A MARKETING APPROACH TO SERVQUAL – MEASURING SERVICE QUALITY IMPACT IN AUTOMOBILE AFTERSALES BASED ON STRUCTURAL EQUATION MODELING

(SERVQUAL METHODUNA PAZARLAMA YAKLAŞIMI –OTOMOTİV SATIŞ SONRASINDA SERVİS KALİTESİ ÖLÇÜMÜ-SEM)

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LIST OF SYMBOLS

AASA : Automotive Aftermarket Suppliers Association
ACA : Auto Care Association
ACSI : American Customer Satisfaction Index
AHP : Analytic Hierarchy Process
ANP : Analytic Network Process
App : Application
AVE : Average Variance Extracted
BSC : Balanced Scorecard
CAGR : Compound Annual Growth Rate
CB-SEM : Covariance-based Structural Equation Modeling
COS : Cost of Sales
CR : Composite Reliability
CSI : Customer Satisfaction Index
DEA : Data Envelopment Analysis
DEMATEL : The Decision Making Trial and Evaluation Laboratory
DMU : Decision Making Unit
EPS : Earnings per Share
GDP : Gross Domestic Product
GPS : Global Positioning System
KPI : Key Performance Indicator
NPS : Net Promoter Score
OEM : Original Equipment Manufacturer
PLS-SEM : Partial Least Square Structural Equation Modeling
PMS : Performance Measurement System
ROA : Rate of Assets
ROI : Rate of Investment
SEM : Structural Equation Modeling
SCSI : Swedish Customer Satisfaction Index
SKU : Stock Keeping Unit
SUV : Sport Utility Vehicle
TTM : Trailing Twelve Months
Q : Quarter
QFD : Quality Function Deployment
VIF : Variance Inflation Facto

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ABSTRACT

The automotive organization is one of the main industries in the world. It has an enormous contribution to the Gross Domestic Product (GDP) for each country. The aftermarket is the secondary market of the automotive industry that is driven by car sales growth, especially by fleet vehicle sales and management. The after-sales activities are considered as a profitable source for business finance such as income, profit. It has also many competitive advantages together with the steady extension of car life (e.g., extended warranty,etc.).

While running after-sales business, service quality is considered as a critical value. Because a business with high service quality can create positive customer perception. While measuring service quality, Servqual model which has 5-dimensional construct (tangibility, reliability, responsiveness, assurance, empathy) is more common to use. But it is not sufficient for aftersales services of the company. Because the company has been increasingly aware of strategical quality variables based on customer needs and expectations. Hence, the study proposed new service quality items based on Servqual 5-dimensional construct and also new quality dimension named marketing. The main target under the proposal is to construct a comprehensive measurement instrument for the company dealers' service quality.

Furthermore, the study targets to differentiate among positive and negative assessment of after-sales service quality which identifies the factors that actually influence satisfaction, loyalty, customer retention and brand image. The structural equation modelling (SEM) was performed using the "Smart-PLS 3" software for testing hypothesis and path analysis of the study (i.e., based on service quality dimensions and customer behaviors).

ÖZET

Otomotiv sektörü dünyanın en önemli endüstrilerinden biridir. Sektörün üretiminde bulunduğu her ülkenin gayri safi hasılasına katkısı büyüktür. Araç satışlarındaki artış, özellikle filo yönetim modeli ile satış sonrası hizmetleri de otomotiv sektörünün ikinci büyük pazarı haline gelmiştir. Bu nedenle satış sonrası faaliyetler gelir ve kâr gibi işletmelerin finansmanı için karlı bir kaynak olarak değerlendirilir. Aynı zamanda üretici firmaların uzatılmış garanti seçenekleri ile birlikte sektör birçok rekabet avantajına da sahip olmuştur.

Satış sonrası işler yürütülürken, hizmet kalitesi kritik bir değer olarak kabul edilir. Çünkü yüksek hizmet kalitesine sahip bir işletme, olumlu müşteri algısı yaratabilir. 5 boyutlu yapıya (fiziksel özellikler, güvenilirlik, heveslilik, güven, empati) sahip olan SERVQUAL modeli hizmet kalitesi ölçümlerinde yaygın olarak kullanılan bir modeldir. Fakat bu model çalışmada yer alan şirketin satış sonrası hizmetleri için yeterli değildir. Çünkü şirket, müşteri ihtiyaç ve beklentilerine dayanan stratejik kalite değişkenlerinden giderek daha fazla haberdar olmuştur. Bu nedenle, çalışmada öncelikle SERVQUAL 5 boyutlu yapıya ve pazarlama olarak adlandırılan yeni kalite boyutuna dayanan yeni hizmet kalitesi öğeleri önerilmiştir. Önerideki temel amaç şirket bayilerinin hizmet kalitesi için kapsamlı bir ölçüm aracı oluşturmaktır.

Ayrıca çalışma müşteri memnuniyeti, müşteri sadakati ve marka imajını etkileyen faktörleri tanımlayan satış sonrası servis kalitesinin olumlu ve olumsuz değerlendirilmesini ayırt etmeyi amaçlamaktadır. Çalışmada, önerilen hipotezleri test etmek ve ilişki modelini çözümlemek için (yani, hizmet kalitesi boyutlarına ve müşteri davranışlarına dayalı olarak) Yapısal Eşitlik Modellemesi (SEM) ‘ne dayalı "Smart-PLS 3" yazılımı kullanılmıştır.

INTRODUCTION

As service and it's solution offerings rapidly growing, companies related with after-sales services (i.e., selling spare parts, technical support, maintenance/repairs, installing updates, parts reconditioning and inspecting) could get a bountiful source for its finance business. The fact is that the new car sales profit margin is rapidly declining in global market each day. According to Accenture study referenced by Harvard Business Review, US' leading automobile manufacturers like General Motors generates relatively more profit from after-sales revenues wen comparing to car sales income. Many researches indicate that after-sales services have high margins. After-sales services is responsible for only 20% of the turnover of manufacturing companies, it is able to generate around %80 of the company's profit (Dombrowskia & Malorny, 2017). Especially in developed countries, the after sales business generates almost half of profits with %20 of a company revenue. This fact points out that firms should understand the huge potential of after-sales services besides product sales.

The world automotive aftermarket industry reported that auto aftermarket generates approximately total revenues of $828 billion in 2016. A compound annual growth rate (CAGR) is occured about 5.8% between 2012 and 2016 (Automotive Aftermarket Global Industry Almanac, 2017) with the generating revenue. Automotive Aftermarket Suppliers Association (AASA) reported that the United States automotive aftermarket will grow at a compound annual growth rate (CAGR) of 3.6 percent through 2020, according to the 2017 Joint Channel Forecast Model produced by the AASA and the Auto Care Association (ACA). Inreasing service demands in the market are the main drivers for this growth. The after-sales service business generally consists of diverse operations: maintenance/repair, spare parts delivery,

product improvement, technical advice etc. (Saccani et al., 2006). But there should be source for generating financial and operational value.

4 main aftersales service provider groups generates revenue: (1) OEMs, (2) independent garages, (3) service chains and (4) the do-it-yourself-segment (Arthur D. Little Automotive Insight, 2015). Especially, OEMs companies and service chains use different strategies in order to boost their service quality. There are also many metrics to identify service quality attributes. While companies develop their service quality, they should consider whether their quality aspects are convenient with company strategic targets and the customer expectations. In this case, the automotive aftersales key performance indicators and their related metrics provide convenient models for decision makers. Hence, the manufacturer gives importance whether the supplier performs to desired standards or not (Pawar et al., 2009).

Besides strategic financial priorities, customer behaviours are also winning drivers for companies. Customer perception based on service performance which has a significant effect on customer satisfaction, customer loyalty and consequently, the manufacturer-customer relationship (Li & Choi, 2009). Therefore, manufacturing companies and the aftersales providers has to be conscious about the importance of customer satisfaction, customer loyalty, and their perception of brand image. Because positive customer perceptions provide income and profit for them in the long run.

Companies must take into consideration the whole product or service features for providing value to their customers. Many businesses provide aftersales support to their customers after product have been sold. In aftersales business, companies can also catch a good opportunities better understanding of customers' needs and expectations that competitors can't easily acquire that can provide them sustainable competitive advantages. Because consumers' perception of product or service quality leads to create ultimate satisfaction or dissatisfaction. Such relations also lead to customer acquisition, preference, repurchase intention, retention, net promoter score (NPS) (i.e., customers who are very satisfied with their service experience are likely

to even go a step further and recommend brand or service provider to others), and loyalty. Hence, each companies focus on their own customer-driven excellence for understanding customer desires and reducing the customers' perception and expectation gap. Customer-driven excellence means much more than reducing defects, it mainly contributes customer satisfaction and long term engagement with customers by reducing complaints and service errors. Each customer has different service needs and expectations even though they own the same product. So, companies need to develop comprehensive customer excellence driven strategies to fulfill the needs of the entire customer set. The performance of a company is a key factor to build better customer's judgement and perception about a product or a service. On the other side, the performance of a company has many measurement dimensions. In this research, different measurement dimensions are proposed based on the company service quality aspects and company's customer based strategic goals. This study highlights the gap between company's customer focused targets and a winning aftersales service quality approach based on satisfaction, loyalty and brand image. Measuring individual customer perception at each customer level is an essential issue to find the gaps. These kind of measurements will also help to improve brand perception and brand loyalty.

This study about automotive after-sales business is aimed to clarify effect of both service quality dimensions' and aftersales market trends on customer behaviours and. All researches are based on many studies in literature related with service quality metrics, trend analysis about aftersales marketing, and also experiences of managers. The main target of the study is to adjust service quality measurements according to the company goals related with customer behaviours.

As a result, main contributions of this study would be:

- Development of the company's strategic options while driving customer behaviours in a positive way.
- Identifying of how service quality metrics and marketing trends affect customer behaviours (i.e., customer satisfaction, customer loyalty and customer brand image)

- Evaluation of loyalty, retention and brand image factors within the propose aftersales service quality model.
- Evaluation of marketing trends via the Servqual scale.

Based on our findings, the study provides new items especially for the brand marketing strategies based on aftersales service business. The findings aim to reach important factors that affect customer behaviours about the brand. In this regard, new service quality approach contains 6 quality dimensions (i.e., tangibility, reliability, responsiveness, assurance, emphaty and marketing). The new service quality construction that is proposed in this study contains 19 Likert-type items. The 19 pairs of items are targetted to measure perceived service level provided by particular dealer (i.e., customer's most recent service experience in one of the company's service provider). The many items in the study are structured as a 7-point response format with "strongly agree" and "strongly disagree". Besides, constructions about customer behaviours contain 8 pairs of Likert-type items. The 8 pairs of items are used for measuring general perception about the brand and the customer perception after their experiences in the dealers with the brand and its services.

While setting up customer attributes (i.e., customer satisfaction, customer loyalty and brand image) in the study, interview tool was used for defining priorities and attractive customer response functions. The interview tool was conducted by deep conversations with the company's managers and the dealer's managers to underline the most significant customer behaviours for better the brand performance.

1. LITERATURE REVIEW

1.1. Aftersales Business

A service is varied by personal service or a service as a product. It is actually not a thing but a series of activities or processes. When customers describe services, they use expressions such as experiences, trust, feeling and security (Grönross, 1988). So, it is not easy to manage service quality and to do service marketing.

The aftersales service delivering is also more complex and tough than manufacturing of products. Because there are many patterns in aftersales business such as technical advice, maintenance/repair, spare parts delivery and product upgrading, among others (Saccani et al., 2006). Delivering services includes various processes such as dealing with all required documents and procedures for completing the selling process (e.g., training, insurance, maintenance contract, warranty extention), focusing on the requirements of the using the product efficiently (e.g., product check-up, customer care, preventive maintenance), concerning about all the technical activities performed to recover and to keep the product functioning (e.g. failed parts replacement, regular maintenance) and dealing with the regulations of disposing of the product (Legnani et al., 2013, Sabbagha et al., 2015). The main idea is that an aftersales business has to support all products which a company had already sold in the past or products that the company currently produce and sell. Each version of products have different parts, vendors and dynamics within itself. Therefore, the service network generally has to deal with more than 20 times the number of stock keeping units (SKUs) that manufacturing track (Cohen et al., 2006). Moreover, aftersales services operation is unpredictable due to unexpected and occasional demands for repairs and maintance. While factories can produce products in advance of demand, they cannot produce services. So, aftersales support companies' goal is to manage and schedule unexpected service needs such as processes and tools in order to establish just in time

materials. They cope with not only when an unpredictable demands for support they also cope with many aftersales dynamics. Needs for spare parts appear as probability distribution while most companies manage this needs by using a deterministic approach. Also, customer dissatisfaction and complaint may occur because of mismatches between supply and demand. But the fact is that demands for repairs and maintance needs mostly appear in an unpredictable time not within a specific time frame.

Considering that aftersales services supply chains are tougher than manufacturing supply chain, companies need to manage their service networks based on their own demand and process. Six Steps for Managing Service Networks (Cohen et al., 2006) proposed an approach for aftersales businesses to boost service quality levels. Identifying the products which will be supported by company is determined as a 1st step. Company may have many brands or products within its organization which has not produced anymore. So, companies need to identify how critical is this support for products and must decide which products they support. Design a portfolio of service products is identified as a 2nd step in the study. Most companies design their own service systems and identify parameters that govern aftersales support considering customer's expectations as well as their own. Most companies and their customers know their responsibilities about service contracts that is based on response times that range from identified specific times.

The 3rd step of the approach is to select business models to support service products. This approach proposed that companies must variety or service options and products to meet customers' needs and their willingness to pay. Business models differ by customer needs and product ownership. For example, customers may not want to own the products they use. The study mentioned as an example that commercial airlines companies do not pay Rolls Royce and General Electric for buying companies' aircraft engines but they pay an hourly fee for using them. So companies can service to customers by performing one or more business models at the same time.

The 4th step that is proposed in the study is to determine aftersales organizational structures. Companies are responsible for warranty covered. On the other side,

companies have to provide both warranty related and non-warranty related aftersales services either by supporting it on their own or by outsourcing it. Because, aftersales services provide income to the companies over a long period of time, companies must know how they can create value for customers.

The study proposed creating an aftersales services supply chain as 5th step of approach. Replacing a defective product with an another product is more easy but more expensive than replacing a module. Moreover, replace to the new one would be the most expensive way to meet a demand for service. When replacing a module is more easy but more expensive than replacing a submodule. For that reason, companies should consider product hierarchy while deciding their stock and logistics magament strategy (Cohen et al., 2006). Companies must think an economical way to avoid the costs of stocking inventories especially old model car parts while customers service demands.

The last and 6th step, continuous performance monitoring is the most common approach in the market. Companies significantly give importance to monitor the performance of services supply chains in order to meet customers changing needs and expectations. Moreover, monitoring performance continuously maintains competitive advantage for companies.

Aftersales is regarded as a competitive advantage source and business opportunity (Armistead and Clark, 1992) and also has a critical role to create customer satisfaction and customer retention (Alexander et al., 2002). Product delivery, warranty and installation (i.e., aftersales service variables) were examined on customer satisfaction and retention was examined by Isaac et al., 2013. It is based on suvey method which involves a self-design questionnaire from 60 respondents. The ordinary least square multiple regression analysis was used for researching how the aftersales variables effect on customer satisfaction and customer retention. The result of the study indicated that the service variables (i.e., product delivery, installation and warranty) are significantly related with customer satisfaction and customer retention.

1.2. Service Quality in Aftersales Business

Service quality is a term that is inreasingly becoming an important research issue for companies since its intensive relation with costs reduction, profitability increase, customer satisfaction, loyalty and assurance of service retention. Supplying of high service quality is a strategy for companies to success their businesses in profitable ways (Rudie & Wansley 1985; Thompson et al., 1985). Also, there is a significant increase about awareness to improve service characteristics which are directly related with customer satisfaction and customer loyalty.

The perceived service quality by customers has 2 dimensions; (1) a technical dimension and (2) a functional which is based on processes (Grönross, 1988).

A service technical quality represents that what customers are left after the production processes and provider-customer interactions are over. It means that customer are effected by the way of services technical quality and process result is transferred to them. How the service employees perform their tasks, how their attitudes towards to customers and their jobs, way of communication are all influencer for the customer perception and evaluation of the service. A functional quality represent the effectiveness of how customers receive the service and how they experience the process (Grönross, 1988).

In their study, Pawar&Geetha, (2014) mentioned that there are 2 major perspectives for measuring service quality which are a European one and an American one. While American perspective focus only on functional quality attributes, European perspective suggests that there are also 2 more components; technical, and image (i.e., how the customers perceive the company).

Another quality approach defined as counting internal failures index that observed internal failures (i.e., still product are in a factory) and external failures (Garvin, 1983). But the fact is that definition of quality of a product or service for customers is what they experience with it. Therefore, number of problems per vehicle or technical quality of services are not a good indicator for perceived quality from the customer perspective. Customer can generalize that product or service is unqualified

with one single bad experience. It may affect the quality related customer satisfaction and customer loyalty in a negative way.

Many studies emphasizes about the importance of high quality services which create and maintain competitive advantage in a global environment, result in satisfaction of customer (e.g Chang et al., 2009; Cho et al., 2013; Chowdhary & Prakash, 2007). Therefore, achieving the highest level of service provision is significant for companies. Quality of goods can objectively be evaluated by parameters. But quality of services are not similar with goods quality and cannot be objectively measured. For this reason, the most proper approach to assess service quality is to measure customer experiences about the service and it's quality. Differs from objective quality, the quality perception is a customer's judgment about companies (Zeithaml, 1987). Findings comparison from the focus groups revealed in the study (Zeithaml et al., 1988) showed that customers used actually the similar and general criterias for desiding about service quality regardless of the service types.

The relation between the quality and customer satisfaction is not simply linear. With a little improvement in quality dimensions, customer perception and their satisfaction can be significantly healed. But in some cases, while service performance has been greatly increased customer satisfaction can improved a little.

Measuring service quality is crucial for companies. There are many techniques and metrics to identify which service quality attributes cover customer requirements and fulfill customer satisfaction.

Factors of good quality need to be short enough. Besides this it has to be comprehensive to provide all aspects of good quality. 6 criterias about a good service quality perception is based on knowledge of how service quality perceived by customers (Grönross, 1988). These 6 criterias are (1) professionalism and skills, (2) attitudes and behavior, (3) accessibility and flexibility, (4) reliability and trustworthiness, (5) recovery, (6) reputation and credibility.

In an another side, among the differentiation strategies that a standardization and customization of service has been used by companies to effectively manage customer service satisfaction and enhancing customer loyalty. To standardize something has

been used to increase economic evaluation tolerance which means costs decreasing and productivity increasing (Krol et al., 2013), a customization allows customers to specify the services that are suited they desires. Kasiri et al., 2016 studied by analysing the experiences and perceptions of 3 service industries; hotel, hospital, university. The study showed that integration of standardization and customization of service offerings is crucial to improve service quality. The study also compared standardization and customization according to their impact on service quality.

With new strategies, companies need to devote much more attention about challenges in global industry. There is a steady increasing low-cost carriers for attracting customers. But increased low-cost carriers may cause decreasing of service quality. Based on this issue, there has been many research about service quality of airline industry with the target of creating customer satisfaction and retention (Rajaguru, 2016; Koklic et al., 2017). The study shows that there is a relation between airlines' revenues, market share, positive word of mouth, and customer retention, customer satisfaction of service quality and loyalty (Koklic et al., 2017). Specifically, the study that is based on online survey methodology proposed that airline tangibles and personnel quality have positively relation with customer satisfaction. The customer satisfaction with airline have a positive affect for customer intention to repurchase and to recommend the airline. The most interesting finding of the study is that the quality of personnel and airline tangibles have a positive affect on satisfaction with the airline were weaker (i.e., less positive) for the low-cost airlines than for the full-service airlines. The main finding of the study showed that price may be a stronger driver for customer' quality expectation.

The reviews of 20 important studies related with aftersales business that evaluates service quality dimensions considering impact targets are shown in Table 1.1a, Table 1.1b, and Table 1.1c.

Table 1. 1.a: Literature review of aftersales service quality evaluation

Author(s)	Methodological Approaches	Impact Target	Aftersales Indices	Construct
Zeithaml et al., 1988	none	Customer Satisfaction	Service Quality	Repair and maintenance services, bank, long distance telephone company, credit card company
Fullerton & Taylor, 2002	Confirmatory Factor Analysis	Customer Satisfaction, Customer Retention, Advocacy, Willingness to pay more	Service Quality	Auto Repair, Hair Styling
Chiou et al., 2004	Fuzzy AHP, Factor Analysis	Sustainable Development	Business Activities, Government Policy, Socio-economics Effects	Aquatic Products Industry
Ahn & Sohn, 2009	Fuzzy Clustering, Association Rule	Customer Satisfaction, Customer Loyalty, Complaint	Aftersales Service Operational Characteristics	Manufacturing Firms
Kuo et al., 2009	Structural Equation Modelling	Customer Satisfaction, Post Purchase Intention	Service Quality, Perceived Value	Telecom Companies
Zhu et al., 2010	Kano's Model, IPA (The importance-Performance Analysis)	Customer Satisfaction	Product Features	Digital Cameras

Table 1.1b: Literature review of aftersales service quality evaluation

Author(s)	Methodological Approaches	Impact Target	Aftersales Indices	Construct
Alhamadani, 2011	Servqual Approach, Multiple Regression Analysis	Customer Satisfaction	Service Quality	Commercial Bank
Fazlzadeh et al., 2011	Structural Equation Modelling	Customer Satisfaction, Re-purchase Intention, Word of Mouth	Service Quality	Home Appliances
Finn, 2011	Polynomial Regression Analysis, Kano's Model	Customer Satisfaction	Service Quality	Healthcare Service
Sulisworo et al., 2012	Kano's Model	Customer Satisfaction	Service Quality	Healthcare Service
Isaac .O et al., 2013	Least Square Multiple Regression Analysis	Customer Satisfaction, Customer Retention	Warranty, Product Delivery, Installation	LG Electronics
Chougule et al., 2013	A Fuzzy Logic Approach, Grid Search Technique	Customer Satisfaction	Service Quality, Reliability	A vehicle model
Chang&Hsu, 2013	Structural Equation Modelling	Customer Perceived Value, Customer Satisfaction	Service Quality	B2C e-commerce
Chatzoglou et al., 2014	Structural Equation Modelling	Customer Satisfaction, Customer Expectation	Service Quality	Public-owned Organizations

Table 1.1c: Literature review of aftersales service quality evaluation

Author(s)	Methodological Approaches	Impact Target	Aftersales Indices	Construct
Tamuliene & Gabryte, 2014	Linear Regression Analysis	Customer Satisfaction, Customer Retention	Relationship quality	Mobile Operator
Kasiri et al., 2016	Grönroos' model of service quality, PLS-SEM	Customer Satisfaction, Customer Loyalty	Standardization and Customization of Service Quality	Healthcare, Hospital, and Education Services
Pakizehkara et al., 2016	AHP, QFD	Customer Expectation	Service Quality	Bank Services
Rajaguru, 2016	SEM, Means end theory, price sensitivity theory	Customer Satisfaction, Behavioural Intention	Service Quality, Perceived Value for money	Airline Industry
Koklic et al., 2017	Structural Equation Modelling	Customer Satisfaction, Intention to repurchase, Intention to recommend	Airline Tangibles, Quality of Personnel	Airline Industry
Zhanga et al., 2017	LibQUAL+, Kano's Model	Readers' Satisfaction	Electronic Service Quality	University Library

1.3. Service Quality Models

Researchers have proposed various kind of measurement metrics to define quality of service. There are many factors to improve the service quality level such as security, attitude, consistency, completeness, condition, availability, and training of service providers (Sasser et al., 1978). Besides the physical quality of services, interactive quality, and corporate quality also has an impact on the service quality level (Lehtinen

& Lehtinen, 1982). A model developed by Grönroos (1984) for service quality model with 2 dimensions: (1)technical quality and (2)functional quality. Especially, technical quality is very similar among businesses in the market (Grönroos, 1984). Grönross' study stressed that quality generating process, especially the buyer-seller interaction defined as functional quality, is the utmost importance to service marketting.

A GAP model is proposed after an analyzing of the service quality dimensions (Parasuraman et al., 1985). The GAP model provides a significant structure to identify and measure quality of services (Saat, 1999).

Rust & Oliver (1994) proposed a three dimensional non-tested model which included service product, service delivery, and service environment. Berry et al., (1994) was studying service quality in America focusing excellent service strategy which was considered as results of more customer. According to this research 10 subjects from a comprehensive ten-year study in America about service quality was proposed. These sucbjects are considered as a lesson consists of (1)listening, (2)reliability, (3)basic service, (4)service design, (5)recovery, (6)surprising customers, (7)fair play, (8)teamwork, (9)employee research, and (10)servant leadership. These subjects basically focused on following consideration:

- Service quality meaning,
- Best measurement approach for service quality,
- The nature of customer service expectations and expectations' sources,
- Basic reasons for service-quality deficiencies,
- Approaches to improve service quality (Berry et al., 1994).

Retail Service Quality Scale (RSQS) was proposed as a multilevel service quality model (Dabholkar et al., 1996). RSQS model has 5 dimensions listed as follows:

1. Physical Aspects,
2. Reliability,
3. Personal Interaction,
4. Problem Solving, and
5. Policy.

In an another study, a service quality model called INTSERVQUAL was proposed by Frost & Kumar, (2000). It is correlated the GAP Model (Parasuraman et al., 1985) and the SERVQUAL (Parasuraman et al., 1988). The model was conctructed based on determining service quality within internal customers (front-line staff) and internal suppliers (support staff) to evaluate the airline industry's service quality dimensions, and the dimensions' relationships.

Furthermore, the 3 main service quality dimensions: (1)personal interaction quality, (2)physical service environment quality, and (3)outcome quality were revealed as SERVPERF model approach developed by Brady and Cronin, (2001). The study also pointed out that service performance quality provides better results of reliability, validity.

1.3.1. Servqual Approach

The research by Parasuraman, Zeithmal and Berry, (1985) revealed some criterias fit 10 dimensions which were used by customers to assess service quality. These dimensions were (1)tangibles, (2)reliability, (3)responsiveness, (4)communication, (5)credibility, (6)security, (7)competence, (8)courtesy, (9)understanding/knowing the customer and (10)access. These dimensions and their descriptions served as the basic structure of the service quality as named SERVQUAL scale. This study selected SERVQUAL scale as a starting point in survey generation for the measurement of aftersales services quality. The five dimensions are the same as the SERVQUAL scale. But many statements in each dimensions are modified accordingly with the company goals and its performance policy, expert opinions inside the company. Besides these, the literature review about the service quality in automotive industry is a bright area to construct comprehensive model for the study.

As suggested by the factor analysis, some of quality dimensions were combined two seperate dimension in the SERVQUAL approach developed by Parasuraman et al. (1985, 1986, Shahin, 1988, 1991, 1993, 1994; Zeithaml et al., 1990). The model has been extensively applied approach for measuring service quality.

In the SERVQUAL instrument originally includes 10 conceptualized dimensions. And the model is consist of 22 statements to measure the performance across five

dimensions using a seven point likert scale to measure both customer expectations and perceptions (Gabbie & O'neill, 1996). From various studies such as bank example, SERVQUAL model has been considered as a consistent and reliable scale to measure service quality (Shireen, 2011). On the other side, findings comparison with the focus groups revealed that regardless of the type of service, customers mainly used almost the same criterias for judgment of service quality (Zeithaml et al., 1988).

It has 5 general dimensions which are stated as (1)Tangibility, (2)Reliability, (3)Responsiveness, (4)Assurance and (5)Empathy (van Iwaarden et al., 2003). The description as a first sentence in the following belongs to van Iwaarden et al., 2003 study.

Tangibility is related with physical aspects of facilities and equipment and appearance of personnel**.** This dimension is one of the important factor in automotive aftersales service and it is worthy for investigate (Yieh et al., 2007). Bouman and Wiele (1992) proposed in their study that the tangible dimension indirectly influence customer loyalty on car service industry. Tangible quality dimension has emphasized on the functional aspects of delivery process and related with how customer experience service and its process (Grönross, 1988).

The four item based on tangibility dimension in SERVQUAL scale is proper for the company measurement model. While the company looks for the availability and quality of right items in process support, material and equipments appearance and modernity is a dimension in the scale. There is only one addition made to dimensions which is related with the the customer waiting areas ambiance. This metric is important for customer pleasant. Because many of the customers spend their time in there while waiting for their car maintenance process.

Reliability represents the performance ability to be the dependably and accurately service as promised. How the organization handle customer problem and needs or do they perform right services for the first time and provide services within promised time? These aspects that comes under reliability dimension of the SERVQUAL model are major consideration in service quality.

There are many different dimension to be proposed to define service quality. And each dimension contains so many factors. The study from India proposed some relevant factors for automobile service quality such as; behavior of service advisor, improper washing&cleaning of vehicle, hospitability, delay of vehicle, technical work, etc. By conducting a survey in their study, Reliability (Delay/in-time delivery) was considered to be the most significant service quality dimension (Katarne&Sharma, 2010). Most of studies also indicated how reliability is the most important dimension for organizations to drive their customer satisfaction and customer loyalty (Katarne&Sharma, 2010; Pawar&Geetha, 2014; Omar et al., 2015).

This study is evaluating reliability as a one of major dimension. Parasuraman et al., 1988 defined five statements for reliability. But in this study, four statements are used that three of them directly comes from SERVQUAL scale. "The quality level of service is a good value for money" is defined as the other one. This statement is one of the influencing service quality drives for the company. Because it directly affects customer satisfaction.

Responsiveness is identified as a willingness to support customers related with their needs and provide them a prompt service. Not only customers but also eveyone are always waiting a quick respond to their needs and they can be satisfied with staff's response and feedback to their request during the progress of the service visit (This Study). Service providers generally manage it by returning phone calls, emails and responding on-site. The company also track its service providers' response times. This is one of the Key Performance Indicators (KPIs) of performance measurement system.

Flexibility due to the changes in the needs of customer like not working only weekdays also providing night services is a competitive advantages. For instance, offering a suitable service appointment date according to customer schedule is reasonably important. So, besides the SERVQUAL scale statements related with responsiveness, this statement about service appointment offering needs to be evaluated for quality measurement of the company.

Assurance is evaluated with competence, courtesy, credibility and security which means that qualification and kindness of employees and their ability to strength of

confidence. In general, the assurance dimension includes ability to perform the services, respect for the customer, and the general attitude of the service provider to care about it customer's benefit.

Addition to trustable and adequate attitudes of staff, maintance&repair process guarantees given by the dealer is an essential aspect for assurance. Customers are aware of qualification of services and quaranteed maintenance (Ulas & Akkucuk, 2016) like product warranties. So, the statement about guaranteed maintance&repair is necessary while evaluating service quality to create customer satisfaction and customer loyalty.

Empathy includes perceiving customer's like and pay them individualized attention. Also, providing easy accessibility, communication is an significant part of empathy dimension. While services are mainly related with fixing things and solving problems, the real advantages for the companies is providing a positive experience that people associate with their companies to get customer satisfaction. Helping customers with a sincere expression or active listening influence customer perception about service quality in a positive way.

The study based upon service quality of aftersales service in car company proposed that the SERVQUAL should be regrouped into two distinct dimensions which comprise of responsiveness, assurance, empathy and reliability as one dimension and tangibility as another dimensions which is not directly influence customer loyalty (Bouman and Wiele, 1992). Another similar study about service quality in car industry regrouped SERVQUAL dimensions and leaved tangibility as one separate dimension (Yieh et al., 2007).

Research of the study of Zeithaml et al., 1988, customers who responded the survey questions were 4 different service categories: (1)repair & maintenance services, (2)bank, (3)long distance telephone company, (4)credit card company to evaluate service quality. While evaluating relative importance of the five SERVQUAL dimensions, a remarkable result shows that reliability is consistently the most crucial dimension in all four cases. Assurance is the second most significant dimension. Tangibles is more important dimension in the case of bank than in the other three

firms, while responsiveness is more important in the case of three firms than in the bank. The least important dimension is empathy for all cases.

The five dimensions with the 22 items are very common in almost all service firms but they are not sufficient for this study relates. Furthermore, there are also some relevant dimensions which have to be evaluated for understanding more clear about customer expectation for service quality of the company. Bhat, 2012 posthulated in his study that SERVQUAL five dimensions are not sufficient to measure service quality and also appropriate for all service settings. Another study proposed that service quality instruments and determinants may need to be reassessed in different service quality (Caceres & Paparoidamis, 2007).

Service quality has become a cornerstone of marketting strategy to tackle many challenges. Companies know the fact that how important service quality is for their survival and growth in the competitive markets.

While evaluating overall service quality, there are various quality attributes that differs from company targets, their operational processes and their customers' needs and behaviours, etc. Conceptual models of service quality are compared based on quality attributes and listed in below Table 1.2.

Table 1. 2: Service Quality Conceptual Models

Haywood-Farmer Service Quality Attributes	**Parasuraman et al.'s Service Quality Dimensions**
Physical facilities, processes and procedures: location, layout, size, decor, facility reliability, process flow and flexibility, capacity balance, control of flow, range of services	Tangibles
People behavior and conviviality: timeliness, speed, communication, warmth, friendliness, attitude, tone of voice, dress, neatness, politeness, anticipation, handling complaints, solving problems	Reliability, Responsiveness Access, Courtesy, Communication
Professional judgment: diagnosis, advice, guidance, innovation, honesty, confidentiality, discretion, knowledge, skill	Competence, Credibility, Security, Understanding/Knowing Customers

Besides service quality, companies are aware of an important role of marketting strategies as well. Some characteristics such as customization of services, managing conditions, making the service physically tangible, and operating supply and demand patterns at the same time are perfect dynamics for services to enhance marketing strategies (Pawar & Geetha, 2014). When you remind your target market that you are strong enough about your aftersales service campaigns, they have a strong memory about the organization and its products. Then, customers trust the brand, follow its campaigns and become accompanying with the company for a long run. According to this, performance expressions are associated with a marketing dimesion are evaluated in this study to measure service quality related to its satisfaction degree.

Comprehensive service quality measurement dimensions and customer behaviour expressions and their measurement items are shown below in Table 1.3a, Table 1.3b, Table 1.3c, and Table 1.3d with the references.

Table 1. 3a: Literature review on service quality measurement dimensions and customer behaviour expressions

Construct	**Generic Dimension**	**Item**	**Measurement**	**Referenced by**
Service Quality	Tangibility	tan_1	The physical facilities of the service dealer are visually appealing	Parasuraman et al., 1988; Pawar&Geetha, 2014
		tan_2	The dealer's staffs are neatly dressed	Parasuraman et al., 1988
		tan_3	The dealer's waiting lounge is comfortable	Ulas&Akkuc uk, 2016
		tan_4	The dealer takes advantages of technology	Ulas&Akkuc uk, 2016
	Reliability	rel_1	The dealer always keep time promises to customers	Parasuraman et al., 1988

Table 1.3b: Literature review on service quality measurement dimensions and customer behaviour expressions

Construct	Generic Dimension	Item	Measurement	Reference
Service Quality	Reliability	rel_2	The dealer performs its services right at the first time.	Parasuraman et al., 1988
		rel_3	The dealer uses original products of the brand	Ulas&Akkucuk, 2016
		rel_4	Quality level of service is a good value for money (reliable repairing)	This Study
	Responsiveness	res_1	It is easy to schedule a suitable service&repair appointment	This Study
		res_2	Employees provides respond and feedback to customer requests during and after the progress of the service visit.	This Study
		res_3	The dealer provides mobility service to the customers	This Study
	Assurance	as_1	The dealer employees are trustable	Parasuraman et al., 1988
		as_2	The dealer employees have the knowledge to answer customer's questions	Parasuraman et al., 1988
		as_3	The dealer quarantees its maintanance process	Ulas&Akkucuk, 2016
	Empathy	emp_1	The dealer offers adequate alternative product or services to meet customer needs	This Study
		emp_2	The dealer always shows sincere interest in customer's needs and problems	This Study
	Marketing	mark_1	The dealer offers attractive service campaigns	This Study

Table 1.3c: Literature review on service quality measurement dimensions and customer behaviour expressions

Construct	Generic Dimension	Item	Measurement	Reference
	Marketing	mark_2	The diversity of the dealer new product and service offerings are well enough	This Study
		mark_3	The dealer rewards its loyal customers (includes add-ons, vouchers, loyalty discounts or cards, special pricing, bonuses or gifts)	This Study
Customer Satisfaction		cs_1	Overall, i am satisfied with the aftersales services provided by the dealer	ACSI
		cs_2	The dealer is better than I expected	ACSI, Wang et al., 2004
Customer Loyalty		cl_1	As long as i have a car which is under this company brand, i will continue to use the aftersales services provided by the dealer	
		cl_2	I will definitely recommend the dealer to the my relatives and friends	ACSI
Brand Image		bi_1	How do you rate your satisfaction level with the brand in terms of meeting your expectations from a car?	This Study
		bi_2	To what extent do you agree with the statement that the brand has features that differentiate it from other car brands?	This Study
		bi_3	Based on your experience with your car, would you recommend the brand to your friends or social circle?	This Study

Table 1.3d: Literature review on service quality measurement dimensions and customer behaviour expressions

Construct	Generic Dimension	Item	Measurement	Reference
Brand Image		bi_4	The brand appeals to my lifestyle	This Study

1.3.1.1. Servqual Approach in Automotive Aftersales Industry

For developing measurement items for car service industry, first of all important service marks have to be defined. Service features specificed for the automotive service industry have been compared with items found in a literature about car service. The studies about the Automotive Aftersales Service Quality Measurement Systems which are mostly based on five Servqual dimensions are listed below in Table 1.4a, Table 1.4b, and Table 1.4c.

Table 1. 4a: Literature review of aftersales service quality evaluation in automobile industry

Studied by	Country	Construct	Quality Dimensions	Contribution	References	Methodological Approaches	Scale
Bouman & van der Wiele, 1992	The Netherlands	Dutch Car Service Industry	Tangibility, Reliability, Responsiveness, Assurance, Empathy	ServQual five dimensions are grouped into three factors (i.e., Customer kindness, Tangibles, Faith)	ServQual by Parasuraman et al., 1988	Mean Score of Factors, Pearson Correlation Matrix	-6 to +6 points range
Andaleeb & Basu, 1994	United States	Automobile Service/Repair Facility	Fairness, Empathy, Responsiveness, Reliability, Convenience	Perceived Fairness of the Facility and its Personnel, Convenience	ServQual by Parasuraman et al., 1988, Andaleeb & Basu, 1994	Multiple Regression Analysis	5-point Likert scale
Katarne & Sharma, 2010	India	Automotive Service Sectors	Tangibility, Reliability, Responsiveness, Assurance, Empathy	Behavior of the Service Advisor, Response at billing counter, Delay of vehicle, Commitment of sales person, Hospitability, Technical work, Improper Washing & Cleaning of the vehicle, Others	ServQual by Parasuraman et al., 1988	Frequency of the items results	

Table 1.4b: Literature review of aftersales service quality evaluation in automobile industry

Studied by	Country	Construct	Quality Dimensions	Contribution	References	Methodological Approaches	Scale
Shuqin & Gang, 2012	China	Auto Aftersales Service Industry	Fairness, Empathy, Reliability, Responsiveness, Convenience		ServQual by Parasuraman et al., 1988, Andaleeb & Basu, 1994	Mean Score of Service Quality Dimensions	7-point Likert scale
Pawar & Geetha, 2014	India	Tata Motors	Tangibility, Reliability, Responsiveness, Assurance, Empathy		ServQual by Parasuraman et al., 1988	Mean Score of Service Quality Dimensions	7-point Likert scale
Al-Shammari & SamerKanina, 2014	Saudi Arabia	Saudi Automotive Company	Tangibility, Reliability, Responsiveness, Assurance, Empathy		ServQual by Parasuraman et al., 1988	Mean Score of Service Quality Dimensions	
Khan & Jadoun, 2015	China	Hero, Bajaj, Honda	Tangibility, Reliability, Responsiveness, Assurance, Empathy, Accessibility	Parking area, Appropriate location	ServQual by Parasuraman et al., 1988	Paired t test (gap between customer expectations and perceptions)	5-point Likert scale

Table 1.4c: Literature review of aftersales service quality evaluation in automobile industry

Studied by	Country	Construct	Quality Dimensions	Contribution	References	Methodological Approaches	Scale
Saidin et al., 2015	Malaysia	Proton and Perodua	Customer Service (responsiveness, assurance, empathy and reliability), Tangibility, Technical Quality		ServQual by Parasuraman et al., 1988, Tangibility by Bouman & Wiele, 1994, Technical Quality by Grönross, 1984		
Gencer&Akkucuk, 2016	Turkey	Automobile Aftersales	Tangibility, Reliability, Responsiveness, Assurance, Empathy	AutoServQual	ServQual by Parasuraman et al., 1988	Inter-Item Correlation	

1.3.2. Kano's Model

The Kano Model has been known one of the most used quality models for product or service development and evaluate product or service attributes which have an great impact on customer behaviours such as satisfaction, loyalty, etc. The Kano Model was first developed by Kano et al. (1984) for defining customer requirements. The Kano Model evaluates features of product or services into 3 different nature of categories that is defined depends on their way of affect.

The 1st is described as One-dimensional attributes. It occurs when customer satisfaction is created and dissatisfaction is not fulfilled. The main idea of the attribute is to be better for the better customer likes.

The 2nd is desribed as Attractive attributes. It indicates that there are some attributes in which their absence does not cause dissatisfaction. Since, these attributes are not expected by customers. So, customers are not aware of what they are missing. But, when these attributes are supplied to customers, they delight the customers.

The 3rd is desribed as Must-be attributes. Customers take them for granted when fulfilled. However, if the product or service does not meet the need sufficiently, the customer becomes very dissatisfied.

There are many studies for defining the role of varied quality attributes in customer's quality perceptions in the process of product or service improving. Kano Model is an efficient approach to categorize a specific features of product such as (Zhu et al., 2010). The study did emprical analysis with 330 questionnaires through on-line survey. The survey included both functional and dysfunctional questions of product attributes in the Kano questionnaire. According to the frequency of answers, product features were classified. Also, the study analysed the importance and satisfaction level of product features. Moreover, there was significant correlation between product attributes based on Kano Model approach and demographical variables. For example, male considered one of product feature is indifferent requirement, but female considered it as a must-be requirement of Kano Model.

In an another study, Kano's model was used for determining customer principal needs and classify this requirements as 3 category; basic, operational and motivational

(Pakizehkar et al., 2016). Then, customer needs were prioritized using AHP technique and at the end, technical commitments were ranked through QFD matrix. After ranking of the customer commitments reveal that the basic requirements are the most importance to the customers. The operational requirement was the second one and the lowest rank was devoted to the motivational requirement. Comparing to the other methods, Kano methodology can guide for desirable situations and define strategic opportunities for service differentiations for the companies (Matzler & Hinterhuber, 1998; Witell & Lofgren, 2007).

1.3.3. The GAPs Model

After analyzing service quality dimensions, a GAPs model was proposed as a significant framework for identifying and evaluating service quality (Saat, 1999). The model basically consists of expectation and confirmation theory (Oliver, 1980; 1993). The theory indicates how customers evaluate quality and taking into consideration the factors to determine quality in its various associations. It is based on the different perception: quality expected by customers, quality offered by firms, quality perceived by users after the service experiences (Mauri et al., 2013). The GAPs model framework is shown in the below Table 1.5a and Table 1.5b.

Table 1. 5a: The GAPs Model Framework (Adopted by Parasuraman et al., 1985; Lovelock & Wirtz, 2011)

GAP Model	Name	Identifying	Studied by
GAP 1	The Knowledge Gap	Customer expectation-management perception gap	by Parasuraman et al., (1985)
GAP 2	The Policy Gap	Management perception-service quality specifications gap	by Parasuraman et al., (1985)
GAP 3	The Delivery Gap	Service quality specifications-service quality gap	by Parasuraman et al., (1985)

Table 1.5b: The GAPs Model Framework (Adopted by Parasuraman et al., 1985; Lovelock & Wirtz, 2011)

GAP Model	Name	Identifying	Studied by
GAP 4	The Communications Gap	Service delivery-external communications gap	by Parasuraman et al., (1985)
GAP 5	The Service Quality Gap	Expected service-perceived service gap	by Parasuraman et al., (1985)
GAP 6	The Perceptions Gap	Service delivery and perceived service gap	by Lovelock (1994)

Gap 1 indicates the management has wrong assess about customer quality expectations. It occurs because of the insufficient market research or communication inside the business.

Gap 2 indicates the gap between management perception about customer quality expectations and the settlement of appropriate service quality standards.

Gap 3 indicates the inconsistency between service quality standards and company's service delivery performance. It occurs because of the lack of both technology and operating systems.

Gap 4 indicates the inconsistency between service delivery and quality characteristics delivered by company's external communication tools (e.g., advertisements, social media, face-to-face selling, etc.). It occurs the result of the inconsistency and inappropriate of external communications.

Gap 5 is also named Customer Gap is the significant gap and it indicates the inconsistency between customer service quality expectations and customer actual service quality perception. According the capability to satisfy customer expectations as a quality definition, The Gaps Model objects to clarify the possible reasons for a gap between expected quality and perceived quality (GAP 5). The Servqual scale was also evaluated for measuring possible gaps about service quality (Parasuraman et al., 1988).

1.3.4. Grönroos Model

The service quality depends on two variables: service expectation and service perception. Besides traditional marketing activities such as advertising, pricing religion, political involvement, word of mouth communication may also have an effect on a given customer's perception and expectation (Grönroos, 1984).

Grönroos' study (1984) modeled service quality as two dimensions: technical quality and functional quality. The study proposed that customers are interested not only in what (technical quality) they get from services but also how (functional quality) they get it. According to search technical outcome of the process is what the customer receives as a result of his or her interactions with a service firm and it can be measured by a customer in a rather objective manner. The functional quality dimension can not be evaluated as objectively as the technical dimension of service quality. According to study's observations, functional quality is more important to the perceived service than the technical quality on customer satisfactory level.

Kasiri et al. (2016) used a framework which was developed extending Grönroos' model of service quality in their study. The study was based on a questionnaire survey collected data form customers of 3 service industries: (1)healthcare, (2)hospitality, and (3)education. On of the findings of the study was functional quality has higher impact on customer satisfaction when compared to technical quality.

1.4. Performance Measurement Systems

Generally, industries have many strategies and activities for achieve their goals and drive continuous improvements. So, many public organizations and private companies are now aware of importance of information about the performance of their operations, policies to achieve various desired outcomes. To define performance statements and to structure its frame are the key approach of measurement systems to evaluate performance functions. Indeed, decision makers are mainly looking at performance expressions in order to follow improvements and organizational sustainability.

The SMART model (Cross & Lynch, 1989) and the Performance Measurement Questionnaire (Dixon et al., 1990) were developed in terms of frameworks and models of performance measurement systems. The Balanced Scorecard (Kaplan & Norton, 1996) was created as a simple but effective framework for performance measurement. There are numerous models have been developed such as the European Business Excellence Model (EFQM, 1998) which was developed from 3 view points; (1) Structures (Bititci & Carrie 1998), (2) Information (Kehoe & Little 1998) and (3) People Behaviour (Burns & Backhouse, 1998), the Performance Measurement Workbook (Neely et al., 1996) and the Performance Prism (Neely & Adams, 2001).

On the other side, Performance Measurement Systems (PMSs) was proposed as an instruments to support decision-making in a continuous improvement process (Neely et al., 1995; Neely, 1999). PMS is also seen as multi-criteria instrument that was made of set of performance metrics to be consistently organized with respect to the objectives of the company (Cooke, 2001; Melnyk et al., 2004). While considering company objectives into elementary ones along organizational level such as strategic, tactical, organizational, one major problem in the design of PMS is the determination of performance expressions which are useful for the control decision-making (Ducq et al., 2001; Kainuma & Tawara, 2006).

There are 2 performance expressions were defined in a PMS which are the elementary and aggregated. While all the elementary performance expressions deal with the various heterogeneous criteria into a common reference (i.e., cost or satisfaction degree), the aggregated performance expressions are the synthesis of the elementary performance expressions into global ones (Cliville´ et al., 2006). In general, performance expressions are global when the objectives are at the highest decision level and elementary when they are at the lowest level (Berrah et al., 2006). Aggregation models enable to capture the notion of priorities in the decision-maker strategy (i.e., investment), but they are not useful in the Taylorian Organizations (see Appendix A) to control decision-making.

Since companies need for more relevant, strategic and development-oriented performance measurement systems, better-intergrated one is always looked for. In general, a performance expression is associated with a given objective and related to

its satisfaction degree (Berrah et al., 2006). In general performance measurement systems should:

- *be balanced* which means to be included the various stakeholders (e.g., shareholders, customers, employees, society, environment) requirements (Kaplan & Norton 1996; Dixon et al., 1990).
- *be integrated* which means to be understood relationships between various measures (Dixon et al., 1990; Neely et al., 1996).
- *inform strategy* which means not only be driven by strategy but also provide an input to strategy (Bititci, 1998 and 2000; Neely & Adams 2001).
- *deploy strategy* which means to spread business strategic objectives throughout the organisation to the critical parts of the organisation (Kaplan & Norton, 2000; Bititci et al., 1997).
- *focus on business processes* which deliver value for the organisation (EFQM 1998; Bititci et al., 1997; Neely & Adams, 2001).
- *be specific to business units* (Kaplan & Norton, 2000).
- *include competencies* (Kaplan & Norton, 2000).
- *include stakeholder contribution* (Neely & Adams, 2001).

1.4.1. Key Performance Indicators

Key performance indicators (KPI) are a set of metrics that companies use to measure their performance over time. These metrics are used define progression of companies to achieve their strategic, operational and financial targets. Metrics are also used to compare companies' financial and operational performance againts other businesses within the same industry. KPIs differ from business to business based on companies' individual priorities and business strategies. For example, a company might consider profitability to be the most important performance measurement metric while the other one might consider the ratio of sales has the highest priority. Furthermore, different business units have their own KPIs related with their specific operations (i.e., first-call resolution rate for customer service call center, return on marketing investment rate for marketing department). Producing more in the economy does not mean that it has also more efficient. To understand more completely the modern economy, companies need

to measure their financial performance, as well as their operational performance. At the strategic level, the overall aftersales companies consider financial performance results such as operating profit, ROA (rate of assets), ROI (rate of investment). According to Lynch and Cross (1991), at the process level, performance can be measured with regard to customer satisfaction, flexibility and productivity. The third level considers the performance of the aftersales organisational unit in dealing with its specific activities. In this regard, automotive aftersales businesses have a lot of metrics to measure and manage companies' financial and nonfinancial results. Comprehensive aftermarket indexes based on financial indexes are detailed listed in Table 1.6a, and Table 1.6b.

Table 1. 6a: Automotive Aftermarket Industry Financial Indexes

Category	**Automotive Aftermarket Financial Indexes**
Growth Rates	Revenue Growth
	Operating Income Growth
	Income from Continued Operations Growth
	Net Income
	EPS (earnings per share)
	EPS net
	Free Cash Flow
	Net Cash Flow
	Capital Expenditures Growth
Profitability	Gross Margin
	EBITDA Margin
	Operating Margin
	Net Margin
	Cash Flow Margin

Table 1.6b: Automotive Aftermarket Industry Financial Indexes

Automotive Aftermarket Financial Indexes		
Valuation	Price to Earnings Ratio	• Cumulative Net Income TTM Q / Q Growth • Stock Performance
	Price to Sales Ratio	
	Price to Book Ratio	• Average Stockholder's Equity TTM Q / Q Growth • Stock Performance
	Price to Free Cashflow (TTM) Ratio	
Financial Strength	Quick Ratio	
	Working Capital Ratio	
	Working Capital Per Revenue	
	Leverage Ratio (TTM)	
	Total Debt to Equity (TTM)	
	Interest Coverage (TTM)	
	Debt Coverage (TTM)	
Efficiency	Revenue/Employee (TTM)	
	Net Income/Employee (TTM)	
	Receivable Turnover Ratio	
	Inventory Turnover Ratio (TTM) Sales	
	Inventory Turnover Ratio (TTM) COS	
	Asset Turnover Ratio (TTM)	
Management Effectiveness	Return On Investment (TTM)	
	Return On Assets (TTM)	
	Return On Equity (TTM)	
Performance	Stock Performance	
Dividend	Dividend Y / Y Growth	
	EPS Net Y / Y Growth	
	Dividend Y / Y Change (TTM	

An overview of the automotive industry's aftermarket goals based on operational indexes are presented in Table 1.7. Customer based aftermarket indexes are explained in detailed under Customer Based Key Performance Indicators.

Table 1. 7: Automotive Aftermarket Industry Operational Indexes

Automotive Aftermarket Operational Goals	**Explanation**
Logistics	Logistics of spare parts in supply chain management is more complicated than of finished products with the challenges of huge number of parts SKUs, unstable and unpredictable demand as well as the complexity of the overall supply and distribution network
Stock Management	Determine stocking or destocking and inventory level for each site of the distribution network. It mainly consists of demand management, demand forecasting and inventory planning management.
Technology	Without sufficient technology support it is not easy to manage and to optimize service business as customer requirements increase and service business complexity growing.
Productivity	Refers to the overall efficiency in resource consumption.
Flexibility	Measures to respond to a changing environment in limited cost and time.
Efficiency	Efficiency indicators are related to internal lead times (mean time to repair, calls per hour), costs, assets utilisation (number of customers per employee), etc.

1.4.2. Customer Based KPI's

Potluri and Hawariat (2010) indicated that product design, technology and price offerings are becoming increasingly difficult for differentiation in products as a result, companies have to provide qualified aftersales service experiences for their customers. Customers who are satisfied with the service that you provide are intent to repurchase company's product/service again and also likely to even go a step further and recommend your company to his/her friends or relatives. The main objective of the aftersales companies is to keep the customer satisfied through trust, credibility and sense of security provided by the organization, and building long run relationships that contribute to better performance for sustainable results (Loomba, 1998). Forooz and Rostami (2006) pointed out that aftersale services have many

advantages such as competitive advantage, customer satisfaction, long- term customer relationship , customer retention and loyalty, new product success and development, high profit, differentiation, branding. Hence, companies really need to focus on their customer based key performance indicators besides their financial and operational KPIs. This is also a kind of marketing focus strategies for the companies for assuring future sales of new products provided by satisfied service experiences. Because customer behavior is a sign how people make decisions about what they buy, want, need or act in regards of a product, service or company or brand. So, undertanding customer behaviour allows companies to increase their market share. A wide range of measurement systems are available on the market based on customer behaviours. Some of customer based KPIs relevant with the company goals are listed in Table 1.8a, 1.8.b.

Table 1. 8a: Automotive Aftermarket Goals Based on Customer

Customer Based KPIs	**Explanation**
Prospective Repurchase Rate	The number of customers who clearly express an intention to repurchase relative to all surveyed customers.
Service Center Recovery	The number of lost repair and maintenance customers who have returned for at least 1 visit
Customer Satisfaction	
Customer Retention	
Net Promoter Score	Customers who are very happy with your customer service are likely to even go a step further and recommend your company to others
Conversion Rate	After someone from your customer service team interacts with a customer, how likely are they to make a purchase or take some other kind of action?
Average Resolution Time	
Active Issues	
Resolved Issues	

Table 1.8b: Automotive Aftermarket Goals Based on Customer

Customer Based KPIs	Explanation
Brand Attributes	How do customers view your company overall?
Complaint Escalation Rate	
Customer Acquisition	

1.4.2.1. Customer Satisfaction

While Global Markets have become increasingly competitive, their customers also have become more demanding and more conscious to satisfy their needs. Since, customers become increasingly demanding for product or services, they are likely to be less tolerant of poor service quality and poor aftersales performance of the firms. These are the main reason of why companies continuously track the needs and satisfaction levels of their customers in order to manage their operations at many levels such as manufacturing, distribution network or service network.

Satisfaction is a sense of contentment that arises from an actual experience in relation to an expected experience according to the study Hernon and Whitman (2001). Satisfaction is the emotional reaction of disconfirmed experience for a product, store, or process (e.g., customer service) on the base attitude level towards to consumption-specific (Oliver, 1981).

Customer satisfaction indicates the value of customer subjective experience with a product or service. It is a one of key factor for company's business success and sustainability of it's presence in a competitive market. Two different conceptualizations of customer satisfaction were proposed througly the early 1990s (Johnson et al., 1996). These are transaction specific and cumulative satisfaction as two different forms of satisfaction. Transaction-specific satisfaction is based on single experience (Oliver, 1993). On the other side, cumulative indicates customer satisfaction as a period of experience time with a product or service. Anber (2011) defined service quality as perceived by customers what is left of their previous perception of the service quality and the level of their satisfaction with the current

performance of the service which accordingly means that satisfaction is an intermediary factor between the previous and present perception.

Because all attributes have not the same effect in satisfying customer needs, it becomes significant to find out how quality attributes impacts on customer satisfaction. So, companies need to evaluate the current performance of these attributes and it's performance systems to set quality improvements. *Customer Satisfaction Index (CSI)* is a frequently used measure to track economic outputs in various sectors especially automobile services. Every car brands have their own Customer Satisfaction Index to measure their customer satisfaction level. CSI measurement scale consists of various items related to the service provided by the company. Each item needs to be rated by company's customers to evaluate customer perception about services provided to them. The type of the questions about metrics are different between companies. Satisfaction value has a significant affect on customer repurchase intention and customer loyalty. Therefore, customer satisfaction index criterias are the most important metrics in the overall performance evaluation of the dealer for incentive systems of the company.

Relating with customer satisfaction and service quality, there have been many studies about measurements of satisfaction and service quality. Caepiel (1974) proposed to use overall measurement to get customers' response to different attributes of products and services. Seven factors that influence customer satisfaction: service content, price, convenience, corporate image, equipment, staff and procedure were mentioned in Kuo (1996) study. There is an another study by Huang (1998) which evaluates customer satisfaction with five factors : product, service, staff, overall performance of products, and closeness to expectation.

In their study, Sulisworo et al. (2012) analyzed two methods of Servqual perspective and the Kano model for customer satisfaction improvement in healthcare service. In order to measure service quality of the hospital service, the important dimensions or attributes of service quality were identified and categorized by Servqual Dimension. Then, customer requirements were measured by a total of 26 questions with the Kano model. According to frequency analysis three of the total 26 service quality attributes have been categorized as "attractive". Four service quality attributes have been

categorized as “must be”, and sixteen of them as “one-dimensional”. However, there is no service quality attribute can be categorized as “reverse” and “questionable”.

1.4.2.2. Customer Loyalty

Customer loyalty is defined as “a deeply commitment to buy product or service again consistently in the future, despite situational influences and marketing efforts having the potential to switch his/her attention” (Oliver, 1997). Most companies consider having a loyal customers as a success drive in the marketing. Because market knows the fact that loyal customers are more likely to share their positive experience with the brand. According to marketing metrics it is also %50 easier to sell to existing customers rather than new customers.

Increasing competition and awareness for customer in the marketing of products and services has forced companies to consider about differentiating strategies for the purpose of attracting and retaining customers.

Anderson and Sullivan, 1993 argued that customer satisfaction increases loyalty of customers, which means in their intention of repurchase or remain getting service provided by the same firm which indicates a customer retention. Many studies have indicated that higher level of customer satisfaction completely leads to greater customer loyalty and word of mouth recommendations (Yoo et al., 2015; Guo et al., 2009). Bowen and Chen (2015) and Lee (2013) proposed that customer satisfaction is connected to loyalty and loyalty, in turn, is connected to the service performance. Many studies (Gerpot et al., 2001; Lee et al., 2001) noted that in developed countries, a strong and robust relationship between customer satisfaction and customer loyalty in mobile phone market. Customer satisfaction has a significant effect on customer loyalty and mediates technical and functional quality of services and customer loyalty (Kasiri et al., 2016).

1.4.2.3. Customer Retention

The fact that all relationship marketing strategies are ultimately evaluated based on the company’s overall profitability. Customer retention is a rather important marketing objective based on customer relationship. Many studies: (Manoj and Sunil, 2011; Jeng and Bailey, 2012) were considered customer retention as the benefit of

relationship marketing. Relational benefits is mainly driven by the core service and quality relationship which provides customer loyalty word of mouth.

It is also significantly valuable variable for companies. According to Marketing Metrics, selling products or services to existing customers is %50 easier than selling new customers. Moreover, attracting and acquiring a new customer can cost almost 10 times more than keeping an existing one. Therefore, customer loyalty is becoming crucial element for firms to keep customers coming back.

A warranty is a promise for a defined period of time that offered by the business that sold the product or service to its customer. This means that a person or a business guarantees the quality, condition, performance or characteristics of the goods or services that sold to a customer. During warranty periods, customers of a company prefer to be loyal of a brand. However, after end of warranty periods, customers are likely either to buy an extended warranty or to go independent garages. Besides these kind of benefits, if customer still continue to repurchase company's product or service, this intention is mostly based on customer's past positive purchase experience. Customer retention can be considered as a repurchase intention that consumers will purchase the goods or services that company provides and deliver their use experiences to friends and relatives (Cronin et al., 2000; Wang et al., 2004; Zeithaml et al., 1996). Repurchasing is a intention that an individual purchases goods or services from the same firm (Hellier et al., 2003). Another significant fact that Zeithaml et al., 1996 pointed to is comparing with attracting new customers, companies can spend less money and time on marketing to retain old customers.

Moreover, post purchase intention has been considered as a sign for service quality (Zeithaml et al., 1996) which means that service quality positively influences customer's repurchasing intention and to recommend the purchased product (Zeithaml et al., 1996). On the other hand, Kuo et al. (2009) did not supported that service quality has directly positive effect on post-purchase intention. The study pointed out that post-purchase intention was directly influenced by both perceived value and customer satisfaction. Extant studies shows that the more satisfied customers are more likely to repurchase from the same company (Stathopoulou & Balabanis, 2016).

The empirical research by Tamuliene and Gabryte, (2014) showed that there is a linearly important positive correlation between customer satisfaction, relationship quality, switching costs and customer retention. Evaluating all hypothesis which set up to test all the relationships between variables in the model, switching costs have the greatest impact on the customer retention. But relationship quality has also very significant impact on customer retention (Tamuliene & Gabryte, 2014).

1.4.2.4. Brand

A brand was defined as a name, term, sign, symbol or design, or combination of them that employed in creating an image of the goods and services of one seller or group of sellers and to differentiate them from those of competitiors (Kotler, 1991). The brand is the most valuable asset at most companies. It basically represents the face of the company. Over time, this image becomes associated with a level of quality, credibility and satisfaction in the consumer's mind. Knowledge in memory to consumer decision making is an important structure for brand identify because this knowledge influence what a customer thinks about brand, especially in a response to the brand marketing activity. So, understanding the structure of brand knowledge in customer's mind is an essential subject for the companies to shape their marketing activities. Well differentiated brands have competitive advantages in the marketing. Because when people have to choose between alternatives, brand is the key decision maker. Brands might advance sustainable competitive advantage for the companies (Aaker, 1989). That is the main reason why companies need fully consantration and further insights on brand management. Building a successful brand could support a producer's competitive position to resist the increasing power of retailers (Park & Srinivasan, 1994). Building a successful brand can also bring many advantages such as defending against competitors and building market share (Adams, 1995).

Confronted with this dynamic complexity of sales and growing demands for service characterized, producers can enhance stronger advantages by developing customer's brand perception. High brand perception is contributing to greater competition. Companies have eventual goal to increase sales and to make customers more satisfied with the product or service. Hence, it is first necessary to establish brand knowledge so that customers react favorably to the brand marketing activites.

1.4.2.5. Brand Value

Value in influencing brand success is a critical part of measuring brand's in-market performance. So, the brand value is an important subject amongst businesses, marketers. The result of checking the term name "Brand Value" on Amazon.com for books is 17,748 books verify the term importance. Seth Godin defined brand's value as a merely the sum total of how much extra people will pay, or how often they choose, the expectations, memories, stories and relationships of one brand over the alternatives.

Brand value is considered with both its consumer perceptions functionality and its financial functionality. There is not an one single authoritative and valid approach to calculating the value of a brand. But while measuring value of a brand, financial assets are considered as a major aspect. Actually, brand equity has financial and customer based aspects while valuation. But this study mainly aim to evaluating qualitative values based on customer's point of view means mostly customer perception and experiences with the brand and its aftersales services, customer based brand equity is more appropriate for the research. A main reason to focus on customer based brand equity in the study is that brand equity is a profitable strategy to increase marketing productivity and customer satisfaction about the brand.

1.4.2.6. Brand Equity

Brand Equity has been studied from a variety of perspectives (Aaker, 1991; Farquhar, 1989; Keller, 1993). Brand equity is generally defined in terms of the marketing effects uniquely attributable which results certain outcomes to the brand (Keller, 1993). Brand equity is also defined as the value that a company generates from a product with a recognizable name, when compared to its equivalents. Creating brand equity in customer's mind is considered a significant part of building a brand (Keller, 1998). So, brand equity has many advantages for the firms. For instance, high brand equity levels is supposed to lead to higher customer preferences and purchase intentions (Walgren et al., 1995).

Brand equity has financial and customer based aspects while valuation. It can be broadly classified into two categories which are based on it's financial perspective to estimate the value of a brand for accounting purposes (Brasco, 1988; Mahajan et al.,

1990; Shocker & Weitz, 1988; Simon & Sullivan, 1993) and it's customer perspective to improve marketing productivity (Aaker, 1991; Kamakura & Russell, 1993; Keller, 1993). Brand equity was evaluated as incremental discounted future cash flows that would result from a product having its brand name in comparison with the proceeds that would accrue if the same product did not have that brand name (Simon & Sullivan, 1990). Another financial perspective of brand equity is that firms with high brand equity are also known to have high stock returns (Aaker & Jacobson, 1994). The marketing approach is often referred to as consumer based brand equity (Mackay et al., 1997).

1.4.2.7. Customer Based Brand Equity

Marketers mainly need a more thorough understanding of customer behaviour to improve their marketing productivity and making better strategic decisions. Specifically, customer based brand equity is a perspective of the individual consumer is provided of consumers brand knowledge on consumer response to the marketing of the brand. That involves customers' reactions to a brand marketing mix in comparison with their reactions to the same marketing mix element for the named or unnamed version of the product or services (Keller, 1993). This perspective is useful for suggesting marketing strategies, tactics to assist managerial decision making.

There are various effects on brand knowledge such as brand awareness, product related and non-product related brand associations, benefits from the brand and so on.

According to Keller, customer based brand equity is the differential effect of brand knowlegde on consumer response to the marketing of the brand and it occurs when the customer is familiar with the brand and holds some strong, unique and positive brand associations in memory. Not only sales and marketing business but also aftersales business must realize that how their customers product or service experiences affect their brand knowledge. Because the structure of customers memory notions about the brand will positive influence their relationships with the brand.

Keller defined brand knowledge as a two components which are brand awareness and brand image. Brand awareness is a brand node strength and trace in memory which are reflected by consumers ability to identify the brand under different conditions (Rossiter & Percy, 1987). It is the combination of brand recognition and brand recall performance. Brand recognition is related with the ability of customers to confirm the brand as having been seen or heard previously. Brand recall is related with consumers ability to retrieve the brand in a given product category means.

The study mainly focus on brand image components because of target groups of customers already have the brand product. So, they are actually aware of the brand name. They are also able to confirm brand recognition which means customers correctly discriminate the brand as having been seen or heard previously. Brand recall performance is not a correct term to evaluate for the customers who have already has the brand product. Because brand recall relates consumers' ability to retrieve the brand when given the product category. Brand awareness has a significant role to influence customer decisions and acquisition of new customers. The term is especially important for the brand marketing strategies.

Brand image deals with the set of pleasant or unpleasant associations connected to the brand that customers hold in their memories. It is also defined as perceptions about a brand reflected by the brand associations hold in customer memory (Herzog, 1963; Newman, 1957; Keller, 1993). Brand associations are other nodes linked to the brand node in memory and includes the meaning of the brand for customers. Brand associations are classified into three major categories: attributes, benefits, and attitudes.

Attributes indicates what a consumer thinks about the product or services. It can be categorized in a multiple ways (Myers & Shocker, 1981) especially their relations to product or service performance which are product-related attributes and non-product related attributes. While product-related attributes vary by the product like its physical composition or service's requirements, non-product related attributes are defined as an external sight of the product or service such as price information, packaging or product appearance information, etc.

Benefit was defined as a personel value which consumers attach to the product or service attributes. Benefit was further distinguished into three categories such as functional benefits, experiental benefits and symbolic benefits. While functional benefits are related with consumer's physiological and safety needs (Maslow, 1970), experiental benefits are related with what is the feeling like to use the product or service. Symbolic benefits are more linked to non-product attributes and relate to needs for social approval, outer directed self-esteem (Keller, 1993).

Brand attitudes are explained as a brand overall evaluation by its consumers (Wilkie, 1986). A multiattribute formulation is a common used brand attitudes in different models. It is associated with benefits and attributes which are remarkable for the brand. Because the customers for the brands have already brand cars and their evaluation is mainly related with the dealers, the question about brand attitudes is more suitable in the study. The other motivation to use brand attitudes category is its relation with beliefs about both product related attributes and functional and experiental benefits (Zeitmal, 1998) and also non-product related attributes and symbolic benefits (Rossiter & Percy 1987). While evaluating the brand image from the view of customer perception, product-related attributes is essentially being analyzed with the survey questions. As an general question about what a consumer thinks about a product is " How do you rate your satisfaction level with the brand in terms of meeting your expectations from a car? " in the survey.

Besides different types of brand image include product-related or non-product-related attributes; functional, experiential, or symbolic benefits; and overall brand attitudes, associations vary into three types; favorability, strength and uniqueness. The favorability, strength and uniqueness of brand associations are the brand image dimensions based on customers' differential response towards to brand knowledge related the perceptions in their memories.

Favorability of brand associations is related to customer beliefs that the brand has attributes and benefits which response customer needs and wants. The question in the survey based on favorability of brand associations is " The brand appeals to my lifestyle". Because it is difficult to create and evaluate a favorable association for the

customers, the general favorable association in customers memory may be meaningful for the research. Hence, appeal question is asked to the customers.

Uniqueness of brand associations may be based on product-related or non-product related or both of them or functional, experiential, or image benefits. The brand has strong positioning and a sustainable competitive advantages that give customers a compelling reasion for buying that particular brand (Aaker, 1982). Having a uniqueness over other brands is a critical advantage to brand's success. The question in the survey based on uniqueness of brand associations is " To what extent do you agree with the statement that the brand has features that differentiate it from other car brands? ".

A product or service category can be evaluated also by an another set of associations that include specific beliefs. These beliefs include not only product-related attributes but also descriptive attributes that is not related to product or service performance. But the survey needs appropriate number of questions to ask. Asking many and highly detailed questions in the survey are not very productive. So the questions to ask the customers about the brand image are aim to get general knowledge about customers brand associations. There is not any single number or measurement definition to calculate brand equity. Rather, brand equity needs to be considered as a multidimensional concept that depends on;

1. What knowledge structures are present in the customers' mind and
2. What actions a firm should take to utilize on the potential offered by all these assosiations (Keller, 1993).

According to Keller's definiton about the brand equity, the study mainly focused on what customers think about the brand. The whole questions about the brand image are as follows:

- How do you rate your satisfaction level with the brand in terms of meeting your expectations from a car?
- The brand appeals to my lifestyle.
- To what extent do you agree with the statement that the brand has features that differentiate it from other car brands?

- Based on your experience with your car, would you recommend the brand to your friends or social circle?

Positive brand image can lead to enhance companies' revenue, lower costs and greater profits. Morever, a positive brand image may enable the brand control larger margins and responses to price increases. Consumers with a strong, favorable, unique brand associations can be willing to pay high prices for the brand (Starr and Rubinson, 1978). All aspects of the brand image are relevant with customers responses to pricing, advertising and promotion activies of the brand. Perceived value by customers is a kind of evaluation of benefits of a product or service. Hence, building a positive customer-based brand equity via favorable, strong, unique brand associations is a one of the most significant strategies for the companies.

1.5. Performance Measurement Methods

Performance measurement is providing to monitore of company's budget and targets against actual results to evaluate how well the business and the network's employees are. It can be related with short-term (efficiency, productivity, etc.) or long-term (customer satisfaction, customer loyalty, etc.) objectives. Many methods are currently used for measuring the companies' or their networks' performance such as Balanced Scorecard, Norms, Data Envelopment Analysis, Regression Analysis and etc.

Regression Analysis

Regression analysis is defined the relative impact of each service quality dimension on overall service quality (Zeithaml et al., 1988). This kind of approaches are based on the average score for each of the dimensions on the overall service quality score obtained from each individual survey. The estimated coefficients are considered as a comparison indicator. The largest estimated coefficient represents the most important dimension in terms of its influence on overall quality perception of customers. Service firms can easily focus on service quality features that have the most influence impact on overall customer perception by ranking the dimensions. But while regression could be used to define the relative impact of each service quality dimensions, it would not specifically define how managerial manner should be strategically changed (Blose & Flynn, 2005). The study argued that this kind of

analysis has several limitation while deciding how manage service quality. These are listed in below.

- How managerial and/or companies attitudes should be strategically altered?
- How resources should be used efficiently to improve service performance and service quality? Should resources be entirely devoted on the most influential dimension or the two most influencial, or the three most?
- How much changes in resources should be made to underline significant dimensions?

Data Envelopment Analysis

The services involve multiple inputs and outputs like production of goods. While evaluating an organization productivity, it is significant to be able to consider different inputs and outputs. Besides the other performance evaluating methods , the key advantage of Data Envelopment Analysis (DEA) which originally proposed Charnes et al., 1978 as a tool for non-profit and public service organizations to manage organizational performance (Austin, 1986), is that it allows organizations to consider a number of outputs and inputs simultaneously, regardless of whether all the variables are measured in common units (Sexton, 1986). DEA is a technique that mathematically evaluates the best weights for each input and output for the particular Decision-Making Units (DMUs) in order to maximize the relative efficiency ratio while satisfying specified minimal condition (Sexton, 1986). Researchers have applied DEA method in service quality evaluation (Izadbakhsh et al., 2009; Flynn et al., 2005). The integrated approach in the study identified strength and weakness points of deficient units. In a survey from 2006 with European service providers, 37.5 % of the respondents reported their dissatisfaction related with existing performance measurement systems which contain efficiency evaluations (Lange, 2009). Hence, such a studies which evaluate service performance by DEA method would help managers or companies to have better understanding of their service efficiency and service productivity.

Norms

Insufficient standart units of measurement, psychological constructs are a much more difficult task to measure. Churchill (1979) pointed out that the the last stage in the qualified measurement developing is to establish of the norms. Norms indicates to the distribution of scores obtained on a measure by a reference group of similar entities or individual (Brown, 1997). For clear explanation of norms, considering a service provider who receives a mean service performance score of 8 on a 9-point scale. And if 90 percent of the service providers in the reference group received scores higher than 8, then the focal provider has clearly low performance (Brown, 1997). A key issue is to defining a proper series of normative scale for implementing norms. There are 3 general appropriate norms are identified: (1)relevancy, (2)representativeness and (3)currency (Gronlund & Linn, 1990; Hopkins et al., 1990).

A two basic types of norms were noted: (1)population-based norms and (2)time-based norms. Population-based norms are pointed by comparing a focal provider's scores against those of a population of similar service providers (i.e., the mean scores obtained from population could then serve as norms against each individual provider). On the other side, because of inappropriate conditions for using population-based norms, companies can construct their own performance over time that is called time-based norms.

Balanced Scorecard

The balanced scorecard (BSC) is a performance assessment framework developed by (Kaplan & Norton, 1992). The research pointed out that customary financial measures like return-on-investment, revenue growth, operating profit give incorrect signals for continous improvement and show not a comprehensive organization performance (Fu and Yang 2012). The Balance Scorecard is a theoretical structure to clarify a companies' strategic objectives into a set of performance measures within the 4 perspectives; (1) financial, (2) customer, (3) internal business processes and (4) learning and growth shown below in Figure 1.1.

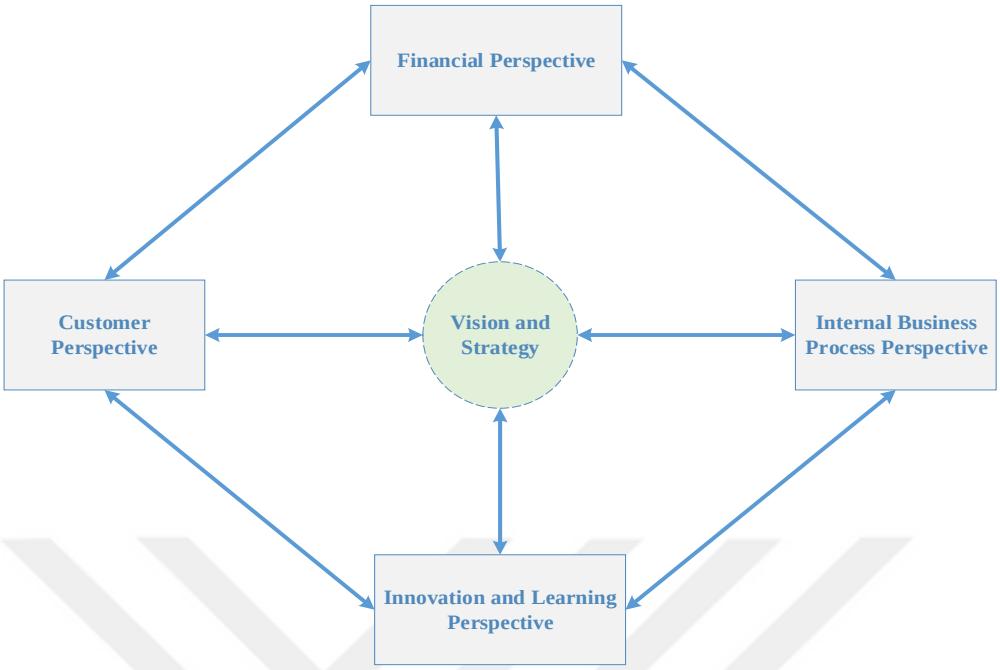

Figure 1. 1: The Balance Scorecard Perspectives

(Adopted from Kaplan & Norton, 1992)

Financial perspective connects the company to its shareholders with a target of achieving profitability, financial interest, developing of sales revenue (Bhagwat & Sharma, 2007). Financial perspectives have tangible outcomes of the company's business strategy like revenue growth, net operating income, profit margins, etc (Asosheh et al., 2010).

Customer perspective is related with customers who are the vital factor of a company's financial success. Measuring company's performance in a customer's view create value and generate revenue by providing products/services buying (Asosheh et al., 2010).

Internal business process perspective defines company's internal processes that company must perform.

Learning and growth perspective defines that companies must generate and improve long-term growth and future value for stakeholders (Grigoroudisn et al. 2012).

The Balanced Scorecard approach is used in various and different management fields as well as automotive service industries (Tan et al., 2016).

2. MARKETING APPROACH TO AFTERSALES BUSINESS

2.1. Marketing

The total perceived quality level is not determined by only the operations of the service, market communication also has to be considered as a vital strategy for the image of the brand and word of mouth factors. Marketing strategies are developed to enhance brand awareness and establish favorable, strong and unique brand associations in customers' memory in order to create a greater brand familiarity. A greater brand familiarity can lead to inreased consumer ability to recognize and recall the brand (Keller, 1993). Marketing communications also may create more satisfied and loyal customers with the brand.

The hypothesis stated in Grönross, 1988 study was tested on a sample consisted Swedish service firms such as banks, insurance companies, hotels, travel agencies, engineering consultant, etc. The study based on survey showed that a large proportion of the respondents agree strongly that the buyer-seller interaction as the interactive marketing function is considered a more important part of marketting than traditional marketing activities such as advertising, mass communication, etc. Because this kind of traditional marketing like ad into the world is one way conversation and it does not create dialogue about product or services. Creating word of mouth communication within customers about their satisfaction with services is more effective marketing strategies than traditional marketing activities.

2.2. Marketing Tools Used in Automotive Aftersales Service Business

Market communication of aftersales industries includes advertising, public relations, service campaigns, customer loyalty campaigns, extended warranty which are directly under the control of firms.

This study describes 4-item instruments in marketing dimension to measure service quality. These items were evaluated with automotive service business professionals and managers in dealer shops. The most important factors that boost companies marketing strategies, especially in automotive service industries are reviewed as follows:

- Summer, Winter Service Campaign
- Free Check up Campaign
- Accessories / Merchandise Campaign
- Free Gift or Coupons with Purchase
- Tire Campaign
- Customer Loyalty Campaign
- Loyalty Card or Loyalty Application
- Birthday Email or Gift
- Extended Warranty
- Brand Name Insurance
- Offer a Take-Home Option
- Co-Branding
- Charity Donations

2.2.1. Summer, Winter Service Campaign

While some of the new marketing techniques being tapped to automotive market are significantly developing, some of them such as Service Campaigns look set to sustain its popularity for a long term. The resulting promotional campaigns have been higher in quality, and the unified national efforts have resulted in much higher returns on investment, said Jack Hollis, Toyota Division vice president of marketing. On the other side, these kinds of seasonal campaigns have been getting favorable response over the years and the customers have also been appreciative of the campaign. Also it helps companies further enhance their relations with customers and contributes customer cumulative satisfaction which involves satisfaction as customer's up to date experience with a product or service (Fornell, Johnson, Anderson, Cha, & Bryant, 1996). It is a clear intention of the vehicle owners to get their vehicle ready for summer

or winter in each year. These kind of periodic campaigns are significant to provide long term relations with customers. Each periodic maintenance consist of many processes such as air conditioning, cooling system, lights, brakes and engine performance inspection, oil, tires, battery changing, windshield wipers and emergencies control. While periodic service campaigns develop customer relations, they also increase company's revenues and profit with diversity of service processes.

2.2.2. Free Check-up

Companies also offer free check-ups of cars either under seasonal service campaigns or provide it at any other time. This is a kind of complimentary servicing campaigns and generally declared as a commitment of customer comfort and convenience. The campaign will offer some point check-up with oil top-up and inspection of the vehicles and services, and will collect feedback on the performance of the vehicle and aftersales services of the brand. Check up inspections vary according to company policy. But generally inspection of vehicle systems like:

- Lighting system
- Windshield Wipers
- Oils/Coolants/Consumables
- Battery
- Tyres
- Brakes
- Horn
- Heating & Ventilation
- Vehicle Interiors & Exteriors

which enabling an examination of almost all key functions of the car. Packages of check-ups are designed like free 20 or 21 point (i.e., the numbers are not accurate, used just for an example) check.

Free check-up offer also increases customer acquisition, encourage new customers and bring inactive customers back. Such campaigns help automakers to especially bring inactive customers back. The most critical thing is when and how to use these

kind of free offers. It is important to know current profit margin, mark up and breakeven point.

2.2.3. Accessories / Merchandise Campaign

Add value services like campaings always accompany good quality services in aftersales. Besides growing auto repair, dealership, bodywork, auto parts and accessories, or car wash business, developing value added strategies are becoming increasingly important issue. Accordingly, market exists for vehicle specific products (i.e. replacement parts, aftermarket parts, and vehicle accessories) for cars and other vehicles. The profits that can be generated for aftermarket parts over the life of a vehicle often exceed the profits that can be realized by the OEM selling the vehicle.

The accessories for cars are like a fashion products of the automotive industry. Products are rapidly changing and evolving. Popular and best selling car accessories vary in the customer, region and mainly car brand. Reports show that a great majority of customers who accessorize their cars are between the ages of 18 and 30. So, aftermarket accessories for any particular vehicle can be predicted with the demographic data of the target population. There are some specific accessories that are popular in the company's market such as wheels, grilles, GPS navigation systems, step and side bars, exhaust modifications. Companies can sell Original Equipment Manufacturer (OEM) accessories, aftermarket accessories or both. The dealerships need to decide what type(s) to sell considering their customer preferences.

Besides all aspects, there is a fact that customers are intend to personalize their cars, especially when they buy a new brand car. Actually, customized vehicles are able to attrack most of customers. This intention is a good opportunity for automakers to introduce their customers with the brand services.

2.2.4. Free Gift or Coupons with Purchase

Offers, coupons, free gifts, discounts and deals are most effectively marketting tools. A free gift with a purchase can be a great way to provide additional value to customer. If it is used strategically, it can also be used to get rid of product that isn't moving.

This type of offers can also be combined with customer loyalty. Discounts and free gift can be a great tool, but they're also expensive. Another approach for deals to drive revenue and customer loyalty is coupons. Good couponing strategy provides many advantages for the companies such as guarantee that its customer will come back and get additional purchases, attract new customers, re-active old customers. On the other side, companies measure effectiveness of the offer or campaigns through a matter of counting the number of coupons.

Couponing strategy is an obviously one of the profitable campaign model to sell company's non moving inventory. The Monetary perspective points out that value is generated when less is paid such as by using coupons or promotions for goods (Bishop, 1984).

2.2.5. Tire Campaign

Many companies have started to look for a creative opportunity to fundamentally strengthen their businesses while offering new products to their customers. An example of value added new business is tire campaigns for companies. It is also considered as a developing cooperation with another company. Besides so many mechanical repair shops, car dealerships also starting to sell tires. It is a kind of offering a new product to differentiate automotive service shops from the competition. With a reliable partner like the international tire manufacturer, companies provide sustainable, safe, comfortable, individual, and affordable tire solutions to its customer. It contributes both company income and developing new relations.

2.2.6. Customer Loyalty Campaign

Customer loyalty is clearly one of most major measures of company success. Majority of firms mainly focus on marketing activities for the development, maintenance and enhancement of customer loyalty (Dick&Basu, 1994). Acquiring new client costs a business much more than keep an existing ones. Return customers tend to buy more from a company over time. Sometimes it does not make sense that a company spend all its time and resources going out and finding a new clients. Because marketing to loyal customers fairly lower cost comparing to new customers

for companies. Hence, the developing of customer loyalty is a critical issue among marketing scholars and practitioners (Zeithaml&Bitner, 2000). Instead of marketing to catch new customers, companies pay more attention to build loyal relationships with customers and other stakeholders. Research done by Frederick Reichheld of Bain & Company (the inventor of the net promoter score (4)) shows that increasing customer retention rates by 5% increases profits by 25% to 95%.

There is an important challenge faced by companies is the lack of accurate information available to both loyal customers and potential customers. There is a lot of information but the necessary ones are always missing. Thus, companies have started to manage this challenge with inside the company or third party companies. Having accurate information about customers are a golden opportunity for companies against their competitors.

2.2.7. Loyalty Card or Loyalty App

Many companies are attracting the wrong kinds of customers. Another important aspect is to bring in and keep customers who you can provide value to and who are valuable to you. To see customer experience sometimes is regarded as being a key factor in driving customer loyalty and customer retention. Loyalty card or loyalty app may help companies what happened in the last period, but also to predict what's going to happen in the next about their customers behaviour.

Many large retailers desire to collect information on customers like demographic information of their customers, whether they are married and have kids, which part of town they live in, their estimated salary. Customers swipe their loyalty card or app at every purchase or service, and the card tracks the amount of money spent. Accordingly, this kinds of systems help company to collect vast amounts of data. On the other side, these kinds of systems guarantee that company will get additional purchases.

2.2.8. Birtday email or Gift

It is obvious that everyone needs to justify their purchases with logic. But, most of us care about also emotional aspects of our experiences while deciding satisfaction

or loyalty level. In other words, everybody wants to feel themselves important. There are many ways to make a feeling customers that they are important for you such as giving a gift for their special dates or remembering their birthdays. Remembering customer's birthdays can get the greatest results to sustain and increase customer loyalty.

2.2.9. Roadside Assistance Service

Roadside assistance is an important part of the aftersales services. These kind of services are especially useful for individuals who are constantly on the road for personal or business reasons or who are planning a long trip. Many auto insurance companies already offer some type of roadside assistance. But it is also very strategic business for main car companies which provide roadside assistance under customer new car and extended warranties. During an unexpected roadside emergency, customers need a roadside assistance service that offers prompt, responsive and flawless attention to their problem. It is really good opportunity for enhancing service offerings, strengthening customer loyalty.

If the business is strengthen with tecnology, it would be most effective. For instance, mobile app allows customers to request roadside assistance using their smartphone and utilizes GPS to allow the company to find them easily. By offering mobile app gives companies competitive advantage.

2.2.10. Extended Warranty

Product warranties have become an essential part of many manufacturers' and retailer's marketing strategies. Moreover, most consumers who have purchased car are tend to be given ''opportunity'' to purchase an extended warranty by an eager salesperson. There are many reasons why retailer promote extended warranties so extensively is that, extended warranties offer retailers margins of 44–77% (Noel, 2001) and can represent as much as 50% of an independent retailer's profits (Baird and Benady, 1996). Extended warranties have been evaluated in terms of models to maximize business way efficiency by a manufacturer selling extended warranties directly to consumers, through retailers, or through third party marketers (Desai & Padmanabhan, 2004).

Uncertainty in terms of product performance over the duration of its useful life is worthy of consideration for customers. So, customers are more likely to buy an extended warranty instead of purchasing additional insurance against product failure. The financial risk to the consumer is also reduced through the warranty.

Customers' main reasons for purchasing extended service contracts are protection against breakdowns and a belief that the cost of a service contract would be cheaper than the cost of potential repairs.

2.2.11. Brand Name Insurance

The term servitization is introduced by Vandermerwe and Rada (1989) to improve the product value sold to customers by providing a package of services (e.g. technical support, self-service and knowledge), these additional services like brand insurance assures better functionality of the product and reliability of the brand. In this regard, aftersales service is one cluster of services including maintenance, repair, warranty, insurance, etc.

2.2.12. Offer a Take-Home Option

When customer car needs a service for maintaining or repairing or any other processes, company's dealers or main companies offer their customers to take their cars from where they want. Because many car owners do not prefer to spend time for repairing or scheduled maintenance visit, this kind of recommendations would be a strategic advantages for customer satisfaction and customer retention. Car owners mostly become aware of the need for routine maintenance at certain mileage intervals. But it is not easy for them to schedule proper time for their car maintenance processes. Quick options like to remind customers their car maintenance routine and offer them to take their car at their homes or where they want provides companies with a sustainable, competitive advantage.

2.2.13. Co-Branding

According to definition of the term, co-branding is a marketing partnership between at least two different brands of goods or services. It is considered particularly

valuable marketing strategies as a means to create positive and powerful image in the minds and also advantage for customer acquisition.

Moreover, co-branding companies have a possibility to transferring their own positive brand image and positive customer emotions to the other. Co-branding cases are really many such as Citroën collaboration with Dolce and Gabbana and Pinko, Peugeot in collaboration with Sweet Years, Renault in collaboration with Miss Sixty, and arriving at the recent Fiat 500 by Gucci. The new car of Citroën was launched for the first time in the Gold version, revisited inside and outside, where seats in a new golden denim fabric with Pinko silk. Luxury brand Gucci is also world's strongest to co-partnering. The fashion brand knows how to creating a unique automotive design and is usually directed to a more eye-catching audience such as the female audience. Because a female customer is more fashion addict and more meticulous in looking for details that can make a difference even in a car. The fashion designing cars reveals a winning strategy for automakers. For instance, The Fiat 500 by Gucci sells briskly at a 52% markup over the base price of a standard Fiat 500. This is really one of good example of successful co-branding.

2.2.14. Social Responsibility

Various businesses have come up with social responsibility movement. There are numerous benefits to corporate donations such as employee morale, increased marketing, tax deduction, being good for the community. These kind of oppotunities would be endless and extremely helpful for its surroundings. Beyond the profit to the community, social responsibility projects also provide important benefit to the business itself as well, both internally and externally.

For instance, all charitable organizations and fund-raising events rely on the media to spread the world about companies' work or a company involved in strategic corporate provides the benefits of positive social media mentions and sharing. Hence, corporating with charity is also a good marketing strategy to manage companies' brand image in their customers' mind.

2.2.15. Value for Money

Especially in airline industry, low cost pricing are the most common strategy in order to attract customers. Vast majority of firms believe that consumers purchasing behaviour is driven by value for money rather than service quality. However, value for money is not a main metric for customers to retain loyal. Zeithaml (1988) identified perceived value as an overall utility received from products and services by customers. value for money has been eployed as an indicator for companies to predict customer satisfaction and to develop pricing and promotion strategies (Dodds et al., 1991). Consumers mostly evaluate their purchase experience with value.

The starting point to develop Marketing Approach to Servqual is to create effective aftersales growth strategy and to strengthen customers' perception of the brand. All these strategies that are mentioned in the above paragraphs are the most profitable sources of automotive business. Since, aftersales business is under growing competition, companies have to be ready for the marketing battle. Not all marketing tools but the appropriate ones are evaluated in the study. They are grouped based on their similarities. At this touch points, marketing tools are clustered with brand-specific differentiators, in order to strengthen brand image and increase customer loyalty. The marketing tools of the brand and their items are shown in below Table 2.1a. and Table 2.1.b. The table also shows the item related questionaires in the survey for rating customer perception about the brand marketing activities.

Table 2. 1a: Marketing Approach to Servqual

Marketing Tools of the Brand	Items	Ratings of Customer Perception
Service Campaigns	Summer, Winter Service Campaign	The dealer offers attractive service campaigns.
	Free Check-up Campaign	
	Accessories / Merchandise Campaign	
	Free Gift or Coupons with Purchase	
	Tire Campaign	
Diversify Service Offerings	Extended Warranty	The diversity of the dealer new product and service offerings are well enough
	Brand Name Insurance	
	Offer a Take-Home Option	
	Co-Branding	

Table 2.1b: Marketing Approach to Servqual

Marketing Tools of the Brand	**Items**	**Ratings of Customer Perception**
Diversify Service Offerings	Roadside Assistance Service	The diversity of the dealer new product and service offerings are well enough
Loyalty Campaigns	Customer Loyalty Campaign	The dealer rewards its loyal customers
	Loyalty Card or Loyalty Application	
	Birthday Email or Gift	

3. METHODOLOGY

3.1. A Proposed Structural Model

The general model estimates the relationships between the indicators and the constructs (measurement model) as well as between the constructs (structural model). The structural model of the study was developed considering the sequence of constructs and the relationships between them. The sequence of the constructs in the model is based on the hypothesis that are constructed with observed experiences and the accumulated knowledge of managers, specialists in the company and in the dealers.

On the basis of five Servqual Dimensions (i.e., *tangibility, reliability, responsiveness, emphaty, assurance*) and a new item as *marketing* approach, a questionnaire was developed for the car service industry. The study does not directly choose the 22 items used in the Servqual Questionnaire in order to generate "best-fit" service quality measurement model for the company. Therefore, a questionnaire generally consists of questions related with the service features which are specific to the car service industry and new generic dimension named marketing which is considered as an important aftersales strategy.

The questionnaire consists of 16 items spread over the five Servqual dimension and 3 new items related with Marketing approach to Servqual Model. The questionnaire consists of not only service quality dimensions but also customer behaviour dimensions (i.e., customer satisfaction, customer loyalty and brand image). The questions related with customer behaviours consist of 2, 2, and 4 items respectively. All service quality generic dimensions and their related items are presented above under "Servqual Approach" title in Literature Review Chapter. While determining the service quality effects on customer behaviors customer satisfaction is considered as a preceding value for customer loyalty and customer's brand image perception. The service quality dimensions (i.e., *tangibility, reliability, responsiveness,*

emphaty, assurance and marketing) on the far left are independent (exogenous) variable. It is modeled as predicting the satisfaction construct. The customer satisfaction construct is an endogenous variable that has a dual relationship as both independent and dependent. It is a dependent construct because it is predicted by service quality. But it is also an independent construct because it predicts customer loyalty and brand image. The customer loyalty and brand image construct on the far right is a dependent (endogenous) latent variable predicted by customer satisfaction. The relationships between the sequence of the constructs are established by drawing arrows. The arrows are inserted with the arrow pointed to the right. This approach indicates the sequence and that the constructs on the left predict the constructs to the right. The path model of this study in Figure 3.1 illisturates the types of constructs and their relationships.

3.2. Structural Equation Modelling

Multivariate analysis methods is an essential tool for analysing complex relationships associated with research in especially social sciences. It involves the application of statistical methods to analyze multiple variables simultaneously. The variables refer measurements related with individuals, companies, situations and so forth. The measurements are often established based on survey or observation datas. The Table 3.1. shows some of the major types of multivariate statistical methods (Hair et al., 2014).

Table 3. 1: Statistical Methods Associated with Multivariate Data Analysis

	Primarily Exploratory	**Primarily Confirmatory**
First-generation techniques	• Cluster Analysis • Exploratory Factor Analysis • Multidimensional Scaling	• Analysis of variance • Logistic regression • Multiple regression
Second-generation techniques	• PLS-SEM	• CB-SEM • Confirmatory factor analysis

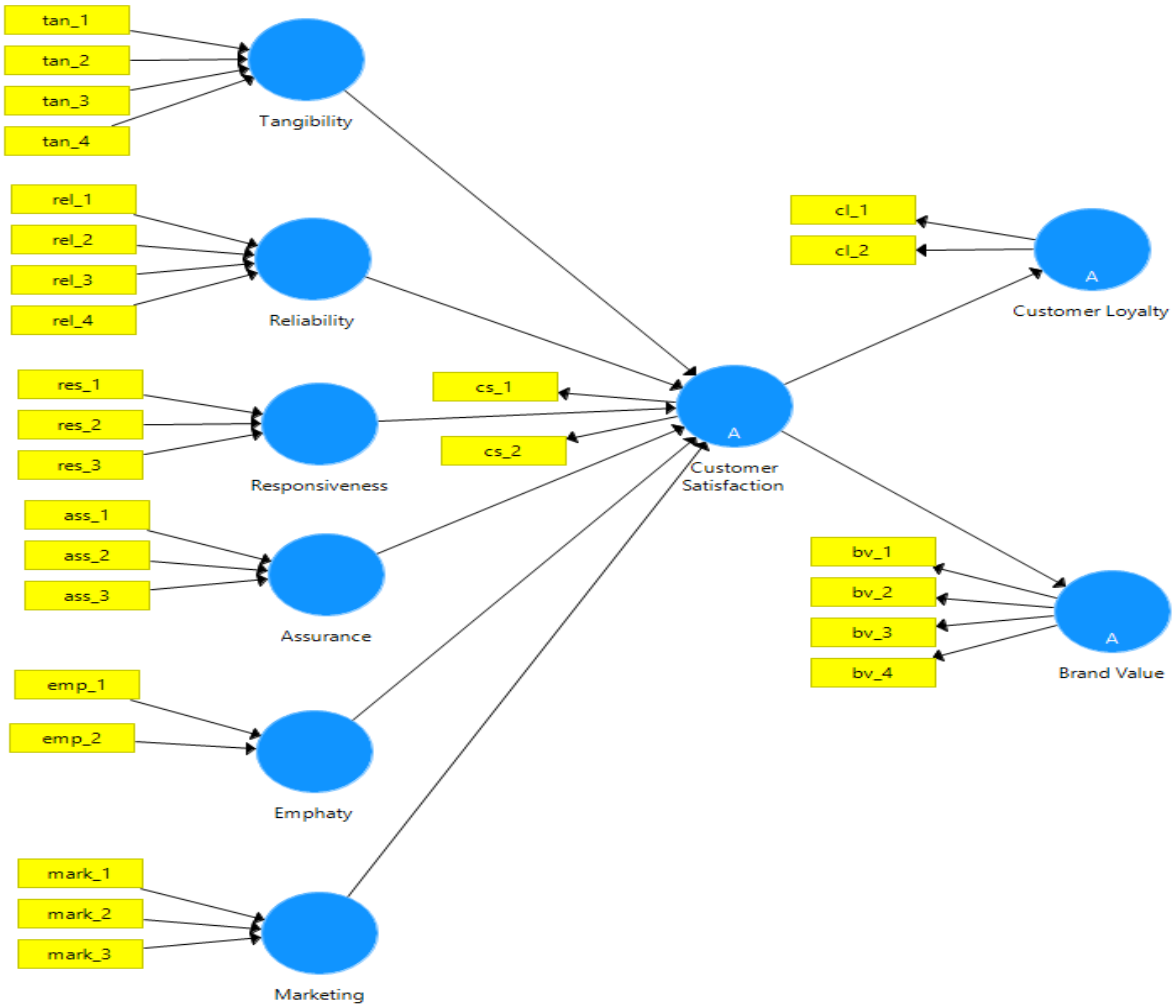

Figure 3. 1: Path Model of This Study

While confirmatory factor analysis are used for testing the hypotheses of existing theories, exploratory methods are used for identifying latent paterns in the study that has no or little prior knowledge about the relation between the variables. In recent years studies, Structural Equation Modeling (SEM) are increasingly used for incorporating unobservable variables measured indirectly by indicator variables. There are two types of SEM which are Covariance-based SEM (CB-SEM) and Partial Least Square SEM (also called PLS path modeling). The focus of PLS-SEM is more on prediction than on explanation (Hair et.al, 2011). The PLS path modeling focuses on prediction of hypothesized relationships both between latent variables and between latent variables and their indicators.

In this study, PLS-SEM is primarily used for explaining the affect of aftersales service quality on customer overall satisfaction, customer loyalty and brand image perception while examining the model. There are many considerations when deciding for applying PLS-SEM. Data charactestics and the study arguments are generally associated with the use of PLS-SEM. The detailed considerations are shown below in Table 3.2.

Table 3. 2: Characteristics of PLS-SEM and CB-SEM

PLS-SEM Characteristics	The Study Arguments
Predicting key target constructs or identifying key "driver" constructs is a main target	x
Formatively measured constructs are part of the structural model.	x
The structural model is complex (many constructs and many indicators).	x
The sample size is small and/or the data are non-normally distributed.	
The path model can handle both formative and reflective measurement model	x
The research uses latent variable scores in subsequent analyses	x
CB-SEM Characteristics	
The main target is theory testing, theory confirmation, or the comparison of alternative theories.	
Error terms require additional specification, such as the covariation.	
The structural model has non-recursive relationships.	
The research requires a global goodness-of-fit criterion.	

The main objective for using PLS-SEM Algorithm is minimizes the amount of unexplained variance (i.e., maximizes the R^2 values).

3.3. Determining Service Quality Dimensions

While constructing new approach for service quality measurement model for the study 2 main articles leaded the study (i.e., Parasuraman et al., 1988 and Gencer & Akkucuk, 2016). After a discussion and evaluation of the service quality model proposed by these 2 research, the company is needed different items considering customer needs.

"Quality level of service is a good value for money" question in the survey is considered as a reliability item. Because relationship between value and quality is very important value for customers. Level of employees effort, perception about quality of product and services are the parts of entire transaction of the experiences which have direct relations with customer' willingness to pay. Hence, this item is needed for better evaluation of service quality of the company's dealer.

Because everyone has busy schedules, customers desire to be provided easily schedule appointments not only for car services but also for everything. No one wants to wait in long lines outside the service dealer. Hence, "it is easy to schedule a suitable service & repair appointment" question in the survey is considered as a responsiveness item. Providing customers for easy booking service & repair appointment strengthens their service experiences.

Comparing all items in the study with these 2 main articles is shown below in Table 3.3a, 3.3b, 3.3c, 3.3d, and 3.3e.

Table 3. 3a: Overview of main study's criterias on service quality evaluation

Service Quality Dimensions	**Definitions**	**Quality Items of Parasuraman et al., 1988**	**Quality Items of This Study**	**AutoServqual Items by Gencer&Akkucuk, 2016**
Tangibles	Physical facilities, equipment, and appearance of personnel	1. The firms should have up-to-date equipment 2. Their physical facilities should be visually appealing 3. Their employees should be well dressed and appear neat 4. The appearance of physical facilities should be in keeping with the type of services	1. The physical facilities of the service dealer should be visually appealing 2. The dealer's staffs should be neatly dressed 3. The dealer's waiting lounge should be comfortable 4. The dealer takes advantages of technology	• Up-to-Date Equipment • Quality of Physical Facilities • Neat Dressed Staff • Compatible Physical Materials • Parking Convenience • Take Advantage of Technology • Certificate of Quality Standards • Comfortable Waiting Lounge
Reliability	Ability to perform the promised service dependably and accurately	5. The firms should do things by the time they promise 6. When customers have problems, the firms should be sympathetic and reassuring 7. The firms should be dependable 8. The firms should provide their services at the time they promise 9. The firms should keep their records accurately	5. The dealer should always keep time promises to customers 6. The dealer should performs its services right at the first time 7. The dealer should uses original products of the brand 8. Quality level of service should be a good value for money (reliable repairing)	• Delivery of the Service at the Time Promised • Sincerity of the Staff (Sympathetic and Reassuring) • Trustworthiness • Keeping Promises • Keep Accurate Records • Accurate Detection of the Failure • Use of Original Products • Repairing According to Procedures • Reliable Repairing • Personal Information Security

Table 3.3b: Overview of main study's criterias on service quality evaluation

Service Quality Dimensions	**Definitions**	**Quality Items of Parasuraman et al., 1988**	**Quality Items of This Study**	• **AutoServqual Items by Gencer&Akkucuk, 2016**
Responsiveness	Willingness to help customers and provide prompt service	10. The firms should not be expected to tell customers when services will be performed* 11. The firms not realistic for customers to expect prompt service* 12. The firms' employees do not always have to be willing to help customers* 13. The firms is OK if they are too busy to respond to requests promptly*	9. It should be easy to schedule a suitable service&repair appointment 10. The dealer employees should provides respond and feedback to customer requests during and after the progress of the service visit. 11. The dealer provides mobility service to the customers	• Telling Customers Exactly the time of Service • Quick Solution to Problems • Concerned Staff • Not Being Too Busy to Respond to Customers • Compatible Staff • Adequate Transportation Facilities • Qualified Labor Force • Replacement Vehicle during Repair • Equal Treatment • Attentive Service

Table 3.3c: Overview of main study's criterias on service quality evaluation

Service Quality Dimensions	**Definitions**	**Quality Items of Parasuraman et al., 1988**	**Quality Items of This Study**	• **AutoServqual Items by Gencer&Akkucuk, 2016**
Assurance	Knowledge and courtesy of employees and their ability to inspire trust and confidence	14. Customers should be able to trust employees 15. Customers should feel safe in their transactions with these stores' employees 16. The firms' employees should be polite 17. The firms' employees should get adequate support to do their jobs well	12. The dealer employees are trustable 13. The dealer employees have the knowledge to answer customer's questions 14. The dealer quarantees its maintanance process	• Trustable Staff • Feel Safe in Transactions • Politeness of the Staff • Adequate Support from the Producer • Knowledgeable Staff • Trained Staff • Informative Explanations • Reasonable Pricing • Guaranteed Maintenance

Table 3.3d: Overview of main study's criterias on service quality evaluation

Service Quality Dimensions	**Definitions**	**Quality Items of Parasuraman et al., 1988**	**Quality Items of This Study**	• **AutoServqual Items by Gencer&Akkucuk, 2016**
Empathy	Caring, individualized attention the firm provides its customers	18. The firms should not be expected to give customers individual attention[1] 19. The firms' employees cannot be expected to give customers personal attention[2] 20. It is unrealistic to expect employees to know what the needs of their customers are[3] 21. It is unrealistic for them to have customers' best interests at heart[4] 22. The firms should not be expected to have operating hours convenient to all customers[5]	15. The dealer offers adequate alternative product or services to meet customer needs 16. The dealer always shows sincere interest in customer's needs and problems	• Individual Attention • Employees' Personal Attention • Understanding the Needs of the Customers • Focus on Customer Expectations • Convenient Operating Hours • Payment Options • Offering Gifts and Promotions • Delivery Quality

[1] Reverse question
[2] Reverse question
[3] Reverse question
[4] Reverse question
[5] Reverse question

Table 3.3e: Overview of main study's criterias on service quality evaluation

Service Quality Dimensions	**Definitions**	**Quality Items of Parasuraman et al., 1988**	**Quality Items of This Study**	**AutoServqual Items by Gencer&Akkucuk, 2016**
Marketing	The buyer-seller interaction by the interactive marketing function such as advertising, public relations, service campaigns, customer loyalty campaigns, extended warranty, etc…	none	17. The dealer offers attractive service campaigns 18. The diversity of the dealer new product and service offerings are well enough 19. The dealer rewards its loyal customers (includes, loyalty discounts or cards) special pricing, bonuses or gifts)	none

3.4. The Model Data Characteristics

The Table 3.4a and Table 3.4b in below indicates how many latent variables, structural model relationships, and indicators in reflective and formative measurement models exist in a PLS path model. The table also shows that the model has a six exogenous constructs; tangibility (T), reliability (RL), responsiveness (RE), assurance (A), emphaty (E) and marketing (M) and three endogenous constructs which are customer loyalty (C.L.), customer satisfaction (C.S.) and brand value (BV). Each of these constructs are measured by multiple indicators.

Table 3. 4a: The Model Data Characteristics

Key Terms	**Explanation**	**Related Statement**
Latent variable or construct	variables that are not directly measured	Tangibility, Reliability, Responsiveness, Assurance, Empathy and Marketing
Indicator or items or manifest variables	are directly measured observations	tan_1, tan_2,tan_3, tan_4, rel_1, rel_2, rel_3, rel_4, res_1, res_2, res_3, as_1, as_2, as_3, emp_1, emp_2, mark_1, mark_2, mark_3, cs_1, cs_2, cl_1, cl_2, bi_1,bi_2, bi_3, bi_4
Reflective indicators	indicating the assumption that the construct causes the measurement of the indicator variable (direction of the arrows is from construct to the indicator	cs_1, cs_2, cl_1, cl_2, bi_1,bi_2, bi_3, bi_4
Formative indicators	indicating the assumption that the items cause the constract	tan_1, tan_2,tan_3, tan_4, rel_1, rel_2, rel_3, rel_4, res_1, res_2, res_3, as_1, as_2, as_3, emp_1, emp_2, mark_1, mark_2, mark_3

Table 3.4b: The Model Data Characteristics

Key Terms	Explanation	Related Statement
Exogenous latent variables	which serve only as independent variables in a structural model	• Tangibility • Reliability • Responsiveness • Assurance • Emphaty • Marketing
Endogenous latent variables	which serve only as dependent variables, or as both independent and dependent variables in a structural model	• Customer Satisfaction • Customer Loyalty • Brand Image

Path models represent diagrams that are used for visually display the hypotheses and variable relationships that are examined by SEM application (Hair, Ringle, & Sarstedt, 2011; Hair et al., 2011). Several individual variables (indicators) are used in the model to measure the hypothesized model more accurate and valid.

Constructs (i.e., variables that are not directly measured) are represented in path models as circles (i.e., tangibility, reliability, responsiveness, assurance, empathy and marketing) and the indicators, also called items or manifest variables, are represented in path models as rectangles which is displayed in Figure 3.1. Relationship between constructs as well as between constructs and their assigned manifest variables are represented as arrows in the path model. Single-headed arrows can be interpreted as causal relationships.

3.5. Theory Construction

The study requires two types of theory to develop the path model:

1. Measurement theory is specified for measuring each constract of the model.
2. Structural theory is specified for defining how each constructs are related to each other.

The study develops hypotheses for the exogenous and endogenous latent variables and their path relationships in the structural modeling as following consideration:

Hypothesis 1 (H1): *Marketing* as a service quality dimension has a significant effect on customer satisfaction.

Hypothesis 2 (H2): *Customer satisfaction* has an *effect* on customer loyalty.

Hypothesis 3 (H3): *Customer satisfaction* has an *effect* on brand image.

3.6. Data Collection

The data collection is a significant stage in all types of research. Since applicaton of SEM methods requires quantitative data, the most appropriate method for qualitative researh model is using questionnaires. Survey method which collects data from participants who has a past experience with the brand is the main structure of the study. To estimate the PLS-SEM, data were collected using computer based and sms based survey that asked about the customers' perception of aftersales service quality and their satisfaction, loyalty and brand image perception based on their past experiences about the brand via the dealer in order to identifying evaluation criterias or developing an evaluation scale.

Customers rated the questions on 7-point Likert scales, with higher scores denoting higher levels of agreement or satisfaction with a particular statement. The data set has 100 responses. Table 3.5 shows the data matrix for the model. The 27 columns represent the variables (i.e., specific questions in the survey) and the 100 rows contain the answers of every respondent to these questions. For example, the first row contains the answers of Respondent 1 for each indicators in the model. The columns display the answers to the 27 survey questions. Data in the first 19 columns are for the indicators associated with the six constructs about service quality dimensions (i.e., tangibility, reliability, responsiveness, emphaty, assurance and marketing), and the 20th to 27th column includes the data for the customer satisfaction, customer loyalty and brand image perception questions.

Before starting the main questions, some informations about customer current status association with brand and also customers demographic profiles are needed for better analysing. Initially, the question about whether customer still has his/her car or not is asked to customers. Then, “ Did you take your car to the company's dealer within the past 12 months? “ is asked as a second question of the survey. Initially, the question

Table 3. 5: Data Matrix of This Study

	Indicator Variables																										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**
Case Number	tan_1	tan_2	tan_3	tan_4	rel_1	rel_2	rel_3	rel_4	res_1	res_2	res_3	as_1	as_2	as_3	emp_1	emp_2	mark_1	mark_2	mark_3	cs_1	cs_2	cl_1	cl_2	bi_1	bi_2	bi_3	bi_4
1	6	5	5	5	6	6	5	2	5	6	6	5	5	6	5	6	4	5	4	5	4	3	4	5	4	4	5
2	2	3	1	1	1	2	1	2	1	2	1	2	2	1	1	3	4	4	1	3	1	4	1	6	6	6	3
3	2	2	2	5	6	5	6	5	5	5	7	6	5	4	6	6	5	6	2	5	2	7	6	6	7	6	6
…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
100	2	6	6	5	6	7	6	6	6	7	7	7	7	6	6	6	3	6	5	6	6	5	6	6	5	6	5

about whether customer still has his/her car or not is asked to customers. Then, " Did you take your car to the company's dealer within the past 12 months? " is asked as a second question of the survey. Initially, the question about whether customer still has his/her car or not is asked to customers. Then, " Did you take your car to the company's dealer within the past 12 months? " is asked as a second question of the survey.

3.7. Measurement

Measurement is a fundamental process of assigning numbers to a variable in conducting especially social science research. While assign numbers to some variables are easy, a kind of variables like satisfaction or trust need indicators or manifestations for measuring. Each indicators represent a single seperate aspect of a larger abstract. For example, one absract in the study is aftersales service satisfaction. The following two indicators are used to measure satisfaction in the study:

- Overall, i am satisfied with the aftersales services provided by the dealer.
- The dealer is better than I expected.

3.8. Measurement Scale

A measurement scale consists of predetermined number of close-ended responses that is used for get an answer to a question. There are four types of measurement scales: nominal, ordinal, interval and ratio. This study uses ordinal scale which examines what's important and significant and typically measures of non-numeric concepts like satisfaction, happiness, discomfort, etc.

Likert scales are common used in Structural Equation Modeling studies. The 7-point likert scale is used in this study survey when customers are evaluating service quality metrics and customer behaviours (i.e., customer satisfaction, customer loyalty and brand image) questions. Because a good Likert scale need present symmetry of Likert items about a middle category like "neither agree nor disagree" or "neutral", the categories for the service quality metrics measurement were used as follows; (1) strongly disagree, (2) disagree, (3) somewhat disagree (4) neither agree nor disagree, (5) somewhat agree, (6) agree, (7) strongly agree.

The categories for the customer behaviours “Level of Acceptability – 7 Scale”, “Level of Satisfaction – 7 Scale” and “Level of Agreement – 7 Scale” metrics measurement were used.

3.9. Model Evaluation After Running PLS-SEM

While CB-SEM prefers normal distribution, PLS-SEM generally makes no assumptions about the data distributions. PLS-SEM generally does not require the data to be normally distributed. Nevertheless, it is important to verify that the data with the calculation of reliability and validity of the construct.

2 types of measurement specification, (1) reflective model and (2) formative model are also referred to as Mode A and Mode B, respectively. A reflective measure defines that all items are caused by the same construct therefore each items should be highly correlated with each other. In this research, customer satisfaction, customer loyalty and brand image are modeled as a reflective measurement model as mentioned under “Model Complexity”. The direction of the arrows is from the construct to the indicator variables (i.e., cs_1, cs_2 for customer satisfaction, cl_1, cl_2 for customer loyalty, bi_1, bi_2, bi_3, bi_4 for brand image). The reflective measurement model assumes that the construct causes the measurement (the covariation) of the indicator variables.

While evaluating the model, reflective and formative measurement models in the structure are based on different asseses. Reflective measurement models are stated on their internal consistency reliability and validity. Formative measurement models needs content validity before collecting the data and estimating the PLS path model. In general aspect of the evaluation is explained as following.

Assessment of reflective measurement models are consist of;

- *Internal consistency reliability.*
- *Indicator reliability*: Indicator loadings should be higher than 0.70.
- *Convergent validity*: average variance extracted (AVE) should be higher than 0.50.
- *Discriminant validity*: The AVE of each latent construct should higher than the construct’s highest squared correlation with any other latent construct (Fornell–

Larcker criterion), an indicator's loadings should be higher than all of its cross loadings.

Assessment of formative measurement models are consist of;

- *Convergent validity*
- Examine each indicator's weight (*relative importance*) and loading (*absolute importance*) and also use bootstrapping to assess their significance.
- *Multicollinearity*: means each indicator's variance inflation factor (VIF) value should be less than 5.

Evaluation of the structural model is consist of;

- Coefficients of determination (R^2)
- Predictive relevance (Q^2) (Hair et al., 2011)
- Size and significance of path coefficients
- f^2 effect sizes
- q^2 effect sizes

3.9.1. Internal Consistency Reliability

Reliability is a significant requirement for validity. The systematic error from the random error cannot be distinguished without an unreliable measure (Mooi & Sarstedt, 2011). The first step to evaluate data set is to test internal consistency reliability. Cronbach's alpha is a measure of internal consistency which indicates how closely related a set of items are as a group. It means Cronbach's alpha provides an evaluate of the reliability based on the intercorrelations of the observed items. It generally shows that 0.60 to 0.70 are acceptable in exploratory research, values between 0.70 and 0.90 can be regarded as satisfactory (Nunally & Bernstein, 1994).

The measurement dimensions' internal consistency in the study showed high reliability, with Cronbach alpha coefficients for the nine variables exceeding 0.80 that is shown below in Table 3.6.

Table 3. 6: Reliability Analysis of Latent Variables

Variables	Number of items	Cronbach's Alfa
Tangibility	4	0,895
Reliability	4	0,864
Responsiveness	3	0,702
Assurance	3	0,918
Emphaty	2	0,904
Marketing	3	0,843
Customer Satisfaction	2	0,885
Customer Loyalty	2	0,872
Brand Image	4	0,914

3.9.2. Convergent Validity

Convergent validity is an extent to measure how positively correlates alternative measures of the same construct with each other. As mentioned before reflective constructs are behaved as a differents approaches to measure the same construct. So, the items of a specific dimension need to converge a high proportion of variance. Outer loadings of the indicators are considered to establish convergent validity of the construct. High outer loadings in the construct is also called as ***indicator reliability***. Outer loadings of the indicators in the study are shown in Table 3.7. A common rule of the model is that the outer loadings should be 0.708 or higher. All outer loadings of the reflective indicators in the study are above 0.708 which indicates high communality of each items of reflective.

According to study by Hair et al. (2014) composite reliability and average variance extracted need to be evaluated as well as the factor loadings to assess convergence validity. ***Composite reliability*** values are shown below Table 3.7. All values of the model constructs (for reflective model) exceeded the recommended value of 0.7 (Hair et al., 2010) with the values **0.9387, 0. 9404, 0.9457**.

The average variance extracted **(AVE**), which reflects the overall amount of variance in the indicators of the each related construct are with the value **0.7980, 0.8875, 0.8970** which exceeded the recommended value of 0.5 (Hair et al., 2010).

Table 3. 7: Convergent Validity of Reflective Model

Model Construct	**Measurement Item**	**Loading**	**Composite Reliability (CR)**	**Average Variance Extracted (AVE)**
Customer Satisfaction	cs_1	0,9552	0,9387	0,7980
	cs_2	0,9390		
Customer Loyalty	cl_1	0,9273	0,9404	0,8875
	cl_2	0,9566		
Brand Image	bi_1	0,9191	0,9457	0,8970
	bi_2	0,8669		
	bi_3	0,8679		
	bi_4	0,9069		

3.9.3. Discriminant Validity

Discriminant Validity is the extent to which indicates that a construct is actually distinct from other constructs and represent a unique phenomena in the model. Discriminant Validity proposes two measures. One method is to assess discriminant validity by examining the cross loadings of the indicators. An indicator's outer loading on the associated construct specifically need to greater than all of its loadings on other constructs (i.e., the cross loadings) to represent discriminant validity. All of the cross loadings of the indicators and the indicators' outer loadings (i.e., customer satisfaction, customer loyalty and brand image outer loadings) are shown in Table 3.8. The indicators's outer loadings on the associated construct are greater than all of its loadings on other constructs in the study. The assestment of reflective measurement model shows that the measurement model demonstrated adequate convergent validity and discriminant validity.

Table 3. 8: Dicriminant Validity of Constructs

	Customer Satisfaction	Customer Loyalty	Brand Image
tan_1	0.5998	0.5120	0.3832
tan_2	0.6857	0.5847	0.3626
tan_3	0.6644	0.4995	0.3491
tan_4	0.7414	0.7249	0.5178
rel_1	0.7598	0.6994	0.3616
rel_2	0.8116	0.7945	0.3977
rel_3	0.6646	0.6736	0.3762
rel_4	0.7350	0.8400	0.4530
res_1	0.5495	0.4953	0.3916
res_2	0.8124	0.7287	0.4249
res_3	0.6033	0.6184	0.2252
as_1	0.6992	0.6809	0.4476
as_2	0.8237	0.7691	0.4933
as_3	0.7726	0.7468	0.4207
emp_1	0.8505	0.8154	0.4731
emp_2	0.8433	0.7681	0.3344
mark_1	0.5937	0.5928	0.5341
mark_2	0.5853	0.5713	0.4883
mark_3	0.5878	0.5230	0.4221
cs_1	0.9552	0.8878	0.5028
cs_2	0.9390	0.7371	0.3969
cl_1	0.7025	0.9273	0.4545
cl_2	0.9022	0.9566	0.4948
bi_1	0.3684	0.3885	0.9191
bi_2	0.3394	0.3331	0.8669
bi_3	0.3223	0.3561	0.8679
bi_4	0.5769	0.6152	0.9069

3.9.4. The Formative Measurement Model Evaluation

In contrast to reflective measurement models, formative measurement models are based on the assumption that the items cause the constract. Formative measures do not necessarily covary. Therefore, the internal consistency evaluation does not apply for formative models in the study. The defining of a construct as a reflective or formative generally has not accurate definition. Each items of a formative construct represents a specific aspect of the latent variable. So, omitting an any item likely alters the nature of

the construct. Since each item is representing its associated construct in the formative model, validity of the each content needs very special search. Some aspects are considered as follows when choosing the measurements model for service quality metrics:

- Each service quality constructs are a combination of their associated items, service quality metrics are modeled as a formative (Fornell&Bookstein, 1982).
- All indicators are causes of their associated constructs (Rossiter, 2002)
- The items are not mutually interchangeable (Jarvis et.al, 2003)
- The assesment of the trait changes, all items will not change in a similar manner (Chin, 1998).

Aftersales service quality indicators are modeled as a formative measurement model in the study. The directional arrows are pointing from the indicator variables (tan_1 to tan_4 for Tangibility and rel_1 to rel_4 for Reliability and res_1 to res_3 for Responsiveness, as_1 to as_2 for Assurance, emp_1 to emp_2 for Empathy, mark_1 to mark_3 for Marketing). Instead of evaluating internal consistency reliability for the formative measurement models, ensuring the formative indicators all aspects of the construct is the main point. The service quality term represents the formative model in the study. Before deciding to dimensions of the service quality, a comprehensive set of indicators were clearly defined as an indicators.

The first step is to assess the formative measurement model's *convergent validity.* This validity measurement provides an answer for the question which arises from whether each indicator indeed contributes to the formative variable. While assessing the formative construct's convergent validity by examining its correlation with an alternative measure of the construct (i.e., direct questions for each particular service quality dimensions (formative variables) names as global represent its reflective one) using global single item. This type of analysis is known as *redundancy analysis*. The correlation between the constructs should be 0.80 or higher. The results showed that the correlations between constructs are above 0.80 which means each formative models in the study demonstared satisfactory and adequate convergent validity with its construct global as shown at Figure 3.2, Figure 3.3, Figure 3.4, Figure 3.5, Figure 3.6, and Figure 3.7.

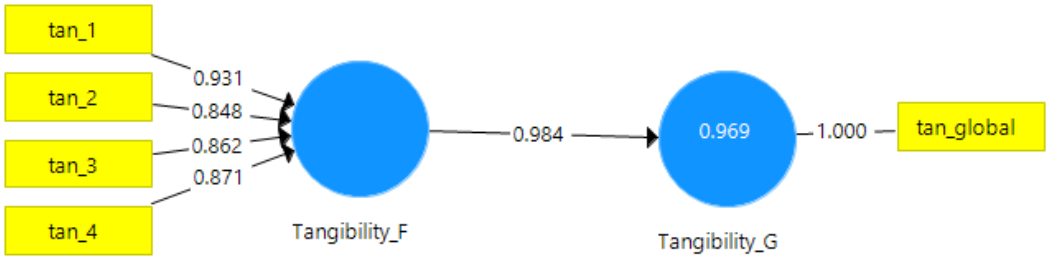

Figure 3. 2: Convergent Validity Assessment of Tangibility

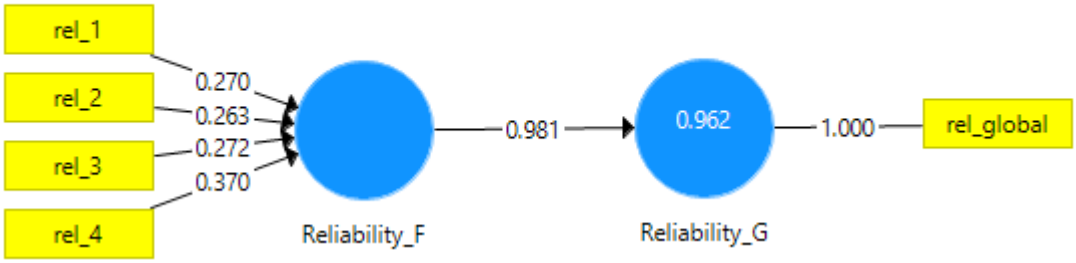

Figure 3. 3: Convergent Validity Assessment of Reliability

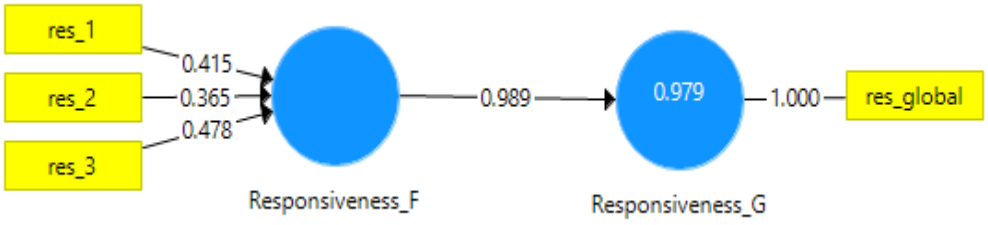

Figure 3. 4: Convergent Validity Assessment of Responsiveness

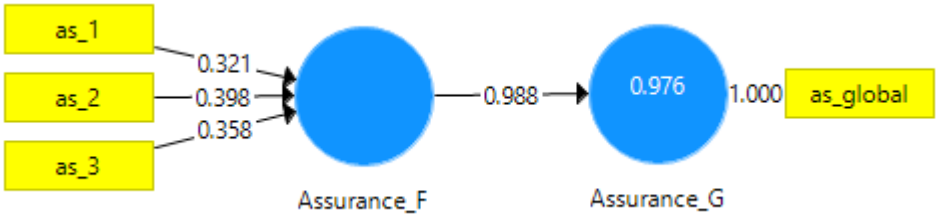

Figure 3. 5: Convergent Validity Assessment of Assurance

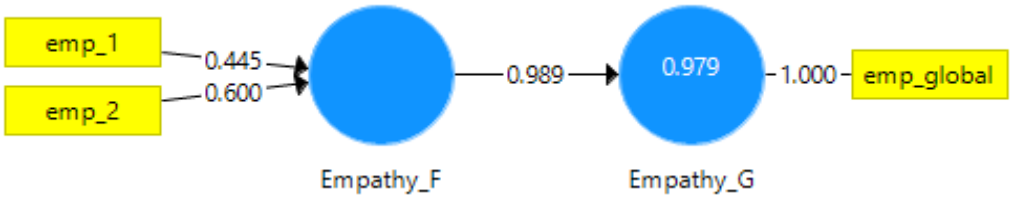

Figure 3. 6: Convergent Validity Assessment of Empathy

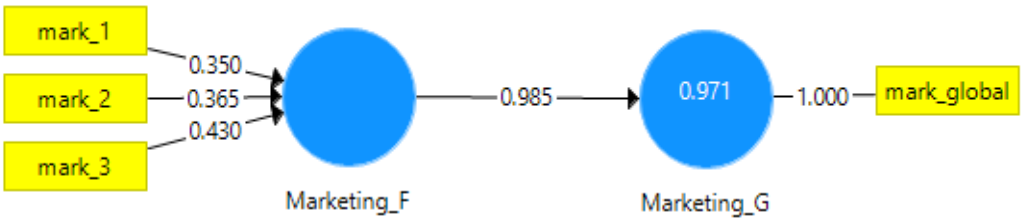

Figure 3. 7: Convergent Validity Assessment of Marketing

The second step for assessment of formative measurement model is to look the level of collinearity. High correlations between two formative indicators are defined as collinearity. The most undesirable structure of collinearity occurs if two (or more) formative indicators are evaluated in the same indicators with exactly the same information in them (i.e., perfectly correlated). This case may occur if the same indicator

is entered twice or because one indicator is a linear combination of another indicator (Hair et al., 2014).

Since each indicator's variance inflation factor (VIF) value are less than 5 in the study (see in Table 3.9 and Table 3.10), there is not any critical levels of collinearity. Therefore, the next step for the formative model assessment is to analyze the significance of outer weights and interpret the formative indicators' absolute and relative contribution.

Table 3. 9: Variance Inflation Factor of Formative Indicators

Tangibility	**Variance Inflation Factor (VIF)**	**Reliability**	**VIF**	**Responsiveness**	**VIF**
tan_1	3.3314	rel_1	1.9094	res_1	1.6958
tan_2	2.4983	rel_2	2.9854	res_2	1.9075
tan_3	2.2665	rel_3	2.2293	res_3	1.2381
tan_4	2.7676	rel_4	2.0072		

Table 3. 10: Variance Inflation Factor of Formative Indicators

Assurance	**Variance Inflation Factor (VIF)**	**Empathy**	**VIF**	**Marketing**	**VIF**
as_1	4.3316	emp_1	3.1560	mark_1	2.0694
as_2	3.5276	emp_2	3.1560	mark_2	1.8675
as_3	2.8964			mark_3	2.1447

Evaluating the contribution of each formative indicators to the construct or its relevance importance with their outer weights is an another important step for assessing formative model. The outer weight is the result of a multiple regression related with dependent variables and the formative indicators as the independent variables (Hair et al., 2010). The outer weights in formative measurement models need to be different from zero. But

the formative indicators in the study (i.e., physical facility appealness as “tan_1” and trustable employees as “as_1”) have nonsignificant outer weights (see Table 3.11). Nonsignificant indicator weights do not mean to be considered as indicative of poor measurement model quality. The indicators with the nonsignificant values are conversely important aspects for their associated variables. Better, formative indicator's absolute contribution to (or absolute importance for) its construct should also be considered. The absolute importance is represented as outer loading in Smart-PLS. Different from outer weights, the outer loadings are evaluated by single regressions of each indicator on its associated construct.

The all outer loadings of formative indicators values are above 0.5 (see Table 3.12). When an indicator's outer weight is nonsignificant but its outer loading is high (i.e., above 0.50), the indicator is evaluated as absolutely important but not as relatively important (i.e., *tan_1* and *as_1* indicators in the study). Since an indicators’ weight are not significant but the corresponding items loadings are high (i.e., > 0.50), the indicators need to generally be retained.

Additionally, all outer weights and all outer loadings are displayed in path model of this study which is shown below Figure 3.8.

Table 3. 11: The outer weights of formative indicators

	Tangibility	Reliability	Responsiveness	Assurance	Empathy	Marketing
tan_1	-0.2742					
tan_2	0.3481					
tan_3	0.3686					
tan_4	0.6562					
rel_1		0.3778				
rel_2		0.4336				
rel_3		0.0489				
rel_4		0.2907				
res_1			0.0456			
res_2			0.7616			
res_3			0.3558			
as_1				-0.2658		
as_2				0.7896		
as_3				0.5182		
emp_1					0.5469	
emp_2					0.4994	
mark_1						0.3959
mark_2						0.4039
mark_3						0.3467

Table 3. 12: The outer loadings of formative indicators

	Tangibility	Reliability	Responsiveness	Assurance	Empathy	Marketing
tan_1	0.7445					
tan_2	0.8511					
tan_3	0.8247					
tan_4	0.9202					
rel_1		0.8584				
rel_2		0.9169				
rel_3		0.7509				
rel_4		0.8305				
res_1			0.6402			
res_2			0.9464			
res_3			0.7028			
as_1				0.8083		
as_2				0.9523		
as_3				0.8932		
emp_1					0.9529	
emp_2					0.9514	
mark_1						0.8792
mark_2						0.8668
mark_3						0.8704

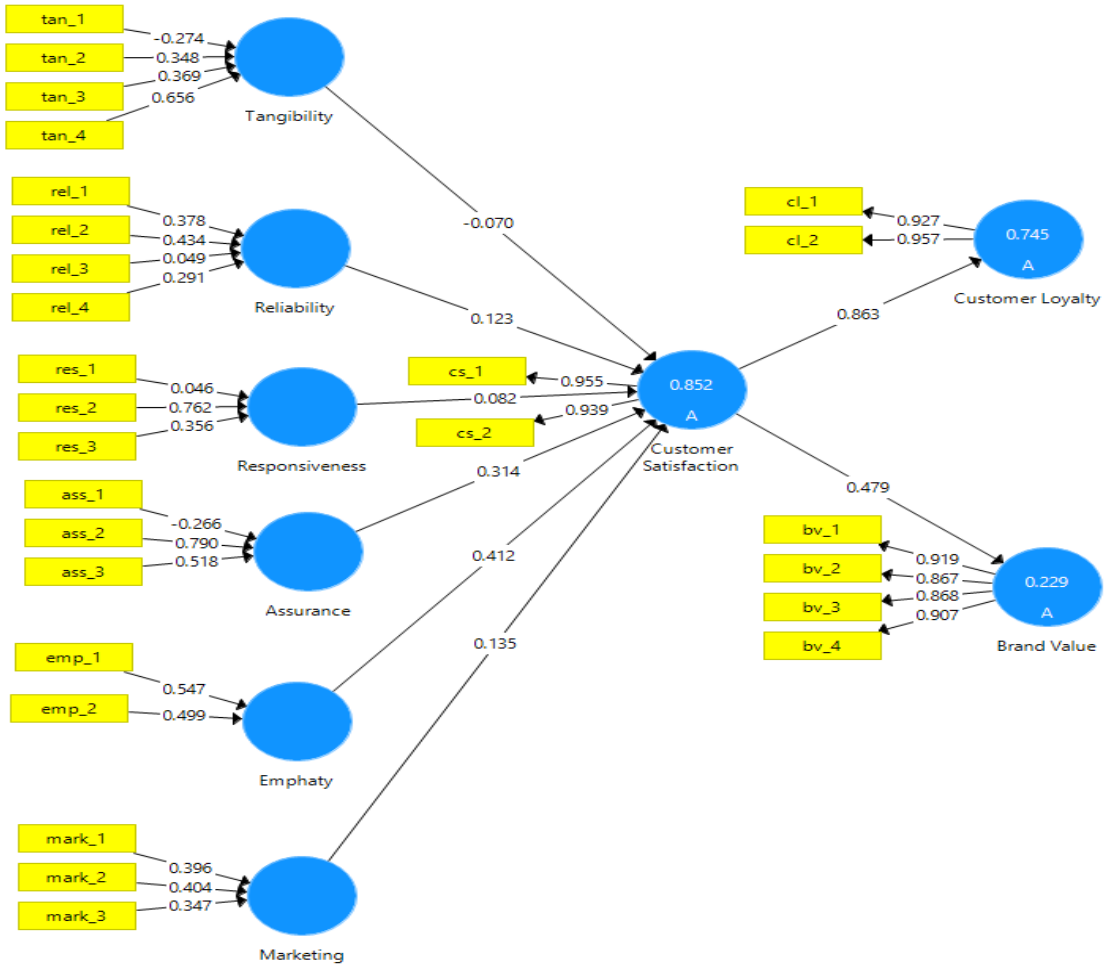

Figure 3. 8: Path Coefficients, Outer Loadings and Outer Weights

Formative Indicators Bootstrapping

Instead of assuming the data are normally distributed (i.e., significance test used in regression does not apply to test path coefficients, outer loadings and outer weights), PLS-SEM relies on a nonparametric *bootstrap procedure* (Davison & Hinkley, 1997) to test coefficients for their significance. While calculating the values, 5,000 bootstrap samples are recommended (Hair et al., 2014).

The outer weight of an indicator (i.e., tan_1) in a formative measurement model has the value -0.2742 and a bootstrap standard error of 0.19. For a probability of error of 1 % (i.e., a= 0.01), the lower bound value and the upper bound value is [-0.5919, 0.2044] known as the bootstrap confidence interval. Since zero falls in this confidence interval, the outer weight of -0.2742 is not significant at the 1 % probability of error level.

The outer weight of an indicator (i.e., tan_3) in a formative measurement model has the value 0.3686. For a probability of error of 1 % (i.e., a= 0.01), the lower bound value and the upper bound value is [-0.0670, 0.7061] known as the bootstrap confidence interval. Since zero falls in this confidence interval, the outer weight of 0.3686 is not significant at the 1 % probability of error level.

The outer weight of an indicator (i.e., rel_3) in a formative measurement model has the value 0.0489. For a probability of error of 1 % (i.e., a= 0.01), the lower bound value and the upper bound value is [-0.0888, 0.2301] known as the bootstrap confidence interval. Since zero falls in this confidence interval, the outer weight of 0.0489 is not significant at the 1 % probability of error level.

The outer weight of an indicator (i.e., res_1) in a formative measurement model with the value 0.0456 and the outer weight of an indicator (i.e., as_1) with the value -0.2658 have the lower bound value and the upper bound value is [-0.0670, 0.7061], [-0.5722, 0.2159] respectively. Since zero falls in this confidence interval, the outer weight of 0.0456 and -0.2658 are not significant at the 1 % probability of error level.

The detailed outer weights significance testing results are shown in Table 3.13.

Table 3. 13: Significance testing results of the Total Effects of Formative Indicators

Formative Constructs	Formative Indicators	Outer Weights (Outer Loadings)	Sample Mean	t Value	*p* Value	Confidence Intervals	Significance Level
Tangibility	**tan_1**	-0.2742 (0.7445)	-0.2218	1.3841	0.1664	[-0.5919, 0.2044]	not significant
	tan_2	0.3481 (0.8511)	0.3300	2.7980	0.0052	[0.0825, 0.5763]	p < .05
	tan_3	0.3686 (0.8247)	0.3388	1.8105	0.0703	[-0.0670, 0.7061]	not significant
	tan_4	0.6562 (0.9202)	0.6337	3.4831	0.0005	[0.2101, 0.9530]	p < .05
Reliability	**rel_1**	0.3778 (0.8584)	0.3788	2.9366	0.0033	[0.1432, 0.6359]	p < .05
	rel_2	0.4336 (0.9169)	0.4267	4.1529	0.0000	[0.2198, 0.6283]	p < .05
	rel_3	0.0489 (0.7509)	0.0579	0.6052	0.5451	[-0.0888, 0.2301]	not significant
	rel_4	0.2907 (0.8305)	0.2783	2.8134	0.0049	[0.0782, 0.4810]	p < .05
Responsiveness	**res_1**	0.0456 (0.6402)	0.0454	0.5584	0.5766	[-0.1306, 0.1908]	not significant
	res_2	0.7616 (0.9464)	0.7633	9.2495	0.0000	[0.6217, 0.8926]	p < .10
	res_3	0.3558 (0.7028)	0.3528	3.2034	0.0014	[0.1643, 0.5356]	p < .10
Assurance	**as_1**	-0.2658 (0.8083)	-0.2146	1.3403	0.1802	[-0.5722, 0.2159]	not significant
	as_2	0.7896 (0.9523)	0.7634	5.6127	0.0000	[0.4628, 1.0000]	p < .05
	as_3	0.5182 (0.8932)	0.4906	3.2367	0.0012	[0.1223, 0.7521]	p < .05
Empathy	**emp_1**	0.5469 (0.9529)	0.5441	3.7127	0.0002	[0.2693, 0.8404]	p < .05
	emp_2	0.4994 (0.9514)	0.4995	3.3794	0.0007	[0.1867, 0.7641]	p < .05
Marketing	**mark_1**	0.3959 (0.8792)	0.4095	2.5000	0.0125	[0.1072, 0.7153]	p < .05
	mark_2	0.4039 (0.8668)	0.3832	2.4976	0.0125	[0.0315, 0.6677]	p < .05
	mark_3	0.3467 (0.8704)	0.3417	2.1403	0.0324	[0.0036, 0.6372]	p < .05

3.9.5. Evaluation of the Structural Model

The study theory/concept has been confirmed with the evaluation of reflective and formative measurement models. The next step is to evaluate the assessment of the structural model results.

The key criteria for assessing the structural model in PLS-SEM are the structural model for collinearity (Step 1), the significance of the path coefficients (Step 2), the level of the R^2 values (Step 3), the f^2 effect size (Step 4), the predictive relevance (Q^2), and the q^2 effect size (Step 5).

Step 1 : Collinearity Assessment

Two most common measures for assessing both pairwise and multiple variable collinearity are tolerance and its inverse, the variance inflation factor. The *tolerance value* is the amount of a variable unexplained by the other independent variables. Another measure is the *variance inflation factor (VIF)* which is calculated inverse as the inverse of the tolerance. A common cutoff threshold is a tolerance value of 0.10 which corresponds to a VIF value of 10 (Hair et al., 1995).

Construct's tolerance with a value lover than 5 is a ideal condition. While examining each set of variables in the structural model for collinearity (see Figure 3.8), each endogenous latent variables' variance inflation tolerance (VIF) value are lower than 5. The VIF values are shown below in Table 3.14. Therefore, there is not any construct to treat collinearity problems for the endogenous latent variables. But the tolerances are above 5 for the exogenous latent variables except "Marketing" variable. Since all the values are less than 10, they are also acceptable (Hair et al., 1995).

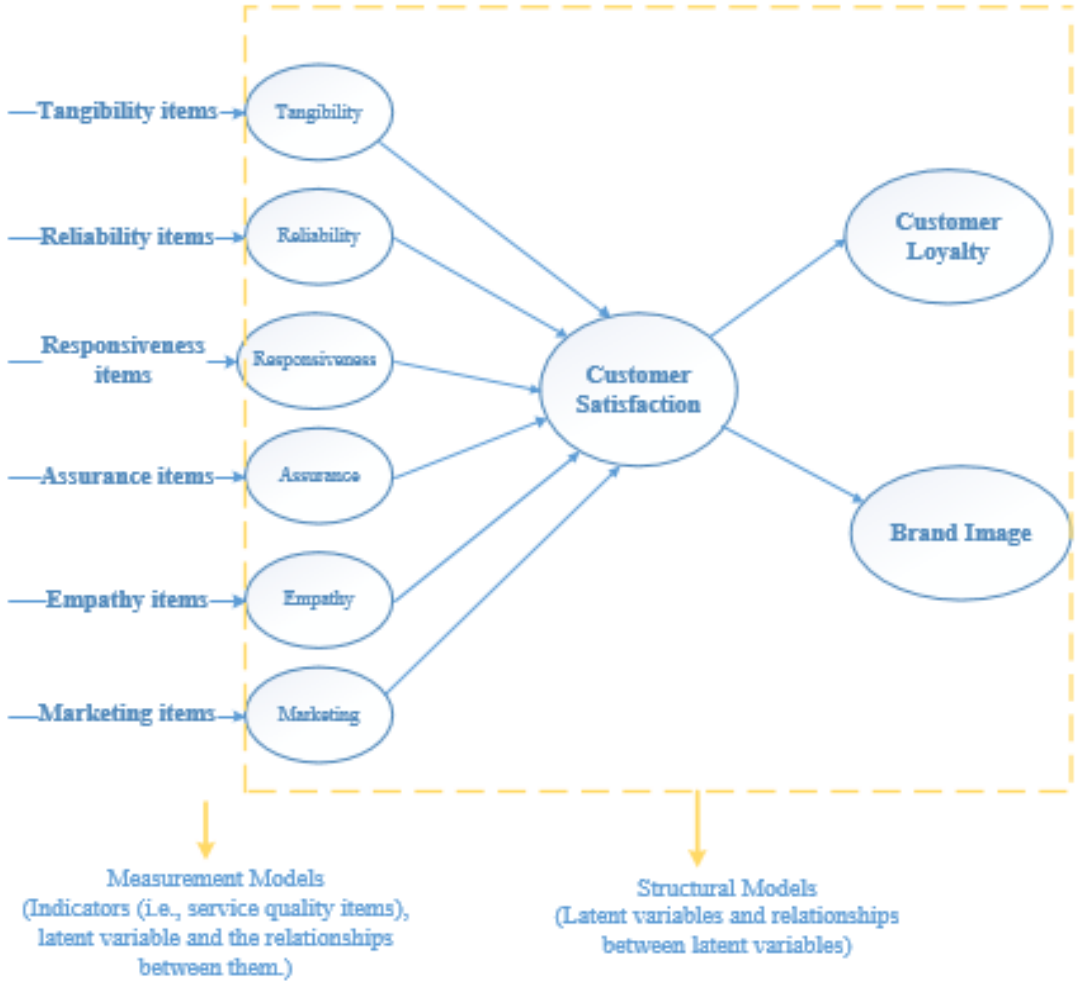

Figure 3. 9: Path Model of the Study

Table 3. 14: Collinearity Assessment of the Structural Model

Construct	Inner Variance Inflation Factor Values (VIF)
Customer Satisfaction-Customer Loyalty	1.0000
Customer Satisfaction-Brand Image	1.0000
Tangibility-Customer Satisfaction	5.1146
Reliability-Customer Satisfaction	9.7303
Responsiveness-Customer Satisfaction	6.8032
Assurance-Customer Satisfaction	6.9190
Empathy-Customer Satisfaction	8.7826
Marketing-Customer Satisfaction	1.9146

Step 2: Structural Model Path Coefficients

The hypothesized relationships among the constructs (i.e., the structural model relationships) are evaluated by running the PLS-SEM. The path coefficients have standardized values between -1 and + 1. Path coefficients which are estimated close to +1 represent strong positive relationships (and vice versa for negative values) that are almost always statistically significant. Whether a coefficient is significant ultimately depends on its standard error that is obtained by means of bootstrapping (Hair et al., 2014). Table 3.15 (i.e., Significance testing results of the structural model path coefficients) displays the path coefficients, the *t* values and their significance level, *p* values, and the confidence interval. The result shows that all relationships in the structural model are significant except *Tangibility → Customer Satisfaction, Reliability → Customer Satisfaction and Responsiveness → Customer Satisfaction*. These results suggest that the company should concentrate its marketing effort, assurance and empathy aspects of service quality on enhancing their customer satisfaction.

Table 3.16 (i.e., Significance testing results of the total effects) shows the corresponding results for the effects of exogenous constructs (i.e, Tangibility, Reliability, Responsiveness, Assurance, Empathy and Marketing) on the target construct (Customer Loyalty and Brand Image). The results show that all total effects except Tangibility, Reliability and Responsiveness are significant at least at a 95% confidence interval.

Step 3: Coefficient of Determination (R^2 Value)

The coefficient of determination is a measure of model's predictive accuracy. It is calculated as the squared correlation between a specific endogenous construct's (customer satisfaction, customer loyalty and brand image) actual and predicted values. The coefficient also indicates the exogenous latent variables (tangibility, reliability, responsiveness, assurance, empathy and marketing)' combined joint effects on the endogenous latent variables. PLS-SEM estimates coefficients (i.e., path model relationships) that maximize the R^2 values of the (target) endogenous constructs. Acceptable R^2 values depend on model complexity and research disciplines (Hair et al., 2014). However, R^2 values with 0.75, 0.50, and 0.25 are defined as substantial, moderate and weak respectively in a research by Henseler et al., (2009).

Table 3. 15: Significance testing results of the structural model path coefficients

	Path Coefficients	***t Values***	***Significance Level***	***p Values***	***%95 Confidence Interval***
Tangibility → Customer Satisfaction	-0.0695	0.6437	*not significant*	0.5200	[-0.2147, 0.1391]
Reliability → Customer Satisfaction	0.1230	0.8738	*not significant*	0.3827	[-0.0476, 0.3987]
Responsiveness → Customer Satisfaction	0.0817	0.6101	*not significant*	0.5421	[-0.0933, 0.3445]
Assurance → Customer Satisfaction	0.3145	2.2684	p < .05.	0.0237	[0.0203, 0.5016]
Empathy → Customer Satisfaction	0.4119	2.6035	p < .05.	0.0095	[0.1073, 0.6106]
Marketing → Customer Satisfaction	0.1355	2.0287	p < .05.	0.0430	[0.0198, 0.2363]
Customer Satisfaction → Customer Loyalty	0.8633	31.6012	p < .05.	0	[0.8118, 0.9048]
Customer Satisfaction → Brand Image	0.4789	5.4824	p < .05.	0	[0.3414, 0.6273]

Table 3. 16: Significance testing results of the total effects

	Total Effect	***t Values***	***Significance Level***	***p Values***	***%95 Confidence Interval***
Tangibility → Customer Loyalty	-0.0600	0.6420	*not significant*	0.5211	[-0.1860, 0.1199]
Tangibility → Brand Image	-0.0333	0.6341	*not significant*	0.5263	[-0.1076, 0.0697]
Reliability → Customer Loyalty	0.1062	0.8595	*not significant*	0.3905	[-0.0399, 0.3499]
Reliability → Brand Image	0.0589	0.8184	*not significant*	0.4135	[-0.0212, 0.2082]
Responsiveness → Customer Loyalty	0.0706	0.6128	*not significant*	0.5403	[-0.0817, 0.3014]
Responsiveness → Brand Image	0.0391	0.5641	*not significant*	0.5730	[-0.0396, 0.1863]
Assurance → Customer Loyalty	0.2715	2.2829	$p < .05$	0.0229	[0.0182, 0.4332]
Assurance → Brand Image	0.1506	1.9980	$p < .05$	0.0463	[0.0088, 0.2676]
Empathy → Customer Loyalty	0.3556	2.5718	$p < .05$	0.0104	[0.0916, 0.5322]
Empathy → Brand Image	0.1972	2.6890	$p < .05$	0.0074	[0.0530, 0.2924]
Marketing → Customer Loyalty	0.1169	2.0519	$p < .05$	0.0407	[0.0175, 0.2004]
Marketing → Brand Image	0.0649	1.7605	$p < .05$	0.0789	[0.0090, 0.1240]

The coefficient of determination values for endogenous construct's in the study is shown below in Table 3.17.

- R-squared value < 0.3 for Brand Image is considered a weak effect size,
- R-squared value 0.5 < R^2 < 0.7 for Customer Loyalty is considered as a moderate effect size,
- R-squared value R^2 > 0.7 for Customer Satisfaction is generally considered as strong effect size (Moore et al., 2013).

Table 3. 17: Results of R^2 and Q^2 Values

Endogenous Latent Variable	***R²* Value**	***Q²* Value**
Customer Satisfaction	0.8516	0.6775
Customer Loyalty	0.7453	0.6142
Brand Image	0.2293	0.1442

Step 4: Effect Size *f²*

In additon to the ***R² values*** of all endogenous constructs**, *f² effect size*** refers the change in the R^2 value when a specified exogenous construct is omitted from the model can be used to evaluate whether the omitted construct substantive impact on the endogenous constructs (Hair et al., 2014). The ***f² effect size values*** are assessed to 0.02, 0.15, and 0.35, respectively, represent small, medium, and large effects of the exogenous latent variable (Cohen, 1988). The values and values' representative effects are shown below in Table 3.18 and Table 3.19.

Table 3. 18: Results of f² effect size for endogenous constructs

	Customer Satisfaction	
	f² effect size values	***Representative Effect***
Tangibility	0.0064	small
Reliability	0.0105	small
Responsiveness	0.0066	small
Assurance	0.0963	small
Empathy	0.1301	small
Marketing	0.0646	small

Table 3. 19: Results of f² effect size for exogenous latent variable

	Customer Satisfaction	
	f² effect size values	***Representative Effect***
Customer Loyalty	2.9257	large
Brand Image	0.2976	large

Step 5: Blindfolding and Predictive Relevance Q^2

Blindfolding is an iterative process that repeats until each data point has been omitted and the model reestimated (Hair et al., 2014). The blindfolding process is just applied to endogenous constructs which have a reflective measurement model. The Q^2 values are obtained by using the ***blindfolding*** process when running the PLS-SEM algorithm. PLS-SEM exhibits the structural model of the study, Q^2 values are larger than zero for the reflective endogenous latent variables (see above Table 3.17) which indicate the path model's predictive relevance for the particular construct.

4. CONCLUSION

4.1. The Application Background

The company has a premium brand as a Sport Utility Vehicle (SUV) class with features of capable off-roader suited. The measurements about the company's SUV class car owners service experiences were obtained from a survey method. The survey applied in this study gives insight informations about the car owners and their past experiences with the brand. The target group of the survey is the car owners who have visited the company dealer within past 12 months. The survey template was created on Survey Monkey. The survey takes 3 minutes to complete. So this is not a big time to avoid for taking the survey. The survey link was send via brand email address with a web link as a first. But collecting enough sample for efficient evaluation is not easy. Because enough datas were not obtained with an email, the survey link was sent again with a customised email message to customers who did not complete the survey. Finally, the survey was sent via sms which is easy to answer on a mobile device. Because some of them did not complete all questions in the survey and some of them has not already own their car. Hence, all evaluation in the model is constructed based on 100 valid responds of the survey.

4.2. Survey Questionaire

A comprehensive service quality measurement survey is launched with;

- 19 questions about the service quality dimension,
- 8 questions about the customer behaviours (i.e., customer satisfaction, customer loyalty and brand image). The questions are presented in Table 4.1.
- 7 questions for the general information about car (e.g., warranty validity, last service experience within past 12 months, etc.)
- 3 questions about demographics which analyze the customers by age, gender.

Table 4. 1: Survey questions about customer behaviors

Construct	Measure(s)	Survey Question of Measure(s)
Customer Satisfaction	General satisfaction about the service experience	Overall, I am satisfied with the aftersales services provided by the dealer
	Ratings of perception about the dealer	The dealer is better than I expected
Customer Loyalty	Evaluating of customer future behaviour	As long as I have a car which is under this company brand, I will continue to use the aftersales services provided by the dealer
	Customer experience about the dealer	I will definitely recommend the dealer to the my relatives and friends
Brand Image		
Characteristics of brand associations type (product-related attributes)	General view of customer thinking about the brand	How do you rate your satisfaction level with the brand in terms of meeting your expectations from a car?
	Customer experience about the brand	Based on your experience with your car, would you recommend the brand to your friends or social circle?
Favorability	Ratings of evaluations of associations	The brand appeals to my lifestyle
Uniqueness	Ratings of beliefs of association	To what extent do you agree with the statement that the brand has features that differentiate it from other car brands?

4.3. Results & Future Research

The aim of this study is to find out service quality dimension effects on customer behaviors (i.e., customer satisfaction, customer loyalty and brand image) in automobile service business in Turkey. The research is constructed based on the company's customers' past experiences with the dealers.

A comprehensive literature review has been conducted including different business such as healthcare services, manufacturing firms, bank, telecom companies and different impact targets like satisfaction, loyalty, re-purchase intention, retention, word of mouth, etc. Following that extensive literature review, in dept conversations with the company's managers and the dealer's managers, a new service quality model added marketing approach is proposed. The structural model of the study displays the relationships (paths) between the constructs and it is created based on 3 hypothesis proposed by this study. In order to gather data for evaluating path model, the survey method is used. The data gathered from 100 respondents are evaluated by Structural Equation Modelling (SEM) performed using the "Smart-PLS 3" software which is regression-based approach to verify proposed model and hypotheses.

Descriptive analyses indicate that most of the items have means greater than 5, which shows that majority of respondents agree with the statements in the questions. Items assossiated with Reliability and Brand Image dimensions are among the highest rated items in the study. This means that the dealers' reliability and customer's perception about the brand image are already appreciated by customers. There is no item which has means lower than 4 in the survey results. It means that there is not any statements which customers do not agree.

All the measurement dimensions' internal consistency in the study showed high reliability, with Cronbach alpha coefficients for the nine variables exceeding 0.80.

Reflective and formative measurement models based on different asseses in the structure are evaluated step by step in "Methodology Chapter". Results of the factor analysis show that the factors affecting directly customer satisfaction and indirectly customer loyalty and brand image is are listed as follows:

- The *physical facility appealness* items represented by "tan_1" and the *trustable employees* items represented by "as_1" have nonsignificant outer weights which means that the indicators are conversely important aspects for their associated variables.
- Significance testing results of the structural model path coefficients shows that all relationships in the structural model are significant except Tangibility → Customer Satisfaction, Reliability → Customer Satisfaction and Responsiveness → Customer Satisfaction. These results suggest that the company should concentrate its marketing effort, assurance and empathy aspects of service quality on enhancing their customer satisfaction. According to those findings, it is convenient to hypothesize that "*Marketing as a service quality dimension has a significant effect on customer satisfaction."*
- The f^2 *effect size* values are assessed to 2.9257 and 0.2976 for customer loyalty and brand image respectively. It shows hypotheses that "*Customer satisfaction has an effect on customer loyalty."* and *"Customer satisfaction has an effect on brand image."* are verified.

As it can be observed the measurement items may also be extented of aftersales industries. For future research, it is suggested that the path model can be constructed with different relations (e.g., customer satisfaction as a mediating effect). The relationship between satisfaction and loyalty may be explained by the customer satisfaction → customer loyalty sequence or customer satisfaction → brand image perception → customer loyalty sequence or perhaps even by both sets of relationships. The proposed model is also appropriate for evaluating companies current service quality. So, companies can integrated the model to their dealer commercial policy

REFERENCES

AASA. (2017). Automotive Aftermarket Global Industry Almanac Report. URL: https://document.li/ms0P.

Ahn, J. S., Sohn, S. Y. (2009). Customer pattern search for after-sales service in manufacturing. Expert Systems with Applications, 36, pp. 5371–5375.

Al-Shammari, M., Kanina, A. S. (2014). Service quality and its relationship with customer satisfaction and loyalty in a Saudi Arabian Automobile Company. Global Journal of Management and Business Research, 14.

Andaleeb, S. S., Basu, A. K. (1994). Technical complexity and consumer knowledge as moderators of service quality evaluation in the automobile service industry. Journal of Retailing , 70, pp. 367-381.

Baird, R., Benady, D., (1996). Money trap guarantees. Marketing Week, 19, pp. 32.

Bhat, M. A. (2012). Tourism service quality: A dimension-specific assessment of SERVQUAL. Global Business Review, 13(2), pp. 327–337.

Bouman, M., Wiele, T. van der. (1992). Measuring service quality in the car service industry: Building and testing an instrument. International Journal of Service Industry Management, 3(4), pp. 4–16.

Brady, M., and Cronin Jr, J. (2001). Some new thoughts on conceptualizing perceived service quality: a Hierarchical Approach. Journal of Marketing, 65(3), pp. 34 -49.

Caceres, R. C., Paparoidamis, N. G. (2007). Service quality, relationship satisfaction, trust, commitment and business-to-business loyalty. European Journal of Marketing, 41(7/8), pp. 836–867.

Carman, J. M. (1990). Consumer perceptions of service quality: An assessment of the SERVQUAL dimensions. Journal of Retailing, 66, pp. 33.

Chatzoglou, P., Chatzoudes, D., Vraimaki, E., Leivaditou, E. (2013). Procedia Economics and Finance, 9, pp. 349 – 360.

Cohen, M. A., Agrawal, N., Agrawal, V. (2006). Winning in the aftermarket. Harward Business Review.

Cronin, J. J., Brady, M. K., Hult, G. T. M., (2000). Assessing the effects of quality, value, and customer satisfaction on consumer behavioral intentions in service environments. Journal of Retailing, 76 (2), pp. 193-218.

Dick, A.S., Basu, K. (1994). Customer loyalty: Toward an integrated conceptual framework. J.Acad.Mark.Sci.22 (2), pp. 99–113.

Dombrowski, U., Malorny C. (2017). Service planning as support process for a Lean After Sales Service. Procedia CIRP, 64, pp. 324 – 329.

Farquhar, P.H. (1989), "Managing brand equity". Marketing Research, (1), pp. 24-33

Fazlzadeh, A., Bagherzadeh, F., Mohamadi, P. (2011). How after-sales service quality dimensions affect customer satisfaction. African Journal of Business Management, 5(17), pp. 7658-7664.

Finn, A. (2011). Investigating the non-linear effects of e-service quality dimensions on customer satisfaction. Journal of Retailing and Consumer Services, 18, pp. 27–37.

Fornell, C., Johnson, M. D., Anderson, E. W., Cha, J., & Bryant, B. E. (1996). The American customer satisfaction index: Nature, purpose and findings. Journal of Marketing, 60, pp. 7–18.

Fullerton, G., Taylor, S. (2002). Mediating, Interactive, and Non-linear Effects in Service Quality and Satisfaction with Services Research. Canadian Journal of Administrative Sciences, 19(2), pp. 124-136.

Gencer, Y. G., Akkucuk, U. (2016). Measuring quality in automobile aftersales: AutoSERVQUAL Scale. Amfiteatru Economic, 19(44), pp. 110-123.

Grönroos, C. (1984). A service quality model and its marketing implications. European Journal of Marketing, 18.

Grönroos, C. (1988). Service quality: the six criteria of good perceived service quality. Review of Business, pp. 10.

Hair, J. F., Jr., Anderson, R. E., Tatham, R. L. and Black, W. C. (1995) Multivariate Data Analysis, 3rd ed, Macmillan Publishing Company

Hair, J. F., Jr., Hult, G. M. T., Ringle, C. M. and Sarstedt, M. (2014) A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM), SAGE.

Hellier, P. K., Geursen, G. M., Carr, R. A., & Rickard, J. A. (2003). Customer repurchase intention: A general structural equation model. European Journal of Marketing, 37, pp. 1762–1800.

Henseler, J., Ringle, C., and Sinkovics, R. (2009). "The use of partial least squares path modeling in international marketing." Advances in International Marketing (AIM).

Johnson, M. D., Anderson, E. W., Cha, J., Bryant, B. E. (1996). Satisfaction Index: Nature, Purpose and Findings. Journal of Marketing, 60, pp. 7-18.

Kasiri, L. A., Cheng, K. T. G., Sambasivan, M., Sidin, S. Md. (2017). Integration of standardization and customization: Impact on service quality, customer satisfaction, and loyalty. Journal of Retailing and Consumer Services, 35, pp. 91–97.

Katarne, R., Sharma, S., Negi, J. (2010). Measurement of Service Quality of an Automobile Service Centre.

Keller, K. L. (1993). Conceptualizing, measuring, managing customer-based brand equity. Journal of marketing, 57(1), pp. 1-22.

Khan, M. T., Jadoun, R. S. (2015). Evaluation of service quality in two wheeler automobile industries using SERVQUAL Model. International Journal of Innovative Research in Science, Engineering and Technology, 4.

Koklic, M. K., Kukar-Kinney, M., Vegelj, S. (2017). An investigation of customer satisfaction with low-cost and full-service airline companies.

Kuo, Y., Wu, C., Deng, W. (2009). The relationships among service quality, perceived value, customer satisfaction, and post-purchase intention in mobile value-added services. Computers in Human Behavior, 25, pp. 887–896.

Ladokun, I. O., Adeyemo, S. A., Ogunleye, P. O. (2013) Impact Of After Sales Service On Consumer Satisfaction And Retention. A Study of LG Electronics in Ibadan, Nigeria. IOSR-JBM, 11, pp. 54-58.

Little, A. D. (2015). Automotive After Sales Report (2015). Automotive Insight.

Maslow, A. H. (1970). Motivation and Personality, second edn, Harper.

Mohammad, A. A. S., Alhamadani, S. Y. M. (2011). Service quality perspectives and customer satisfaction in Commercial Banks Working in Jordan. Middle Eastern Finance and Economics. ISSN: 1450-2889 Issue 14 (2011).

Moore, D. S., Notz, W. I, Flinger, M. A. (2013). The basic practice of statistics (6th ed.). New York, NY: W. H. Freeman and Company, pp.138.

Noel, C.P. (2001). More coverage with that? Consumers seldom benefit from extended warranties. Christian Science Monitor.

Pakizehkar, H., Sadrabadi, M. M., Mehrjardi, R. Z., Eshaghieh, A. E. (2016). The application of integration of Kano's model, AHP technique and QFD matrix in prioritizing the bank's substructions. Procedia - Social and Behavioral Sciences, 230, pp. 159 – 166.

Parasuraman, A., Zeithaml, V., Berry, L. (1985). A conceptual model of service quality and its implications for research. Journal of Marketing, 49 (Fall), pp. 41-50.

Parasuraman, A., Zeithaml, V., Berry, L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. Journal of Retailing, 64 (1), pp. 12-37.

Pawar, A., Geetha, N. (2014). Measuring service quality by using SERVQUAL Scale-A study on Concorde Tata Motors.

Zeithaml, V.A., Berry, L., Parasuraman, A., (1996). The behavioral consequences of service quality. J. Mark., 60, pp. 31–46.

Saaty, T. L. (1989). Decision-making, scaling, and number crunching, Decision Sciences, 20, pp. 404-409.

Sabbagha, O., Rahman, M. N. A., Ismail, W. R., Hussain, W. M. H. W. (2016). Impact of quality management systems and after-sales key performance indicators on automotive industry: A Literature Review. Procedia - Social and Behavioral Sciences, 224, pp. 68 – 75.

Saidin, Z. H., Mokhtar, S. S. M., Saad, R., Yusoff, R. Z. (2015). Automotive after-sales service quality and relationship quality in Malaysian National Car Makers. International Academic Research Journal of Business and Technology, 1(2), pp. 71-78.

Saccani, N., Songini, L., Gaiardelli, P. (2006). The role and performance measurement of after-sales in the durable consumer goods industries: an empirical study. International Journal of Productivity and Performance Management, 55, 259-283.

Shuqin, W., Gang, L. (2012). An empirical study of after-sales service relationship in China’s Auto Industry. International Conference on Mechanical Engineering and Material Science.

Stathopoulou, A., Balabanis, G. (2016). The effects of loyalty programs on customer satisfaction, trust, and loyalty toward high-and low-end fashion retailers. Journal of Business Research, 69, pp. 5801–5808.

Sulisworo, D., Maniquiz, N. E. F. (2012). Integrating Kano‟s Model and SERVQUAL to improve healthcare service quality. IC-GWBT, Ahmad Dahlan University, pp. 23-24.

Tamuliene, V., Gabryte, I. (2014). Factors influencing customer retention: case study of Lithuanian mobile operators. Procedia - Social and Behavioral Sciences, 156, pp. 447-451.

Wilkie, W. (1986). Consumer behavior. New York: John Wiley & Sons, Inc.

Wirtz, J., Zeithaml, V. (2017). Cost-effective service excellence.

Yieh, K., Chiao, Y.-C., Chiu, Y.-K. (2007). Understanding the antecedents to customer loyalty by applying structural equation modeling. Total Quality Management, 18(3), pp. 267-284.

Zeithaml, V., Berry, L., Parasuraman, A. (1996). The behavioral consequences of service quality. Journal of Marketing, 60 (2), pp. 31-46.

Zeithaml, V.A., Bitner, M.J., (2000). Services Marketing: Integrating customer focus across the firm, 2 ed. Irwin/McGraw-Hill, London.

Zhang, Y., Bi, R., Xiao, M. (2017). Studying on enhancing readers' satisfaction model of electronic service quality in library based on LibQUAL+ and Kano. Procedia Engineering 174, pp. 260-266.

Zhu, D., Lin, C., Tsai, C., Wu, J. (2010). A study on the evaluation of customers' satisfaction – the perspective of quality. International Journal for Quality Research, UDK- 005.521.

APPENDICES

Appendix A.

Brief information about Taylorian Organizations is explained as follows:
Frederick Taylor (1917) developed scientific management theory (often called "Taylorism") at the beginning of this century. The theory had four basic principles:
1) find the one "best way" to perform each task,
2) carefully match each worker to each task,
3) closely supervise workers, and use reward and punishment as motivators, and
4) the task of management is planning and control
By analyzing each task individually, the theory was able to match right combination of factors that yielded large increases in production.

Appendix B.

QUESTIONNAIRE

Q1. According to the records you have a X brand car. Do you still have this car?

Yes	No

Q2. Did you take your car to the company's any dealers within the past 12 months?

Yes, i took my car to the dealer.
No, i took my car to independent garages.
No, i did not take my car to anywhere.

Q3.Which of the dealer did you go at your last visit?

Q4. Was your vehicle under warranty at your last visit?

Yes	No

Q5. What is the model of your car?

Q6. What is the model year of your car?

Q7. Did you buy your car as a new or used one?

Q8. Please indicate the degree that you agree with the statements below considering your last visit to the dealer.

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
The physical facilities of the service dealer are visually appealing							
The dealer's staffs are neatly dressed							
The dealer's waiting lounge is comfortable							
The dealer takes advantages of technology							
The dealer always keep time promises to customers							
The dealer performs its services right at the first time.							
The dealer uses original products of the brand							
Quality level of service is a good value for money							
It is easy to schedule a suitable service&repair appointment							
Employees provides respond and feedback to customer requests during and after the progress of the service visit.							

	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
The dealer provides mobility service to the customers							
The dealer employees are trustable							
The dealer employees have the knowledge to answer customer's questions							
The dealer quarantees its maintanance process							
The dealer offers adequate alternative product or services to meet customer needs							
The dealer always shows sincere interest in customer's needs and problems							
The dealer offers attractive service campaigns							
The diversity of the dealer new product and service offerings are well enough							
The dealer rewards its loyal customers (includes add-ons, vouchers, loyalty discounts or cards, special pricing, bonuses or gifts)							

Q9. Overall, how satisfied are you with the after-sales services provided by the dealer?

Completely satisfied	Mostly satisfied	Somewhat satisfied	Neither satisfied nor dissatisfied	Somewhat dissatisfied	Mostly dissatisfied	Completely dissatisfied

Q10. Please indicate the degree that you agree with the statement “The dealer is better than I expected”.

Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree

Q11. Could you please indicate the degree that how possible you will continue to use the after-sales services provided by the dealer as long as you have a car which is under this company brand.

Definitely possible	Quite possible	Somewhat possible	Neither possible nor impossible	Somewhat impossible	Quite impossible	Definitely impossible

Q12. . Please indicate the degree that you agree with the statement “I will definitely recommend the dealer to the my relatives and friends”.

Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree

Q13. How do you rate your satisfaction level with the brand in terms of meeting your expectations from a car?

Extremely good	Good	Somewhat good	Neither good nor bad	Somewhat bad	Bad	Extremely bad

Q14. To what extent do you agree with the statement that the brand has features that differentiate it from other car brands?

Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree

Q15. Please indicate the degree that you agree with the statement “The brand appeals to my lifestyle”.

Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree

Q16. Based on your experience with your car, could you please indicate the degree that you agree with the statement “I will definitely recommend the brand to the my relatives and friends”.

Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree

Q17. Gender:

Male	Female

Q18. Age:

18-25 years	26-35 years	36-45 years	46-55 years	> 56 years

BIOGRAPHICAL SKETCH

Müge Nur Ünsal was born in Ankara on February 19, 1988. She graduated from Turgutalp Anatolian High School in 2006. She obtained a B.S. degree in Industrial Engineering from Gaziantep University in 2012. After graduating, she worked Robert Bosch GmbH as an engineer for 1 year. Since November 1, 2015, she has been working in Fiat Chrysler Automobile Company (FCA) as an engineer. She is a M.Sc. candidate in Industrial Engineering at Galatasaray University, having the chance to narrow her area of expertise and to widen her knowledge in industrial engineering. She wrote a thesis associated with her experiences in automotive aftersales business entitled as "A Marketing Approach to SERVQUAL – Measuring Service Quality Impact in Automobile Aftersales Based on Structural Equation."