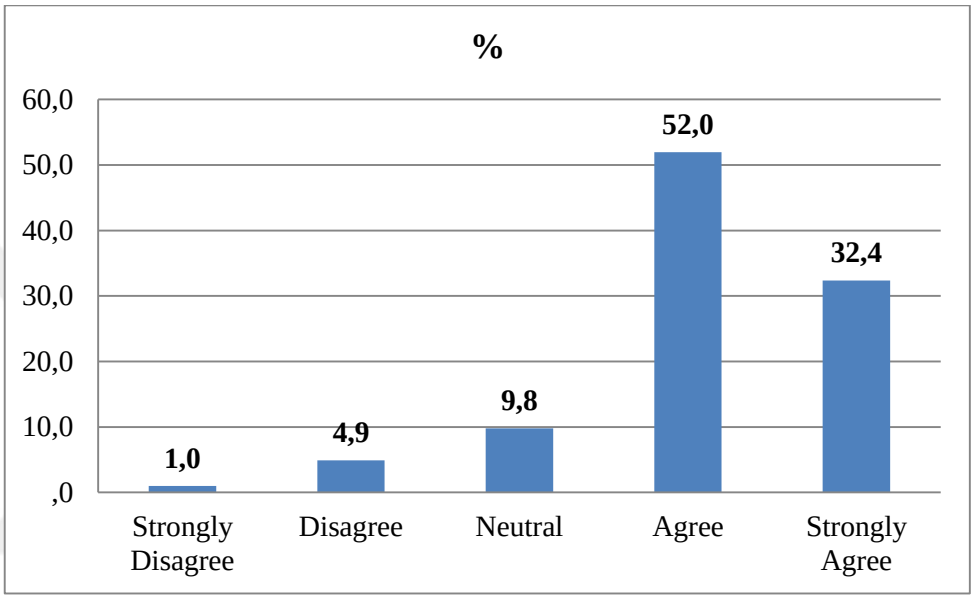


SQPM17 Vendor-4 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS



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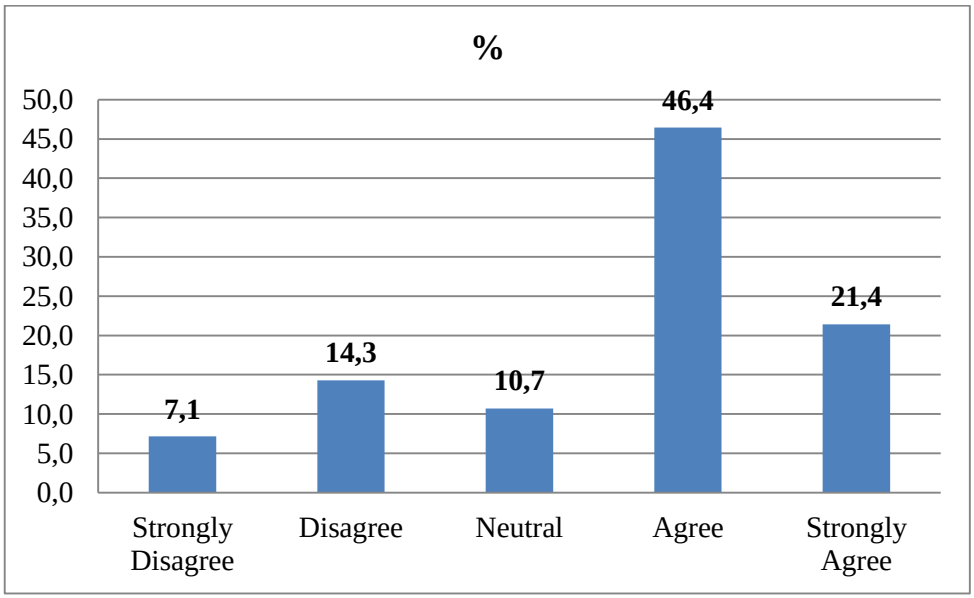
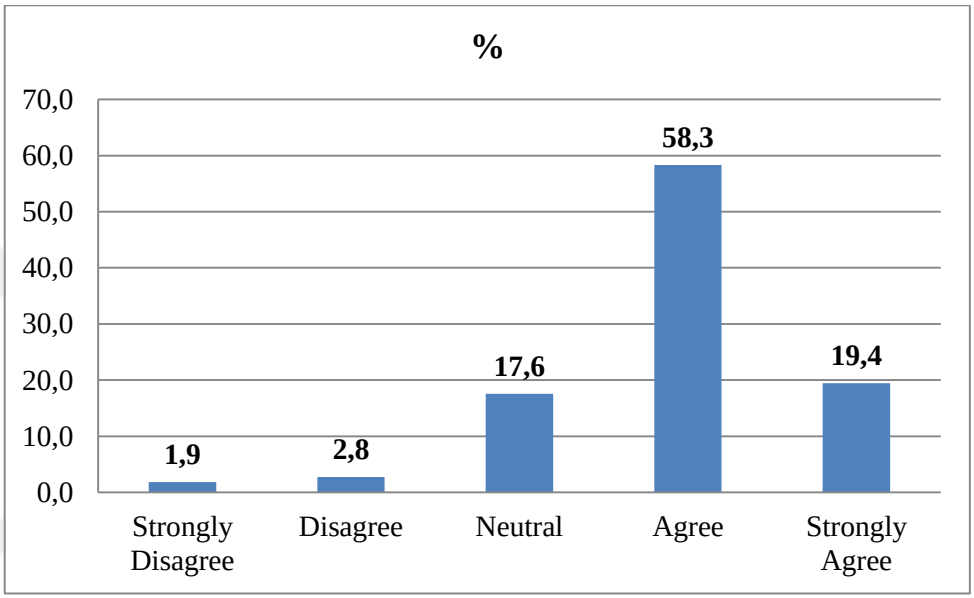


SQPM18 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS



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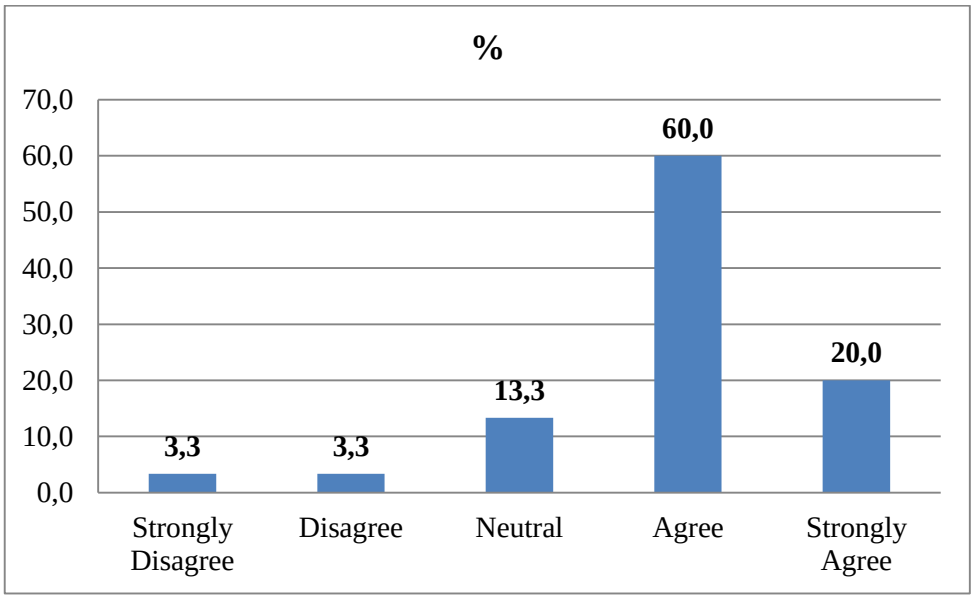
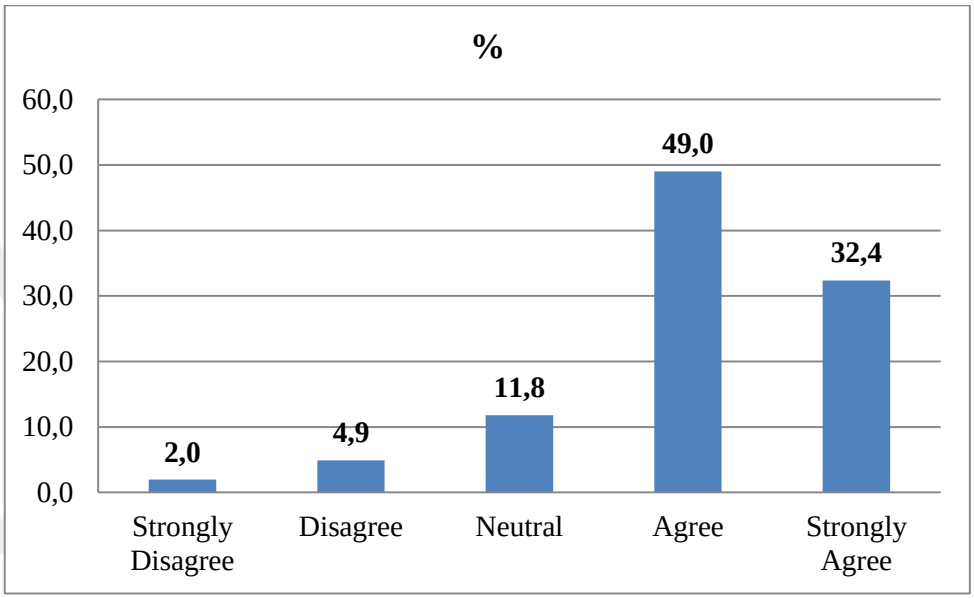


SQPM18 Vendor-4 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS



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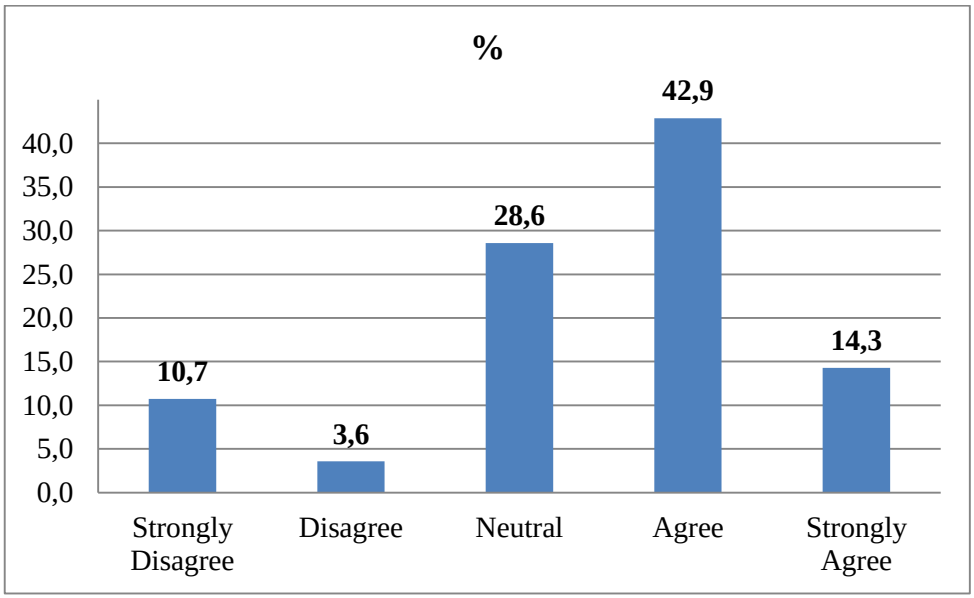
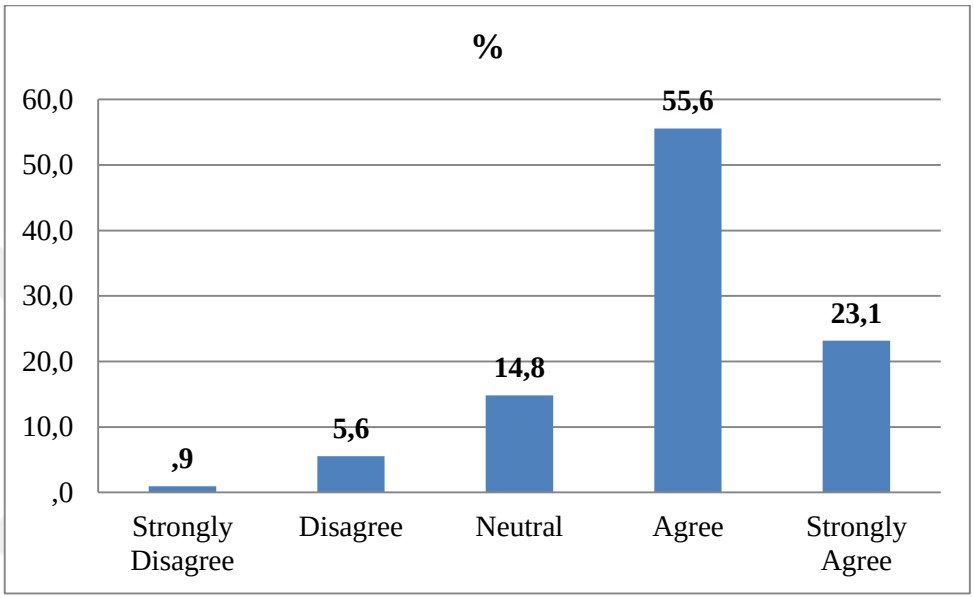


SQPM19 Vendor-2 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS



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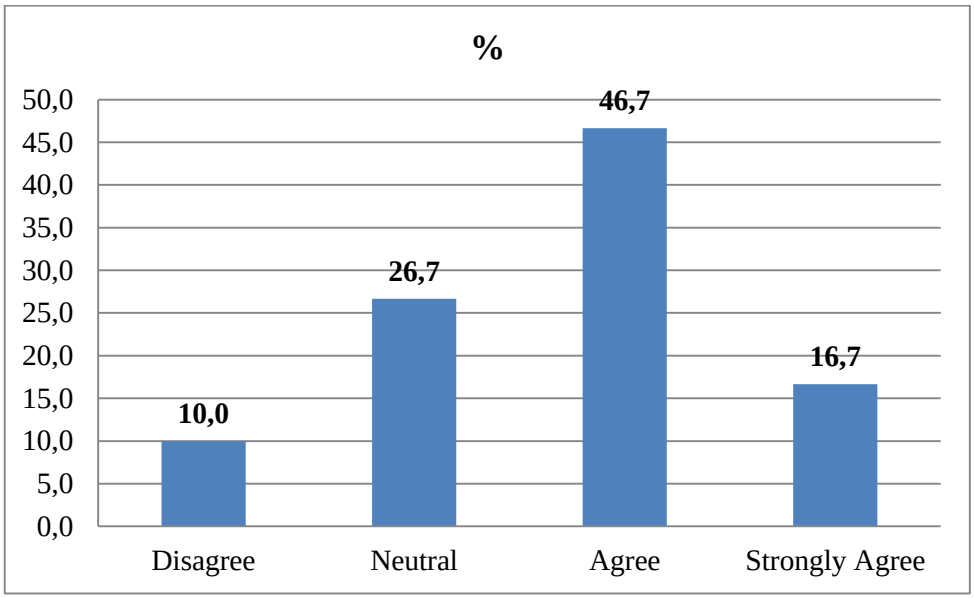
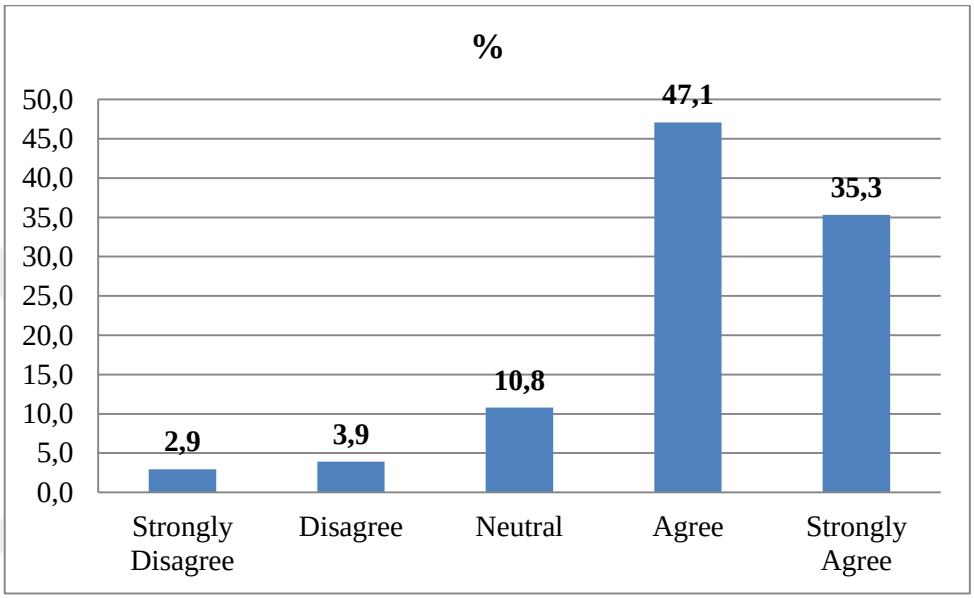
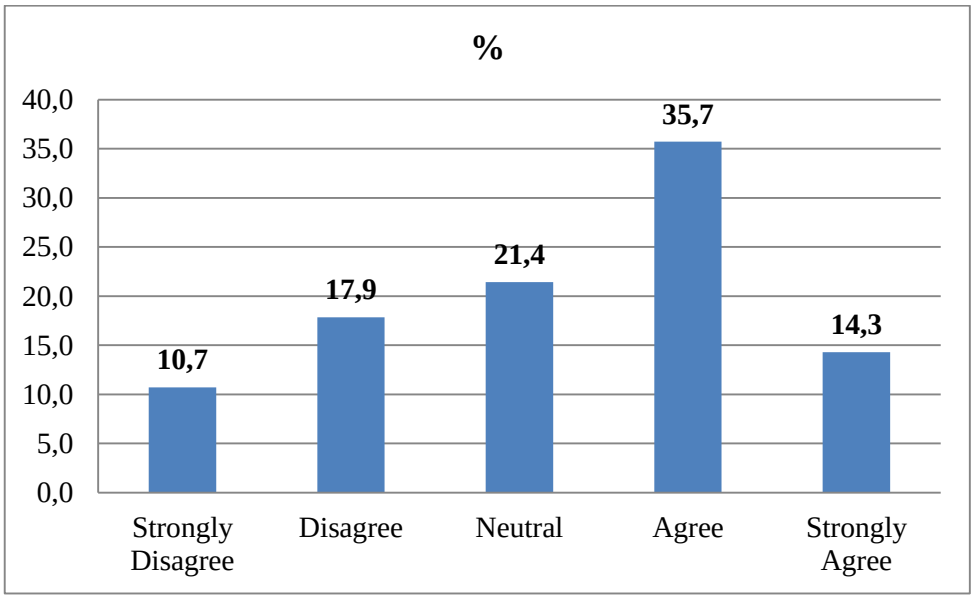


SQPM19 Vendor-4 Score Result

APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS



SQPM20 Vendor-1 Score Result



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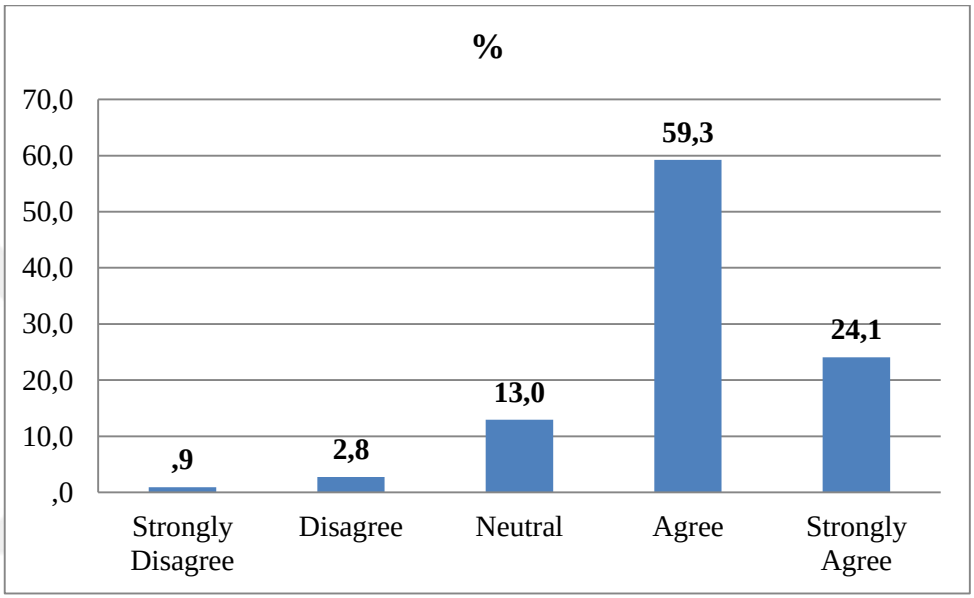
APPENDIX C. (CONT.) PERCEIVED SERVICE QUALITY VENDOR ANALYSIS



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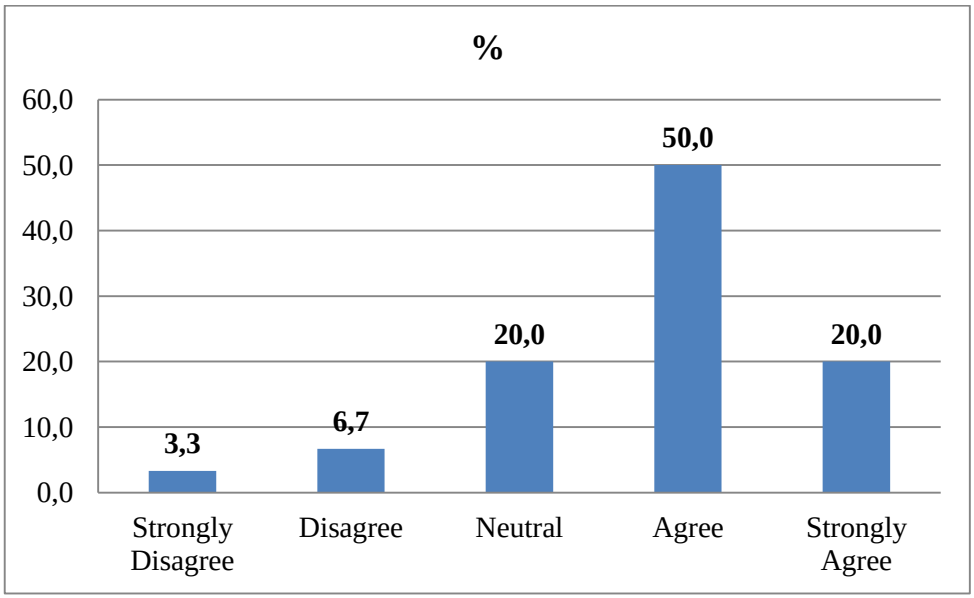

SQPM20 Vendor-4 Score Result

CURRICULUM VITAE

PERSONAL INFORMATION

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EDUCATION

Degree	Institution	Year of Graduation
MBA	Çankaya Univ. Master of Business Administration	2017
BS	Erciyes Univ. Elecrical-Electronics Engineering	2008

WORK EXPERIENCE

Year	Place	Enrollment
2016- Continue	HUAWEI Telecommunication	Service Solutions Sales Manager
2014-2016	HUAWEI Telecommunication	Services Technical Director
2010-2014	HUAWEI Telecommunication	Services Technical Team Leader
2008-2010	HUAWEI Telecommunication	Services Technical Engineer