Original Research

Examining the Impact of Customer Satisfaction with After-Sales Services on Corporate Profitability

Shahriar Soltani[1], Farzad Movahedi Sobhani[1*], Seyed Esmaeil Najafi[1]

Received: 7 April 2022 / Accepted: 14 May 2022 / Published online: 19 January 2022

* Corresponding Author, farzadmovahedi@gmail.com

1- Department of Industrial Engineering, Central Tehran Branch, Islamic Azad University, Tehran

Abstract

Determining the factors affecting customer satisfaction in after-sales service in various industries has been studied. However, the importance of after-sales service by considering customer demographic factors in the automotive industry and its impact on organizational profitability needed further investigation. For this purpose, a sample of 383 customers (from the statistical population of 153,000 referring to the dealer network) was randomly selected from different clusters of customers. The structural equation model in Amos 21 software was used to test the model and research hypotheses. The RFM clustering method was used to show the preferences and demands of customers in each cluster to address behavioral dissimilarity among customers. We also calculated the effect of each factor on overall customer satisfaction and profitability by presenting a mathematical model through multivariate regression equations. The results showed that the demographic variable of customers' income effectively affects their perception of satisfaction. Also, the level of customer satisfaction has a positive relationship with the organization's profitability. Finally, through mathematical equations, the numerical effect of each of the independent variables on the dependent variables, customer satisfaction, and profitability of the organization was calculated.

Keywords – Customer Satisfaction; Profitability; After -Sales Services; Regression; Automotive industry

INTRODUCTION

In the new era of business, after-sales services play a crucial role in customer satisfaction and customer loyalty, and ultimately company's profitability [1]. Customer satisfaction and service quality are considered vital factors in business survival as the growth of a company highly depends on customer retention by offering unique service quality.[2] Providing excellent and appropriate services leads to customer satisfaction, customer loyalty, and ultimately a high level of customer retention for the organization. Service quality is defined as comparing customer expectations with the actual performance of services. Good service quality not only leads to customer satisfaction but also surpasses Organizations, becoming more competitive than other competitors in today's markets. High-quality service can be achieved by identifying service problems and finding a unique way to address those problems. Furthermore, defining performance metrics for the service can improve the level of customer service resulting in a high level of customer satisfaction. In addition, service quality can be determined by examining the difference between expected services and perceived services.[3]

According to Pradnyadewi [4], there is a positive relationship between service quality and customer satisfaction. Multiple regression analysis is performed to examine the relationships between service quality and customer satisfaction variables in this study. The results indicated that all factors of service quality could be used to anticipate the level of customer satisfaction. Consequently, identifying and satisfying customer needs can put the after-sales service network of the company in a different position compared to competitors. It also can be used as a differentiation strategy to position the company in the market as a leader in offering the best services.

Offering exceptional customer service will make the experience memorable for customers and increase customer loyalty [5]. In addition, many researchers investigated the factors affecting the after-sales service quality on customer satisfaction in several industries. The result of research indicated employees' appearance and attitude are the most important factors affecting customer satisfaction [6]-[10].

Despite researchers' focus on customer satisfaction and its effects on automotive after-sales services, there are minimal studies with the main focus on these specific factors affecting customer satisfaction. For instance, Murali et al. [11] recognized twenty-one factors for service quality and evaluated how these factors affect customer satisfaction. For example, Shokouhyar et al. [12] has proposed a framework to assess different dimensions of after-sales service and their effect on customer satisfaction. However, to define performance improvement initiatives and achieve desired outcomes regarding customer satisfaction, merely identifying of classification of these factors is not sufficient. However, most previous studies have investigated these factors regardless of customer demographics.

According to Smith's [13] definition of market segmentation, "in response to different customer preferences and how to easily satisfy these demands, we need to observe the market as a heterogeneous market comprised of smaller homogenous markets. This observation may lead to a better understanding of the importance of customer characteristics in this industry.

Evaluation of demographic characteristics explains the importance of age, gender, education, income, occupation, marital status, etc. The more information companies gather, the more successful they will be in delivering suitable and customized services to the customers [14]. Organizations must be constantly aware of the demographic impact on customer satisfaction and business profitability. Through effective use of demographic data, service providers can attract and retain customers [15]- [17]. Several studies have been conducted to investigate the effects of demographic factors on different aspects of service quality. For example, Webster [18], Bowen and Hedges [17], and Stafford [19] studied the effects of age and gender on customer perception. Increasing the understanding of the gender difference effect is a useful tool in marketing. Thompson and Kaminski [20] found a significant relationship between age and service quality.

Similarly, Gagliano and Hathcote [21] found a significant relationship between income and service quality expectation. Generally, the literature review shows that the study of demographic factors and their effect on after-sales service quality in the automotive industry has not received much attention. Therefore, there is a potential for further research in the future. Therefore, one of the main objectives of this study is to investigate the relationship between customer income and customers' perception of service quality.

The relationship between customer satisfaction and company profitability has been studied in previous research. Although there is a complex relationship between these factors, their relationship has been confirmed. Eklof et al. [22] claimed that all the past studies supported the direct relationship between customer satisfaction and the organization's performance. Other recent works also confirmed the same fact. [23]-[26]. In a review of the previous studies on the relationship between service quality and the company's profitability Schneider [27] suggested that the company's financial success can be various by the quality of the services provided to customer and their satisfaction. Despite providing a comprehensive sample for US fast-food chain restaurants, it did not indicate a statistically significant relationship between customer satisfaction and financial outcome. Nevertheless, they found a relationship between changes in customer satisfaction and their effect on financial outcomes. In their Service Profit Chain for Retail Performance Analysis review, Pritchard et al. [28] failed to prove the relationship between customer satisfaction, customer loyalty, and financial results. There is also an opposite relationship between customer satisfaction and ROI in service-oriented organizations, whereas this relationship is proved to be positive in manufacturing companies [29]. Most studies address the complex correlation between several aspects of service quality and customer satisfaction and the connection between satisfaction, loyalty, and profitability [30]-[33], [25], and [34]. By reviewing the literature, it is concluded that our general hypothesis is that customer satisfaction increase in the field of services leads to financial performance improvement. However, the difference in results in some studies can be due to the impact of customer characteristics in different industries [28], [35].

Therefore, in the present study, we will examine the impact of after-sales service and satisfaction on the organization's profitability. This is the second issue that we considered in our research. According to the above, this research contributes to the literature related to customer satisfaction in the after-sales service sector and its role in organizations' profitability. First, the present study examines the role and effect of the demographic variable of customer revenue on customer perception of satisfaction in after-sales service by identifying the gap in the previous literature. Second, we examine the role of after-sales service and satisfaction on profit. Finally, organizational efficiency examines the effect of customer revenue clustering on corporate profitability.

The paper is arranged as follows:

The literature review deliberates after-sale service, profitability, and research hypotheses. Afterward, the research methodology was explained. Finally, pragmatic

results, discussion and conclusion, managerial issues, and research limitations are provided in the end.

THEORETICAL UNDERPINNING AND HYPOTHESES

There are various studies regarding after-sales service and its role in customer satisfaction and the relationship between service quality, customer satisfaction, and loyalty in diverse service industries in the era of marketing. [4],[11],[12],[36],[37]- [39].

In all after-sales service companies, the focus of their activities is on providing service for their customers to make them happy with the company's products. It is an effective tool to guarantee the level of sales and maintain customer retention and loyalty [40]. The notion of after-sales service has become a significant strategic source of differentiation and competitive advantage for businesses [41]. In recent times, the business has become more service-oriented [42]. One of the most determinant factors of customer satisfaction is service quality, which has drawn many researchers' attention [43], [44].

Many researchers focused on the same subject after Parasuraman and Zeithaml et al. [45] studied the relationship between service quality, customer satisfaction, and loyalty in various service industries. However, the role of service quality in the service after-sales automotive industry has rarely been examined. Bei and Chiao [46] researched the impact of product quality and cost on customer satisfaction and loyalty in the Taiwanese automotive sector. They found that observed quality of services predominantly affects customer satisfaction and, accordingly, customer loyalty which completes the research outcomes Boulding and Kalra et al. [47], Taylor and Baker, [48], Parasuraman and Zeithaml et al. [45], who believed that customer satisfaction through service quality can positively impact and customer loyalty.

However, the findings were correlated with studies such as Anderson and Sullivan [31] and Gotlieb et al. [49] that showed that service quality directly impacts customer loyalty. For example, Ryu et al. [50] indicated the service quality in an automotive industry depends on the following principles: first, what is presented to the customer, second, the situation where the service is provided, and third, how it is delivered.

The "Service Quality, Customer Satisfaction and Loyalty in Car Service" study aimed to determine the dimensional structure of the SERVQUAL scale in car repair services and determine the effect of service quality variables on customer satisfaction and loyalty [51]. Their results exhibited that in the automotive service sector, the following structure of the SERVQUAL scale does not conform with the results of the former studies. Customer commitment was portrayed as a different dimension of service quality. Customer commitment has had the most significant impact on service quality as a new dimension. Other parameters affecting the service quality in the automotive industry are the prompt finding of defective products, the qualifications, and the employee's expertise in offering proper services, which have been mentioned in the studies [52]-[55].In addition, customer waiting time, repair time, service cost, service contract options, availability of spare parts and general manner of the technicians, and availability of the centers are among the factors by Hwang et al.[56]and Chicu et al.[57], These factors are effective parameters for customer satisfaction in the automotive industry after-sales service.

The impact of after-sales services on customer satisfaction in the other areas of the industry has also been measured. For example, Shen and Tang [58], Shurair, and Pokharel [59] presented that education plays a vital role in the quality of services provided in the university industry. There is a significant link between service quality and student satisfaction [60]. This study evaluated the hotel industry's quality of services and examined the effects of changing service quality on customer satisfaction, customer loyalty, and brand image. This result of the study implied; that first, there's a positive relationship between customer satisfaction and loyalty, and there's a negative relationship between customer satisfaction and brand image. Second, there's a positive relationship between customer satisfaction and two factors: customer loyalty and brand image. Third, there's a positive relationship between customer loyalty and brand image.

Izogo and Ogba [51] have studied the components of service quality in the SERVQUAL model and its effect on customer satisfaction and loyalty using a survey method. The results of this evaluation demonstrate a significant relationship between these variables. The impact of service quality, price, andservice convenience on customer loyalty and satisfaction has been researched by Kaura et al. [61] in the Indian retail banking sector. This study revealed that quality, reasonable price, and convenience of services are the compelling factors in customer loyalty. Considering the fact that employee behavior positively affects customer satisfaction and loyalty, at the same time, it shows there is a significant relationship between service quality and customer loyalty. Accordingly, tangibility did not show a significant effect on customer satisfaction and loyalty. Also, additional factors such as price, accessibility, transactions, profit, and ease of decision-making significantly affected customer satisfaction and loyalty. But after-profit convenience did not affect customer loyalty. In addition, customer satisfaction was presented as an intermediary variable between its predecessors (except for the two dimensions of tangibility and after-sales convenience) and the customer.

Although researchers emphasize customer satisfaction and its effects on automotive after-sales services, just an insignificant number of studies have dealt with factors that

affect customer satisfaction. To illustrate, Murali et al. [11] identified twenty-one factors for service quality and considered how this is directly related to customer satisfaction.

Shokouhyar [62] also distinguished various factors influencing customer satisfaction in automotive after-sales services companies. The combination of Kano and SERVQUAL models was used to categorize the customer demand. The result indicated that authorized dealers could provide more appropriate services by segmenting their customers because of the lack of similarity between customer groups. In addition to these studies, some researchers have identified various parameters impacting the quality of service beyond the SERVQUAL framework. Based on these results, responsiveness, competence, accessibility, goodwill, communication, credibility, security, understanding, and knowing customers and tangibles are affected by customer characteristics, meaning that demographic factors influence customer satisfaction. Characteristics related to demographic factors present the status of the customer community in terms of age, gender, education, income, occupation, marital status, etc. [14].

Numerous studies have been conducted to investigate the effects of demographic factors on service quality dimensions. For example, Webster [18], Bowen and Hedges [17], and Stafford [19] examined the effects of age and gender demographic variables on customer perception. They indicated a difference in the quality of perceived services between men and women. Understanding gender differences is a valuable strategy for marketing that can be used. Webster added to this research an indication that marital status, education, ethnicity, and occupation are all variables of demographic segregation.

Thompson and Kaminski [20] found a significant relationship between age and service quality dimensions. In comparison, Gagliano and Hathcote [21] presented an essential relationship between revenue and service quality expectations. Dabhade et al. [16] showed that studying the social demographics of customers affects their satisfaction. They also showed that factors such as gender, level of education, occupation, and customers' income affect their perception of satisfaction.

In general, the literature demonstrates that the effect of demographic variables that have easy access to information such as gender, education, and age of customers has been paid more attention by researchers, and the study of factors such as customer income on quality dimensions the after-sales service industry. The automotive industry has received less attention, and the potential for further investigation is felt in this area, so we argue that the demographic variable of revenue can affect the quality of service and, ultimately customer satisfaction and can be expected:

H1: Customer income affects their perception of services.

The relationship between customer satisfaction and profitability has been the subject of many past studies, which have shown a positive relationship between these two variables [63],[64]. Several factors affect the organization's profitability, including the type of industry, the organization's size, advertising costs, and financial indicators. However, the direct role of economic indicators such as price is one of the essential elements of a business on organizational profitability [65], [66]. But some indicators indirectly affect the organization's profitability, including the customer satisfaction index, which in the long-run has a direct impact on the organization's profitability [67]. From the early formulation of the service profit chain in 1994, the different aspects of these relationships have been deliberate: [68]-[73]. The service quality can be increased by improving individual service elements by considering the conceptual profit-service chain model. This fact can lead to better financial results by increasing customer loyalty.

Eklof et al. [22] claimed that all the past studies supported the direct relationship between customer satisfaction and the organization's performance. Other recent studies also confirmed the same fact [23]-[26]. In addition, there are similar findings in several more recent works in their review of Service Profit Chain for Retail Performance Analysis, which showed there's not a correlation between customer satisfaction and loyalty and business financial results [23]-[28],[35],[83].

There is also a negative correlation between customer satisfaction and ROI in service-oriented companies, whereas manufacturing businesses positively
correlate [29],[83]. Maximum customer satisfaction leads to faster cash flow, increased sales volume, and reduced cash flow risk. Gupta and Zeithaml [30] indicated that customer satisfaction also leads to more revenue in the future and reduced company operating costs [74]-[77]. Satisfaction Profit-chain is a model that the relationship between customer satisfaction and financial performance [78]. This model was intended to increase customer service performance, resulting in higher financial performance.

In general, most research indicates a complex correlation among several elements of service quality customer satisfaction and customer satisfaction, loyalty, and profitability [30]-[34]. Still, some studies' differences in results can be due to customer characteristics in different industries [28], [35]. Therefore, in the present study, we expect that after-sales service and satisfaction will affect the profitability of the organization:

H2: There is a positive relationship between after-sales service satisfaction and organizational profitability.

RESEARCH METHODOLOGY

This research's statistical population includes customers referred to the network of authorized dealers of a car company during the quarter of April, May, and June of 2020. Initially, according to SERVQUAL criteria, we identified 19 indicators affecting service quality from the customers' point of view through a focus group study of 20 experts in after-sales service in the automotive industry (Table 1). Then, to collect the data required for the research, we designed a questionnaire consisting of 6 functional questions and 13 perceptual questions. Customers in a range of five options answer relevant questions with yes and no answers and perceptual questions from very high, high, medium, low, and very low.

TABLE I
QUALITY ELEMENTS

SERVQUAL model	Quality Elements
Tangibles	Appointment procedure
	Ease of use of the queuing system
	How to make an appointment
	Network Availability
Responsiveness	Time is taken at reception the car
	Immediate identification of all defects
	Timely repair and delivery of the vehicle
	Car delivery on the day of reception
Reliability	Quality of periodic service
	Service Quality
	Requires parts during repairs
	Timely supply of parts
Assurance	Submit a bill
	The cost of service
	The cost of labor or parts
	Repair order Description
Empathy	Staff Behavior
	Non-acceptance by the agency
	Recording defect at reception time

We confirmed the validity of the questionnaire through interviews with experts in the automotive industry. The reliability of the research questionnaire was evaluated using Cronbach's alpha index, which was calculated to be 0.919 (SPSS software). Because the alpha coefficient is more than 0.7, the questionnaire has acceptable reliability. Also, the KMO index was calculated, and the results are shown in Table 2. The KMO value of 0.927 indicates the adequacy of sampling. The closer the KMO index is to 1, the more acceptable it is. (List of survey questions is presented in Appendix A).

I. Clustering

We separately evaluated similar customers using the K-mean clustering algorithm to evaluate attitude dissimilarity. K-mean clustering algorithm is applied due to its high-speed performance in large data sets[12],[79]-[81],[90],[91]. In this case, Recency, Frequency, and Monetary value (RFM) indicators are used as the clustering Attributes. RFM analysis is a marketing approach that presents behavioral knowledge about customers' actual marketing levels [62], [82]-[85].

TABLE II
KMO TEST

KMO and Bartlett's Test		
	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.927
Bartlett's Test of Sphericity	Approx. Chi-Square	5770.007
	DF	703
	Sig.	0.000

The general data includes 153,000 customers collected from the database of an automotive company. The customer database consists of general customer information such as age, gender, education, telephone number, and address. Specific information includes the type of vehicle, the number of times to visit the repair shop, replaced parts, and the cost of repairs each time the customer visits the repair shop. The elbow method is utilized to determine the appropriate number of clusters. Based on this approach, we grouped similar customers into three clusters. The summary results of the k-means clustering are discussed in Section 4.

II. Structural Equations Model (SEM)

The structural equations model (SEM) is a comprehensive statistical approach to testing hypotheses about the relationships between observed and hidden variables**.** In this regard, the SFM approach (AMOS software version 21) was employed to test the research hypotheses.

III. Regression

Third, we used multiple linear regression to evaluate the impact of the identified variables on overall customer satisfaction and profitability factors. In the fourth step, we have used the survey method to accurately identify the variables that affect customer satisfaction with after-sales service. For this purpose, the survey form has been designed by employing the identified variables. According to Cochran's formula, 383 samples were determined with a 5% error for the survey. Therefore, we randomly selected 450 customers from three clusters proportionally. Structural Equation Method was employed to test the research hypotheses. According to results, the hypothesized model showed an excellent fit,

$\chi 2$ /DF = 2.46; GFI = 0.992; CFI = 0.9; TLI = 0.907; IFI = 0.986; NFI = 0.924; SRMR = 0.040; RMSEA = 0.07.

According to McCallum, Brown, and Shogavara's theory (1996), if the Root Mean Square Error Approximation RMSEA index is less than 0.1, the model is excellent. If it is between 0.5-0.1, the model is good, and if it is between 0. 8-0.5 the model is average. Therefore, the standardized estimates were inspected to determine support for the hypotheses (Figure 1).

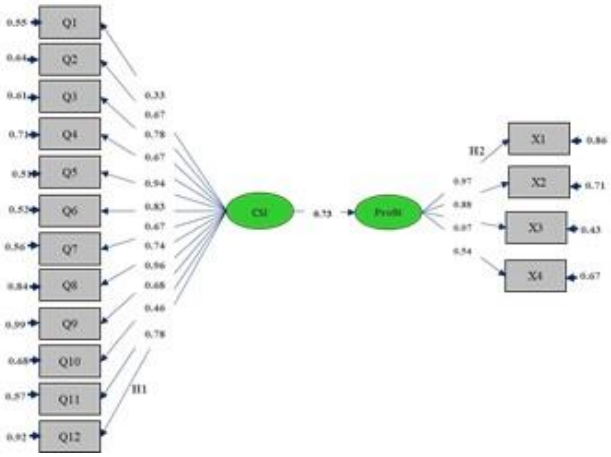

FIGURE 1
STRUCTURAL EQUATION MODELING IN STANDARD MODE

A positive and significant relationship between all factors affecting customer satisfaction and overall customer satisfaction was confirmed based on the results of the factor analysis. In fact, standard coefficients (load factor) and significant numbers have been used to endorse or refute the hypotheses. The result of the factor analysis indicated that all load factors are greater than 0.3, and their significance number is greater than 1.96, which confirmed that all identified variables could affect customer satisfaction. The factor that has the highest impact on customer satisfaction is the expert employee's explanations regarding the services performed on a car.

The factor that has the lowest impact on customer satisfaction is the company's method of setting up an appointment for the service. The first hypothesis of this study was to clarify if there is a positive relationship between the level of customers' income and its impact on their satisfaction with service. The result of this study approved the positive relationship as the load factor was 0.78, which is higher than 0.3, and the significance coefficient of p is less than 0.001. In the same way, the second hypothesis of the research was to clarify if that there is a positive relationship between customer satisfaction and the organization's profitability.

The result of this study approved the positive relationship as the load factor was 0.97, which is greater than 0.3, and the numerical value of p, which is 0.018. Based on previous studies, our assumption has been that customer satisfaction significantly impacts a company's profitability [80]. Twenty automotive industry experts were again surveyed as a focus group to determine the main factors affecting profitability. Finally, customer income, sales of the company's products, and competing car prices were confirmed as effective parameters in profitability.

As a result, we identified 11 independent variables and four independent variables for modeling customer satisfaction and company profitability, respectively (Table 3).

TABLE III
STRUCTURAL EQUATION MODELING RESULTS

Variables	Description	Factor Loading	P-value	Result
Q1	Overall Customer Satisfaction	0.33	0.006	confirmed
Q2	Appointment procedure	0.67	0.009	confirmed
Q3	Time is taken reception at the car	0.78	0.046	confirmed
Q4	Timely repair delivery and of the Vehicle	0.67	0.066	confirmed
Q5	Quality of periodic service	0.94	0.017	confirmed
Q6	Service Quality	0.83	0.006	confirmed
Q7	Timely supply of parts	0.67	0.07	confirmed
Q8	The cost of Service	0.75	0.019	confirmed
Q9	Repair order Description	0.96	0.076	confirmed
Q10	Staff Behavior	0.68	0.053	confirmed
Q11	Network Availability	0.46	0.016	confirmed
Q12	Customer Income	0.78**	0.009	H1 Confirmed
X1	Overall Customer Satisfaction	0.97**	0.018	H2 Confirmed
X2	Customer Income	0.88	0.046	confirmed
X3	Sales of the company's products	0.77	0.066	confirmed
X4	competing for car's price	0.54	0.017	confirmed

Note** p < .001, *** p < 0.01, Ns = no significant.

Finally, according to the model output, 11 variables out of 19 variables were approved as the main factors affecting customer satisfaction (Table III).

Dependent variable:X1
Method: stepwise Regression
Date:04/10/2020 Time: 15:50
Sample:300
Included observations:300
No always included regressors
Number of search regressors:11
Selection method: stepwise forwards
Stopping criterion: p- value forwards/backwards=0.2/0.2

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Q6	0.187416	0.004348	2.601082	0.0023
Q7	0.369911	0.043780	5.605011	0.0001
Q9	0.296706	0.057087	4.231711	0.0022
Q5	0.186756	0.064884	2.465678	0.0300
Q11	0.181406	0.061447	3.786447	0.0003
Q8	0.247858	0.067567	2.689578	0.0065

R-squared	0.712344	Mean dependent var	3.338047
Adjusted R-squared	0.683308	S.D. dependent var	1.346427
S.E. of regression	0.628740	Akaike info criterion	2.038311
Sum squared resid	81.89768	Schwartz criterion	2.233063
Log likelihood	-166.3924	Hannan-Quinn criter.	2.409179
Durbin-Watson stat	2.088518		

Selection Summary

Added Q6
Added Q7
Added Q9
Added Q5
Added Q11
Added Q8

FIGURE 2
TOTAL REGRESSION RESULT FOR ALL GROUP CUSTOMER

Furthermore, the effect of the variables affecting satisfaction concerning customer income segmentation, including high-income, low-income, and middle-income, on overall satisfaction was examined.

According to the regression analysis of curves 2 -4 (Eviews Software), we found that in the high-income group, the three variables of the middle-income and low-income groups are affected by four variables.

The regression coefficients' reliability coefficient is obtained 95%, so those coefficients for which the probability of error is less than 0.50 are selected. Finally, the Prob column in Figures 2 - 5 shows the selected coefficients.

The regression model for all customers based on the regression results of Figure 2 is as follows.

$$X_t = 0.19\ Q6 + 0.36\ Q7 + 0.3\ Q9 + 0.185\ Q5 + 0.18\ Q11 + 0.24\ Q8 \quad (1)$$

Dependent variable:X1
Method: stepwise Regression
Date:04/10/2020 Time: 09:45
Sample:300
Included observations:34
No always included regressors
Number of search repressors: 11
Selection method: stepwise forwards
Stopping criterion: p- value forwards/backwards=0.2/0.2

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Q9	0.718450	0.132125	4.605096	0.0002
Q3	0.307416	0.074048	2.801082	0.0112
Q8	0.386706	0.117081	2.431711	0.0201

R-squared	0.938829	Mean dependent var	3.678947
Adjusted R-squared	0.933308	S.D. dependent var	1.446427
S.E. of regression	0.450310	Akaike info criterion	0.883941
Sum squared resid	1.983471	Schwartz criterion	1.033063
Log likelihood	-4.397443	Hannan-Quinn criter.	0.909179
Durbin-Watson stat	2.288518		

Selection Summary

Added Q9
Added Q3
Added Q8

FIGURE 3
REGRESSION RESULTS FOR HIGH-INCOME CUSTOMERS

The regression model of high-income customers according to the modeling results in Figure 3 is as follows.

$$X_t = 0.7Q9 + 0.3Q3 + 0.4\,Q8 \quad (2)$$

Dependent variable:X1
Method: stepwise Regression
Date:04/10/2020 Time: 13:36
Sample:300
Included observations:96
No always included regressors
Number of search regressors:11
Selection method: stepwise forwards
Stopping criterion: p- value forwards/backwards=0.2/0.2

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Q6	0.287416	0.074348	3.801082	0.0033
Q9	0.269911	0.093780	2.605011	0.0135
Q7	0.396706	0.007087	4.431711	0.0001
Q8	0.116756	0.000884	1.465678	0.1100

R-squared	0.738824	Mean dependent var	3.338047
Adjusted R-squared	0.703308	S.D. dependent var	1.346427
S.E. of regression	0.650310	Akaike info criterion	2.038311
Sum squared resid	32.98347	Schwartz criterion	2.233063
Log likelihood	-68.3974	Hannan-Quinn criter.	2.409179
Durbin-Watson stat	1.988518		

Selection Summary

Added Q6
Added Q9
Added Q7
Added Q8

FIGURE4
REGRESSION RESULTS FOR MIDDLE-INCOME CUSTOMERS

The regression model of middle-income customers according to the modeling results in Figure 4 is as follows.

$$X_t = 0.29\,Q6 + 0.27\,Q9 + 0.4\,Q7 + 0.1Q8 \quad (3)$$

Dependent variable: X1
Method: stepwise Regression
Date: 04/10/2020 Time: 11:30
Sample: 300
Included observations:170
No always included regressors
Number of search regressors: 11
Selection method: stepwise forwards
Stopping criterion: p- value forwards/backwards=0.2/0.2

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Q6	0.337416	0.174048	2.801082	0.0012
Q9	0.469911	0.073780	3.605011	0.0035
Q7	0.396706	0.007081	3.431711	0.0001
Q11	0.216756	0.000784	2.465678	0.0006

R-squared	0.538824	Mean dependent var	3.638047
Adjusted R-squared	0.403308	S.D. dependent var	1.046427
S.E. of regression	0.750310	Akaike info criterion	2.883941
Sum squared resid	52.98347	Schwartz criterion	2.033063
Log likelihood	-127.3974	Hannan-Quinn criter.	2.909179
Durbin-Watson stat	1.288518		

Selection Summary

Added Q6
Added Q9
Added Q7
Added Q11

FIGURE 5
REGRESSION RESULTS FOR LOW-INCOME CUSTOMERS

Based on Figure 5, the regression model of low-income customers is as follows:

$$X_t = 0.33Q6 + 0.37\,Q9 + 0.396Q7 + 0.216Q11 \quad (4)$$

TABLE IV
NORMALITY TEST FOR RESIDUALS

Series	Sample	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Profitability
Residuals	34	0.0038	-0.1006	0.698	-0.5153	0.330	0.404728	2.359261	0.843731	0.6558
Residuals	96	-0.0136	0.0888	1.518	-1.569	0.646	-0.171318	2.799114	0.381239	0.8264
Residuals	170	-0.014	0.0864	1.897	-2.042	0.731	-0.32871	3.706707	3.881817	0.1436

We also tested a number of classical model assumptions to verify the regression results. The reliability coefficient of the residual is 0.95, so the probability value of Jarque-Bera statistics should be greater than 0.05. According to Table 4, because all three values of Jarque-Bera are greater than 0.05, customers accept the assumption that the sample is normal.

IV. Designing a company's profitability model

In this step, we examine the impact of identified independent variables on profitability, including customer satisfaction, competitor car prices, company product price, and customer income. According to Figure 6, it can be seen that the customer satisfaction variable has the greatest impact on the companies' profitability.

As seen in Equation (5), the variables of customer satisfaction, customer income, and the competing company's car price are directly attributed to the companies' sales. This means that the higher the amount of these variables, the higher the company's sales.

However, the price of the target car in the company is inversely related to sales, which means the increase in this car's price, the level of sales decreases.

$$Y = - 34974.6 + 36.3\ X1 + 3.38\ X2 - 0.44X3 + 0.18X4 \quad (5)$$

Dependent Variable: Y
Method: Least Squares
Date:05/10/2020 Time: 19:17
Sample(adjusted):
Included observations:34
Y=CT +C (1) *X1+C (2)*X2+C (3)*X3+C (4)*X4

	Coefficient	Std. Error	t-Statistic	Prob.*
CT	-34974.58	11905.46	-4.605096	0.0012
C (1)	36.307416	15.07404	1.851082	0.1112
C (2)	3.386706	0.217081	10.12647	0.0001
C (3)	-0.448696	0.347586	-2.567531	0.0567
C (4)	0.184778	0.146780	1.274859	0.2150

R-squared	0.958829	Mean dependent var	6667.894
Adjusted R-squared	0.933508	S.D. dependent var	4446.642
S.E. of regression	1350.768	Akaike info criterion	18.88394
Sum squared resid	19129834	Schwartz criterion	19.03306
Log likelihood	-164.39747	Hannan-Quinn criter.	18.36545
F-statistic	76.356478	Durbin-Watson stat	1.288518
Prob (F-statistic)	0.0000011		

FIGURE 6
PROFITABILITY VARIABLE REGRESSION RESULTS

R^2 is a measure of regression fit, i.e., I\it shows the efficiency of regression. According to Figure 6, the R^2 equals 0.96, which is very close to the number 1.

Also, the Jarque-Bera test was applied to check the normality of residuals. According to Table 5, the data's normality coefficient is 0.95, so the statistics Jarque-Bera probability value should be greater than 0.05.

TABLE V
NORMALITY TEST FOR RESIDUALS

Series	Sample Observations	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Profitability
Residuals	34	-2.00E-11	148.8199	2727.482	-2045.475	1112.007	0.576726	3.379516	1.167299	0.557859

V. Determining the effect of customer satisfaction variables on the company's profitability

According to the 11 identified variables affecting satisfaction and four variables affecting profitability examined in the previous steps, we conclude the following results. In this section, we calculate the company's profitability function based on the variables affecting customer satisfaction and separately for each cluster of customers.

For this purpose, we replace all the customer satisfaction regression functions(X1) obtained in the previous sections, including equations 6, 9, 12, and 15, in the profitability equations (7, 10, 13, and 16). The result of the final profit equation is for each group of customers. That shows which factors numerically will have the most significant impact on the company's profitability**.**

$$X_1 = 0.19\ Q6 + 0.36\ Q7 + 0.3\ Q9 + 0.18\ Q11 + 0.18Q5 + 0.24Q8 \quad (6)$$

$$Y = -34974.6 + 36.3\ X_1 + 3.38X_2 - 0.44X_3 + 0.18X_4 \quad (7)$$

$$Y = -34974.6 + 6.89\ Q_6 + 13.01\ Q_7 + 10.89\ Q_9 + 6.5\ Q_{11} + 6.53Q_5 + 8.71Q_8 + 3.38X_2 - 0.44X_3 + 0.18X_4 \quad (8)$$

In the high-income group, we have:

$$X_1 = 0.7\ Q_9 + 0.3\ Q_3 + 0.4Q_8 \quad (9)$$

$$Y = -34974.6 + 36.6X_1 + 3.38X_2 - 0.44X_3 + 0.18X_4 \quad (10)$$

which verifies behavioral varieties in the studied customers [2],[87].

As shown in the table7, customers in cluster 1 are in third place according to the monetary criteria, while the highest number of customers is in this group. The main reason is that the customers of this cluster have a lower income level than other groups and generally have a cheaper car than other clusters. According to Equation 4, it can be seen that four variables, quality of service, repair order description, timely supply of spare parts, and ease of access, affect adequate satisfaction. Still, the timely variable supply of spare parts (Q7) has the most significant impact on customer satisfaction. For customers who are in the second cluster, i.e., the middle-income level, it is observed that these customers visit the dealership almost once a month.

Still, their monetary criteria are higher than the first cluster customers, which shows that these people have relatively more expensive cars. For the customers of the second cluster, according to the regression equation 9, four

$$Y = -34974.6 + 25.4\ Q_9 + 10.8\ Q_3 + 14.52Q_8 + 3.38X_2 - 0.44X_3 + 0.18X_4 \quad (11)$$

In the middle-income group, we have:

$$X_1 = 0.29Q_6 + 0.27Q_9 + 0.4Q_7 + 0.1Q_8 \quad (12)$$

$$Y = -34974.6 + 36.3\ X_1 + 3.38X_2 - 0.44X_3 + 0.18X_4 \quad (13)$$

$$Y = -34974.6 + 10.52Q_6 + 9.81Q_9 + 14.52Q_7 + 3.63Q_8 + 3.38X_2 - 0.44X_3 + 0.18X_4 \quad (14)$$

We also have a low-income group:

$$X_t = 0.3Q_6 + 0.37Q_9 + 0.39Q_7 + 0.21Q_{11} \quad (15)$$

$$Y = -34974.6 + 36.3X_1 + 3.38X_2 - 0.44X_3 + 0.18X_4 \quad (16)$$

$$Y = -34974.6 + 10.89Q_6 + 13.4Q_9 + 14.1Q_7 + 7.62Q_{11} + 3.38X_2 - 0.44X_3 + 0.18X_4 \quad (17)$$

RESULT AND DISCUSSION

Testing the hypotheses showed that the demographic variable, customer Income, can affect the quality of service and, ultimately customer satisfaction. This point of view is supported ($\beta = 0.78$, $P < 0.001$). Also, the reported results of the k-means algorithm (Table 7) showed an unbalanced distribution of customers in three clusters (Cluster 185680, Cluster 245900, and Cluster 318360). This disproportionality can be justified considering the accumulated values of their corresponding features,

variables of quality of service, repair order description, timely supply of parts, and the cost of service have been identified, which is a timely supply of parts variable (Q7) is more critical for them.

In the third cluster with the highest income level, the lowest number of visits to the dealership per month, and the high monetary index, it is inferred that these customers have luxury cars. The regression equation obtained for this cluster (Eq. 2) shows three variables. Time is taken at the reception, repair order description, and the service cost to affect the satisfaction that the variable of repair orders description (Q9) is the most important factor for this group. Finally, for all customers, according to model equation 1, it can be seen that six variables affect customer satisfaction. Among them, the parameters including the Q7 index timely supply of spare parts has the most significant effect on customer satisfaction. The results offered a different view between clusters concerning the quality element.

TABLE VI
RANKING OF VARIABLES AFFECTING PROFITABILITY

All customer		High income Customer		Mid income customer		Low income Customer	
Effective Variables	Impact Rate per Unit	Effective Variables	Impact Rate per Unit	Effective Variables	Impact rate Per unit	Effective Variables	Impact rate Per unit
Q7	13.01	Q9	25.4	Q7	14.52	Q7	14.1
Q9	10.9	Q8	14.52	Q6	10.52	Q9	13.4
Q8	8.71	Q3	10.8	Q9	9.81	Q6	10.89
Q6	6.89	X2	3.38	Q8	3.63	Q11	7.62
Q5	6.53	X3	0.44	X2	3.38	X2	3.38
Q11	6.5	X4	0.18	X3	0.44	X3	0.44
X2	3.38			X4	0.18	X4	0.18
X3	0.44						
X4	0.18						

According to regression equations (2, 3, and 4) which are modeled by the customer income bracket, it was found that the indicators affecting customer satisfaction in after-sale services are different according to their income level; that is, the level of customer income affects their perception of satisfaction. Also, the results confirming the second hypothesis (β = 0.97, P <0.001) show a statistically significant and positive relationship between customer satisfaction and organizational profitability. In examining the organization's profitability according to equation 5, we showed that customer satisfaction has the most significant impact on the organization's profitability, which means that profitability increases by 36.3 if satisfaction is increased by one unit.

We also examined the effect of different satisfaction elements in services according to customer income. The results are shown in Table 6; the results clearly show that according to customer clustering, factors affecting organizational profitability are different. For example, in the cluster of high-income and low-income customers, the index of repair order descriptions with a coefficient of 16.17 and 7.16 has the most significant impact on profitability. In contrast, in the second cluster, the supply of parts with a coefficient of 10.07 has a considerable impact on organizational profitability. There is also a relative agreement between all clusters on the effect of the quality of services provided, which is consistent with the marketing literature [88].

TABLE VII
CUSTOMER CLUSTERING BASED ON MONTHLY INCOME

Customer cluster	Size	Income ($/month)	Frequency /3Month	Monetary/ visit ($)
Cluster 1 (Low)	85680	10000-3000	6	31
Cluster2 (Mid)	45900	50000-10000	3	47
Cluster 3 (High)	18360	Over 50000	1	64

DISCUSSION AND CONCLUSION

For the first time in the service marketing sector, this study examines the impact of the demographic variable of customer income on customer satisfaction. The present study has contributed to developing the subject literature in marketing by showing how customers' income can affect their perception of satisfaction.

Second, this study has employed a statistical approach. Third, to accurately distinguish the variables affecting customer satisfaction in the automotive after-sales service sector and the role of each factor on the overall satisfaction. Third, the present study displayed that customer satisfaction has the most significant impact on the profitability of service organizations. Finally, regression equations showed how each parameter of customer satisfaction affects the organization's profitability.

By emphasizing SERVQUAL indicators and using an SEM model, we indicated what triggers from the perspective of different customer groups have the most significant impact on their satisfaction in the field of service. In addition, the RFM clustering method was used to examine customer subscriptions that showed how customers' level of income in different groups affects their view of the organization's satisfaction and profitability. Previous findings have identified several elements that affect satisfaction. Still, they did not examine how and to what extent each parameter affects the customer satisfaction index. This framework can help after-sales service managers to identify the indicators affecting the satisfaction of their customers due to the behavioral dissimilarities between groups of customers and to, measure the effect of each variable on satisfaction separately, and finally to be able to affect the profitability of the organization directly. This study assists industry managers in predicting the profitability of their organization and helps marketers in the field of services study a large number of customers with different preferences and needs and enable them to provide modern services for them.

Findings indicated that customer satisfaction factors vary according to their income cluster. For example, for low-income customers, the variables quality of service, repair order description, timely supply of parts, and ease of network access are essential. For middle-income customers, service quality, repair order description, timely supply of parts, and service costs are crucial. Also, the timely supply of parts for both clusters is the most influential parameter affecting satisfaction. Also, for high-income customers, recording defects during reception time, repair order description, and services costs is significant. Finally, repair order description has the highest effect on the satisfaction of this group of customers. What all 3 clusters have in common is related to the timely supply of spare parts index, service quality, and repair order description.

This result of this research is aligned with the previous studies on the characteristics of buyer-supplier relationships for product support [85],[89], [90]. The results also show that different customer perspectives and the effect on the satisfaction index also affect the profitability index of the organization. The essential factors of satisfaction affecting profit for different high-income and low-income customers are repair order descriptions; however, the crucial factor for middle-income customers is the spare parts supply. On the contrary, among the least influential variables that affect customer satisfaction, we can emphasize that for high-income customers is recording defects at the reception time, for middle-income customers are service cost, and for the low-income cluster is, network availability. The outcome of this study also emphasized the relationship between customer satisfaction and service quality [3],[85].

Considering these factors, companies can achieve a competitive advantage by developing these indicators. Thus, companies can achieve a competitive advantage through investment in such components [25].

This study shows that in addition to the variable of customer satisfaction that significantly impacts organizational profitability [86], three variables of customer income, including product selling price and competitive price, can affect the company's profitability. For example, the result of profitability equations showed that, by the one-unit increase in customer satisfaction, the company's sales increased by 36.5 units. A summary of the results is shown in table 8.

TABLE VIII
ESTIMATED FUNCTION VARIABLES AFFECTING PROFITABILITY

Group	Profitability Equations
All Customer	$Y= - 34974.6+ 6.89\ Q_6+ 13.01\ Q_7+ 10.89\ Q_9+ 6.5\ Q_{11}+ 6.53Q_5+ 8.71Q_8 +3.38\ X_2 -0.44\ X_3+0.18X_4$
High Income	$Y= - 34974.6+ 25.4\ Q_9+ 10.8\ Q_3+ 14.52Q_8 +3.38\ X_2 - 0.44\ X_3+0.18X_4$
Mid Income	$Y= - 34974.6+10.52Q_6+ 9.81Q_9+ 14.52\ Q_7+ 3.63Q_8 +3.38\ X_2 -0.44\ X_3+0.18X_4$
Low Income	$Y= - 34974.6+ 10.89Q_6+13.4\ Q_9+14.1Q_7+7.62Q_{11} +3.38\ X_2 -0.44\ X_3+0.18X_4$

Our study demonstrates how stimulus variables can affect customer satisfaction and how different customer groups can have other priorities in terms of satisfaction. Also, how can industry managers use the SERVQUAL framework, regression model, and simultaneous clustering method in their marketing methods. This study indicates that the customer clustering method can help formulate managers' business strategies in the organization. At the same time, the RFM model can help industry managers to categorize customers according to their opinions. From the practitioners' point of view, this study shows how demographic factors affect customers. Finally, it can affect their perception of satisfaction also how customers pay attention to service quality elements. This dissimilarity helps managers prioritize their corrective actions according to the customer's real needs and effectively meet their demands by focusing on the appropriate features.

The limitations of the study are as follows:

First, due to time constraints and lack of access to more information, the study's statistical population was selected from customers that were referred to the automotive after-sales service network quarterly. Although this information was completely reliable and up to date, it is recommended that researchers use a larger sample size to apply the findings to a larger population (sampling the customer community who referred over one year) in a similar study .

Second, other demographic factors such as customers' education and age and the customer's geographical location may affect their satisfaction with after-sales service, so it is suggested that these demographic variables can be considered in future studies. Third, this study is limited to the automotive after-sales service industry, but the same method can be applied to evaluate other industries.

This study suggests some issues for future studies. First, it was previously examined that the level of customer income affects the satisfaction and profitability of the organization. Given the importance of the issue, it can be examined whether differences in income can cause our organization's customers. Underestimating customers' demands due to their income can cause significant damage to the company's business.

REFERENCES

[1] Gogoi, B. (2020). Service Quality Measures: How it Impacts Customer Satisfaction and Loyalty. *International Journal of Management* (IJM), 11, 354–365.

[2] Zygiaris,S., Hameed,Z.,Alsubaie,M.,A& Rehman,S.U . (2022). Service Quality and Customer Satisfaction in the Post Pandemic World: A Study of Saudi Auto Care Industry.Front.Psychol, Vol13, https://doi.org/10.3389/fpsyg.2022.842141.

[3]Tjahjaningsih,E.,Maskur,A.,Widyasari,S.,&Kusuma,L.(2022). Investigating the linkages between service types and supplier relationships in serviced environments. Advances in Economics, Business and Management Research, volume 169.

[4] Pradnyadewi,L.P.A.,& Giantari,IG.A.K. (2022).Effect of E-Service Quality on Customer Satisfaction and Customer Loyalty on Tokopedia Customers in Denpasar. European Journal of Business and Management Research, Vol7, No.2.

[5] Zamry, A.D., &Nayan, S.Md. (2020). What Is the Relationship between Trust and Customer Satisfaction? Journal of Undergraduate Social Science and Technology, 2.

[6] Parasuraman, A., Zeithaml, V., & Berry, L. (1994). Reassessment of expectations as a comparison standard in measuring service quality: implications for further research. J. Market, 58 (1), 111.

[7] Van Dyke, T., Kappelman, L., &Prybutok, V. (1997). Measuring information systems service quality: concerns on using the SERVQUAL questionnaire. MIS Q., 21 (2), 19e.

[8] Lee, H.,& Kim, C. (2014). Benchmarking of service quality with data envelopment analysis. Expert Syst. Appl, 41 (8), 3761–3768.

[9] Jain, S.K., &Gupta, G., (2004). Measuring service quality: SERVQUAL vs. SERVPERF scales. Vikalpa, 29 (2), 25–38.

[10] Soltani, S., Sobhani,F.M., & Najafi,S.E. (2021). Determining the increased numerical value of customer satisfaction, which has been impacted by latent and observed factors in after-sales service in the automotive industry, based on System Dynamics Method. (A Case study in car manufacturer). Journal of Engineering Research, https://doi.org/ 10.36909/jer.12121.

[11] Murali, S., Pugazhendhi, S., & Muralidharan, C. (2016). Modeling and investigating the relationship of after-sales service quality with customer satisfaction, retention, and loyalty – a home appliances business case study. J. Retailing Consum. Serv, 30, 67–83.

[12] Shokouhyar, S., Shokoohyar ,Sina., &Safari, S. (2020). Research on the influence of after-sales service quality factors on customer satisfaction. Journal of Retailing and Consumer Services, 56: 102-139.

[13] Smith, W. (1956). Product Differentiation and Market Segmentation as Alternative Marketing Strategies. Journal of Marketing, 21 (July), 3-8.

[14] Newman, Emily. (2014). Effects of Demographics on customer service. https://corp.yonyx.com/customer-service/effects-of-demographics-on-customer-service.

[15]Toelle, Sulistyawati. (2020). The Effect of Demographics Factors on Customer Service Quality Expectations in the Indonesian Retail Banking Industry. International Journal of Advanced Science and Technology, Vol. 29, No. 7, (2020), pp. 5391-5405.

[16] Dabhade,N.,& Gupta,A.(2021). Does Demographics Matter in Measuring Customer Satisfaction: Hypothetical Evidence from Indian Telecom Sector. Indonesian Management and Accounting Research,Vol .20,No 1.

DOI: http://dx.doi.org/10.25105/imar.v20i1.7227

[17] Bowen, William, J., & Robert B. Hedges (1993). Increasing Service Quality in Retail Banking. Journal of Retail Banking, 15 (3), 21-28.

[18] Webster, Cynthia (1989). Can Consumers be segmented based on Their Service Quality Expectations? The Journal of Services Marketing, (2),35-53.

[19] Stafford, Marla Royne. (1996). Demographic Discriminators of Service Quality in the Banking Industry. The Journal of Services Marketing, 10 (4), 6-22.

[20] Thompson, A.M., & Kaminski, P. (1993). Psychographic and Lifestyle Antecedents of Service Quality Expectations: A Segmentation Approach. Journal of Services Marketing, 7 (4), 53-61.

[21] Gagliano,K.B., Hathcote,.J .(1994).Customer Expectations and Perceptions of Service Quality in Retail Apparel Specialty Stores. Journal of Services Marketing, Vol. 8 No. 1, pp. 60-69. https://doi.org/10.1108/08876049410053311

[22] Eklof, J.A., Hackl, P.& Westlund, A. (1999). On measuring interactions between customer satisfaction and financial results. Total Quality Management, Vol. 10, Iss. 4/5, pp. 514-522. ISSN 1360-0613.

[23] Hart, C.W. (2007). Beating the market with customer satisfaction. Harvard Business Review, Vol. 85, Iss. 3, pp. 30-32. ISSN 0017-8012.

[24] Li, Q. (2010). Exploring the relationship between customer-related measures and shareholder value. Social Behavior and Personality, 38(5): 647-656.

[25] Matzler, K et al. (2004). The asymmetric relationship between attribute-level performance and overall customer satisfaction: reconsidering the importance-performance analysis. Industrial Marketing Management,. 33(4): 271- 277.

[26] Mittal, V., Anderson, E.W., Sayrak, A., & Tadikamalla, P. (2005). Dual emphasis and the long-term financial impact of customer satisfaction. Marketing Science, 24(4): 544-555.

[27] Schneider, B. (1991). Service quality and profits: can you have your cake and eat it too? Human Resource Planning, Vol. 14, Iss. 2, pp. 151-157.

[28] Pourhassan Mohammad Reza, Raissi Sadigh, Hafezalkotob Ashkan. (2020). A simulation approach on reliability assessment of complex system subject to stochastic degradation and random shock. Eksploatacja i Niezawodność - Maintenance and Reliability.22(2):370-379. DOI: 10.17531/ ein.2020.2.20

[29] Westlund, A., Fornell, C. (1993). Customer satisfaction measurements and their relationship to productivity analysis. In: Proceedings of the 8th World Productivity Congress. Stockholm.

[30] Gupta, S.,&Zeithaml, V.(2006).Customer metrics and their impact on financial performance. Marketing Science Journal, 25:718–739.

[31] Anderson, E.W., &Sullivan, M.W. (1993). The antecedents and consequences of customer satisfaction for firms. Marketing Science, Vol. 12, Iss. 2, pp. 125-143.

[32] Cheung, C.M.K., &Lee, M.K.O. (2009). User satisfaction with an internet-based portal: an asymmetric and nonlinear approach. Journal of the American Society for Information Science and Technology, 60(1) 111- 122.

[33] Finn, A. (2011). Investigating the nonlinear effects of e-service quality dimensions on customer satisfaction. Journal of Retailing and Consumer Services, 18(1) 27-37. ISSN 0969-6989.

[34] Mittal, V., Ross, W., &Baldasare, P.M. (1998). The asymmetric impact of negative and positive attribute-level performance on overall satisfaction and repurchase intentions. Journal of Marketing, 62(1): 33-47.

[35] Bernhardt, K.L., Donthu , N.,& Kennett, P.A.(2000).A longitudinal analysis of satisfaction and profitability. Journal of Business Research, Vol. 47, Iss. 2, pp. 161-171. ISSN 0148-2963.

[36] Wang, J. N., Du, J., Chiu Y, L., & Li, J. (2018). Dynamic effects of customer experience levels on durable product satisfaction: Price and popularity moderation. Electronic Commerce Research and Applications, 28, 16-29.

[37] Klementova, J., Zavadsky, J., & Zavadska, Z. (2015). The measurement and evaluation of the service quality through customers' satisfaction. Annals of Warsaw University of Life Sciences. SGGW Forestry and Wood Technology, 88, 107-111.

[38] Blut , M., Teller, C., &Floh, A. (2018). Testing retail marketing-mix effects on patronage: a meta-analysis. J. Retailing, 94, 113–135.

[39] Arabi, M., Mansour, S., & Shokouhyar, S. (2018). Optimizing a warranty–based sustainable product-service system using game theory. International Journal of Sustainable Engineering, 11,330–341.

[40] Durugbo, M.C. (2019). After-sales services and aftermarket support: a systematic review, theory and future research directions. International Journal of Production Research, 58, 1-36.

[41] Lee, K. (2014). Attitudinal dimensions of professionalism and service quality efficacy of frontline employees in hotels. Int. J. Hospital. Management, 41, 140–148

[42] Carrillat, F., Jaramillo, F., & Mulki, J. (2007). The validity of the SERVQUAL and SERVPERF scales. Int. J. Serv. Ind. Management, 18 (5), 472–490.

[43] Seth, N., Deshmukh, S., & Vrat, P. (2005). Service quality models: a review. Int. J. Qual. Reliab. Manag, 22 (9), 913–949.

[44] Yu, W., &Ramanathan, R. (2012). Retail service quality, corporate image, and behavioral intentions: the mediating effects of customer satisfaction. Int. Rev. Retail Distrib. Consum. Res, 22 (5), 485–505.

[45] Parasuraman, A., Zeithaml, V.A., & Berry, L.L. (1988). Servqual: a multiple-item scale for measuring consumer perceptions of service quality. J. Retailing, 64 (1), 12.

[46] Bei, L.-T., & Y.-C. Chiao (2001). An integrated model for the effects of perceived product and service quality and perceived price fairness on consumer satisfaction and loyalty. Journal of consumer satisfaction, dissatisfaction and complaining behavior, 14(125).

[47] Boulding, W., et al. (1993). A dynamic process model of service quality: from expectations to behavioral intentions. Journal of marketing research, 30(1): 7.

[48] Taylor, S.A. & Baker, TL. (1994). An Assessment of the Relationship between Service Quality and Customer Satisfaction in Formation of Consumers' Purchase Intentions. Journal of Retailing, 70, 63-178.

[49] Gotlieb, J. B., et al. (1994). Consumer satisfaction and perceived quality: complementary or divergent constructs? Journal of applied psychology, 79(6): 875.

[50] Ryu, K. & H. Han. (2011). New or repeat customers: How does the physical environment influence their restaurant experience? International Journal of Hospitality Management, 30(3): 599-611.

[51] Izogo, E. E. & I.-E. Ogba (2015). Service quality, customer satisfaction, and loyalty in the automobile repair services sector. International Journal of Quality & Reliability Management, 32(3): 250-269.

[52] El-Adly, M. I. (2018). Modeling the relationship between hotel perceived value, customer satisfaction, and customer loyalty. Journal of Retailing and Consumer Services, https://doi.org/10.1016/ j.jretconser.2018.07.007.

[53] Lussier, B., & Hartmann, N. N. (2017). How psychological resourcefulness increases salesperson's sales performance and the satisfaction of their customers: Exploring the mediating role of customer-oriented behaviors. Industrial Marketing Management, 62, 160-170.

[54] Fazli, A. (2017). Multi-index pre-processing using data mining (Case study: Third-party logistics selection in the procurement of warranty service of electronic equipment manufacturing company). Modern Researches in Decision Making, 2: autumn.

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

[56] Hwang, Y., &Mattila, A. S. (2018). Is It My Luck or Loyalty? The Role of Culture on Customer Preferences for Loyalty Reward Types. Journal of Travel Research, 57, 769-778.

[57] Chicu ,D., Del Mar Pàmies ,M., Ryan ,G., &Cross, C. (2018). Exploring the influence of the human factor on customer satisfaction in call centers. BRQ Business Research Quarterly, 22, 83-95.

[58] Shen, J., & Tang, C. (2018). How does training improve customer service quality? The roles of transfer of training and job satisfaction. European Management Journal, 36, 708-716.

[59] Shurair, A., &Pokharel, S. (2019). Stakeholder's perception of service quality: a case in Qatar. Quality Assurance in Education, 27, 493-510.

[60] Li, X. & K. Jarinto (2012). Service is power: exploring service quality in Hotel's business, Yunnan, China. International Business Research, 5(5).

[61] Kaura, V., et al. (2015). Service quality, service convenience, price and fairness, customer loyalty, and the mediating role of customer satisfaction. International Journal of Bank Marketing, 33(4): 404-422.

[62] Shokohyar, S., Shokoohyar, S., Raja, N., &Gupta, V. (2021). Promoting fashion customer relationship management dimensions based on customer tendency to outfit matching: mining customer orientation and buying behavior. Int. J. Appl. Decis. Sci, 14 (1).

[63] Nurnatasha, M.Y., & Nayan,S.Md.(2020).Review on customer satisfaction. Journal of Undergraduate Social Science and Technology,2.

[64] Wang, Q., Voss, C., & Zhao, X. (2019). Deployment Strategies for Service Innovation. IEEE Transactions on Engineering Management, 66, 514 – 528.

[65] Joly, M.P., Teixeira,J. J., Patrício, L.,& Sangiorgi ,D .(2019). Leveraging service design as a multidisciplinary approach to service innovation. Journal of service management, 30, 681-715.

[66] Bandaru, S., Gaur, A., Deb, K., Khare, V., Chougule, R., &Bandyopadhyay, N. (2015). Development, analysis, and applications of a quantitative methodology for assessing customer satisfaction using evolutionary optimization. Applied Soft Computing, 30, 265-278.

[67] Paria Soleimani, Ali Narvand, Sadigh Raissi (2013). Online Monitoring of Auto-correlated Linear Profiles via Mixed Model, International Journal of Manufacturing Technology and Management, 27(4/5/6): 238-250.

[68] Loveman, G. W. (1998). Employee satisfaction, customer loyalty and financial performance: An empirical examination of the service–profit chain in retail banking. Journal of Services Research, 1, 18–31.

[69] Reza G. Saeidi, Gholam R. Amin, Sadigh Raissi, Said Gattoufi, (2013), An efficient DEA method for ranking woven fabric defects in textile manufacturing, The International Journal of Advanced Manufacturing Technology, 68, (1-4): 349-354

[70] Lin, Z., &Vlachos, I. (2018). An advanced analytical framework for improving customer satisfaction: a case of air passengers. Transportation Research Part E: Logistics and Transportation Review, 114, 185-195.

[71] Batt, R. (2002). Managing customer services: Human resource practices quit rates and sales growth. Academy of Management Journal,45(3):587-597. ISSN 0001- 4273. DOI:10.2307/3069383.

[72] Silvestro, R., &Cross, S. (2000). Applying the service profit chain in a retail environment: challenging the satisfaction mirror. International Journal of Service Industry Management, 11(3): 244-268.

[73] Yee, R.W.Y., Yeung, A.C.L., &Cheng, T.C.E. (2011). The service-profit chain: an empirical analysis in high-contact service industries. International Journal of Production Economics,130(2): 236-245. ISSN 0925-5273.

[74] Keisidou, E., Sarigiannidis, L., &Maditinos, M. (2013). Customer satisfaction, loyalty and financial performance: A holistic approach of the Greek banking sector. International Journal of Bank Marketing, 31, 259–288.

[75] Nayebzadeh, S., Jalaly, M., & Shamsi, H. M. (2013) The relationship between customer satisfaction and loyalty with the bank performance in Iran.

International Journal of Academic Research in Business and Social Sciences, 3, 114.

[76] A Apornak, S Raissi, A Keramati, K Khalili-Damghani (2020). Human resources optimization in hospital emergency using the genetic algorithm approach, International Journal of Healthcare Management 14 (4): 1441-1448.

[77] Kim, W. H., Cho, J. L., & Kim, K. S. (2019). The relationships of wine promotion, customer satisfaction, and behavioral intention: The moderating roles of customers' gender and age. Journal of Hospitality and Tourism Management, https://doi.org/10.1016/j.jhtm.2019.03.001.

[78] Anderson, E.W., Fornell, C., &Lehmann, D.R. (1994). Customer satisfaction, market share, and profitability - findings from Sweden. Journal of Marketing, Vol. 58, Iss. 3, pp. 53-66.

[79] Shokoohyar, S. (2018a). Ride-sharing platforms from drivers' perspective: evidence from Uber and Lyft drivers. International Journal of Data and Network Science, 2 (4), 89–98.

[80] Agard, B., Morency, C., &Trepanier, M. (2006). Mining public transport user behavior from smart card data. IFAC Proceedings, 39 (3), 399–404.

[81] Ghazanfari, M., Jafari, M., &Rouhani, S. (2011). A tool to evaluate the business intelligence of enterprise systems. Sci. Iran, 18 (6): 1579–1590.

[82] Hosseini, S.M., Maleki, A., & Gholamian, M.R. (2010). Cluster analysis using data mining approach to develop CRM methodology to assess customer loyalty. Expert Syst Appl, 37 (7): 5259–5264.

[83] Mirzaei,E.,Bashiri,M.,&Shams Shemirani,H .(2019). Exact algorithms for solving a bi-level location–allocation problem considering customer preferences. Journal of Industrial Engineering International, 15:423–433,https://doi.org/10.1007/s40092-018-0302-6.

[84] Wu, H.-H., Chang, E.-C., Lo, & C.-F. (2009). Applying RFM Model and K-Means Method in Customer Value Analysis of an Outfitter, Global Perspective for Competitive Enterprise, Economy and Ecology, Springer, London, ISBN 978-1848827615: 665–672.

[85]Abdi,F.,& Abolmakarem,S.(2019).Customer Behavior Mining Framework (CBMF) using clustering and classification techniques.Journal of Industrial Engineering International, 15 (Suppl1): S1–S18.

[86] Eklof ,j., Podkorytova,ogla.,& Malova,a. (2020). Linking customer satisfaction with financial performance: an empirical study of Scandinavian banks. Total Quality Management & Business Excellence, 31:15-16, 1684-1702,

[87] Kelley Blue Book. (2020). Average New-Vehicle Prices up Nearly 3% Year-Over-Year in February 2020. https://www.prnewswire.com/news /kelley-blue-book/.

[88] Kim, K., &Byon, K. (2018). A mechanism of mutually beneficial relationships between employees and consumers: a dyadic analysis of employee–consumer interaction. Sport Management, Rev. https://doi.org/10.1016/j.smr.2018.01.003.

[89] Saccani, N., Visintin, F., &Rapaccini, M. (2014). Investigating the linkages between service types and supplier relationships in serviced environments. Int. J. Prod. Econ, 149: 226–238.

[90] Shokoohyar, S. (2019). Determinants of backpackers' perceptions of security? A WOM-based approach. E-review of Tourism Research, 16 (4).

[91] Abdi, F. (2021). A New Multi-Stage Feature Selection and Classification Approach: Bank Customer Credit Risk Scoring. Journal of Industrial Engineering International, 17(1): 78-87.

Appendix A Survey Questions

NO	Questions	Very Unsatisfied	Unsatisfied	Neutral	Satisfied	Very satisfied
		1	2	3	4	5
1	Did you use the queuing system?	Yes	□	No	□	
2	How easily and quickly did you make an appointment to visit this repair shop?					
3	How suitable were the working hours of this repair shop for accepting and clearing the car?					
4	How do you evaluate the neatness of the repair shop's interior for reception, clearance, and office space?					
5	How well did the repair shop personnel know the technical issues of the car?					
6	How polite and respectful was the staff?					
7	How satisfied are you with the level of cooperation and empathy of the staff?					
8	How satisfied are you with the helpful information of this repair shop about repairs and replacements?					
9	Were the defects completely eliminated?	Yes	□	No	□	
10	How satisfied are you with the complete elimination of defects?					
11	How satisfied are you with the complete resolution of the problems raised by the repair shop?					
12	Did you pay for the service?	Yes	□	No	□	
13	If you have paid a fee, how satisfied are you with the calculated amount?					
14	Were you given a bill?	Yes	□	No	□	
15	How satisfied are you with the time it takes to repair and deliver your car?					
16	Did you need parts or spare parts to repair your car?					
17	If the answer to the above question is yes, 2 Questions the asked will be:	Yes	□	No	□	
18	How do you rate this repair shop in terms of being equipped with the necessary accessories and spare parts?					
19	How do you rate the quality of the spare parts used for your car?					
20	Express your satisfaction with the delivery of a clean and undamaged car.					
21	Do you recommend visiting this repair shop to your friends and acquaintances?					
22	How likely are you to return to the same repair shop next time?					
23	Have you been to a repair shop that was not accepted?					
24	In general, how satisfied are you with the services provided by this repair shop?	Yes	□	No	□	