

ARTICLE

Impact of service quality on customer loyalty: A multi-analytic approach using neural network

Monika Agarwal ^{1, *}, Samridhi Tanwar ², Chandan Parsad ³ and Sanjeev Prashar ⁴

¹Jagan Institute of Management Studies, Rohini; IMSAR, Maharshi Dayanand University, Rohtak and ²The Technological Institute of Textile & Sciences, Bhiwani and ³IIM, Bodhgaya and ⁴IIM, Raipur

*monikaagg85@gmail.com

Abstract

The purpose of this study is twofold, first to explore the relationships among service quality dimensions and customer loyalty in the life insurance sector. The second aim is to find the sequence of significant service dimensions in predicting customer loyalty. A total sample of 431 customers from the top five private life insurance companies were surveyed. The multi-analytic approach: a combination of structural equation modeling and neural network model was used for the analytical process. The results from structural equation modeling revealed a significant and positive association of six service dimensions namely responsiveness, service availability, tangibility, reliability, assurance, and empathy with loyalty intentions of customers. The result of the neural network model showed that reliability is the best predictor of customer loyalty followed by responsiveness, assurance, tangibility, empathy, and service availability. The application of a multi-analytic approach (a combination of structural equation modeling and neural network) for understanding service quality-customer loyalty relationship can be of great help to private life insurance companies who are devising service strategies to influence loyalty intentions of customers to gain a competitive advantage in the market.

Keywords: Service Quality; Customer Loyalty; Life Insurance Sector; Structural Equation Modelling (SEM); Neural Network (NN)

1 Introduction

The insurance sector is important for the economic development and growth of a nation. Post-liberalisation, there has been a vigorous growth in Indian life and non-life insurance markets (IBEF, 2020). With fifty-seven insurance companies - twenty-four and thirty-three in the life and non-life insurance respectively, the competition in the Indian market has become extremely intense (IBEF, 2020). In 2018-19, the total premium collection touched INR 6775 billion, which was projected to grow at a compound annual growth rate of seven percent by 2025 (Intelligence, 2020). Major economic reforms, technological digitization, and re-imagined business models have played a game changer role in the Indian insurance industry (Mahyavanshi, 2020). Besides these, the dawn of market orientation in the insurance sector has hastened the intense competition (BimaBazaar, 2017) and changed the way in which insurance companies engaged with the customers

(IBEF, 2020). In such a competitive environment, companies, as well as customers, endeavor for a relationship that facilitates in deriving value for both these entities Pantouvakis and Lymperopoulos (2008); Manatt (2014). With the rise of aggregators and other digital comparison tools comes the commoditization of insurance (Insurance, 2017). Customers seek value in terms of quality services and satisfaction, whereas companies haul value from their loyal customers through profitability vide repurchase intention, cross-selling, positive feedback, and referrals to other target consumers (Museumbi, 2016; Naujoks et al., 2017; Tsoukatos and R, 2006). As per Boonlertvanich (2019), each company for its success requires to have well-built relationships with customers. Customer loyalty is the key to the profitability and growth of companies (Kampully et al., 2015; Mahyavanshi, 2020). Since the insurance industry operates in a highly complex and competitive environment, customer loyalty is considered to be one of the imperative aspects to attain a persistent competitive edge in the sector (Ansari and Riasi, 2016; Heskett et al., 1997; Naujoks et al., 2017; Riasi, 2015). Girdlestone (2018) has a view that intense competition in the insurance sector makes it difficult for the companies to attract and retain a customer. Mahyavanshi (2020) posited that insurance companies need to have customer experience as a pivot in their business strategies for garnering customer loyalty. Accordingly, high-quality interactions can instigate higher loyalty in customers. Hence, insurance companies need to explore innovative ways to build customer loyalty by offering an interconnected array of services that extend beyond insurance (Naujoks et al., 2017). To hold a strategic and successful placement in the market, service providers have a high and reasonable interest in the assessment of service quality (Brown and Swartz, 1989; Rudie and Wansley, 1985). Company (2017) served that delivery of expected service quality can lead to higher customer loyalty and more profits. Henceforth, it can be stated that the long-term success of life insurance companies can be achieved by providing good quality services and inspiring loyalty among customers.

Researchers have elucidated a positive relationship between service quality or its factors and customer loyalty, either directly or indirectly, in various service industries. Prominent among these include Fida et al. (2020); Kheng et al. (2010); Leninkumar (2016) in banking; Baba and Majeed (2018); Kumar (2017); Kumar et al. (2019) in the telecom; Alauddin et al. (2019) in the hotel; and Tareq and Nafez (2019) in the health industry. Hitherto not much experiential work is done on customer loyalty (Guillen et al., 2008) and its relationship with various service dimensions in the insurance sector (Tsoukatos and R, 2006). Being an elemental requirement for the existence of life insurance companies, the customer loyalty aspect requires adequate investigation. Hence, it becomes pertinent to analyze the relationship between the service quality dimensions and customer loyalty. Considering this, the study explores how various factors of service quality impacts customer loyalty in the life insurance sector.

Extant literature focuses only on the aggregate relationship of service quality and customer loyalty, while lesser importance is given to understand the relationship of service dimensions with customer loyalty in the insurance sector (Tsoukatos and R, 2006). Also, these studies have used general statistical techniques to examine linear relationships between the service quality and customer loyalty, and ignored the complex non-linear relationships (Bapat, 2017; Boonlertvanich, 2019; Caruana, 2002; Cronin and Taylor, 1992; Mohammed, 2013). However, the latest innovative techniques such as artificial neural networks are a better way for the decision-making process and to evaluate the complex non-linear relationship (Ansari and Riasi, 2016; Cabanillas et al., 2017). Therefore, this paper has used a neural network to determine the relative importance of significant service dimensions in predicting customer loyalty. The study explores the relationship of service quality dimensions and customer loyalty in the Indian life insurance sector using a combination of structural equation modeling and neural network model to determine the service dimension(s) that are the best predictor of customer loyalty.

In its endeavor to develop a model depicting the relationship of service quality dimensions with customer loyalty in the context of life insurance, the present paper has been structured as follows. It begins with the discussion on the theoretical framework and review of literature related to the study constructs. This is followed by a discussion on the construction of hypotheses and research methodology. Next sections present analyses of data and discussion on results. The paper concludes with the implications and limitations of the study.

2 Theoretical background

Service quality is the extent of incongruity between consumers' normative expectations and their perception of the service performance (Gronroos, 1984; Parasuraman et al., 1985). According to Kotler and Armstrong (2007), service quality reflects a company's ability to 'hang on its customers.' Essentially, service quality is measured vide a comparison between the expectations of customers about the outcome of the services and their perception of the way the services are delivered (J., 2015). Service quality is obligatory for endowing value to the customers and maintaining long-term relations with them (Sultana and S., 2010). According to Toran (1993), service quality forms the heart of processes, work, and service of the insurance companies. Higher service quality in the internal policies, practices, and services of the firm stimulates higher customer satisfaction leading to regular profits (Berry et al., 1988), higher customer perceived value and loyalty (Alauddin et al., 2019; Storbacka et al., 1994), which further leads to constructive results like positive word-of-mouth (Harrison-Walker, 2001), repeated sales, cross-selling (Taylor, 2001) and refusal to superior options (Jones et al., 2002).

Parasuraman et al. (1985) noted that service quality is composed of ten service dimensions. Subsequently, these dimensions were framed into SERVQUAL scale consisting of five dimensions namely tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman et al., 1988, 1991a,b). SERVQUAL scale has been applied by a vast gamut of researchers across various service industries including tourism (Alexris et al., 2002), public services (Brysl and Curry, 2001), e-business (Van et al., 2003). However, there was an absence of a particular method and a scale for service quality assessment across service industries. To beat this predicament, several scales had been simulated, modified, and formulated to assess services

by considering SERVQUAL as a base, which includes SERVPERF (Cronin and Taylor, 1992) for the hotels, clubs, and travel agencies; LODGSERV Knutson et al. (1990) for the hotels; SITEQUAL Yoo and Donthu (2001) for the Internet shopping; LibQUAL (Cook et al., 2001) for the library, SELEB Toncar et al. (2006) for the educational services, etc.

In the context of the insurance sector, (Mehta and Lobo, 2002) identified six dimensions of service quality – assurance, personalized financial planning, relationship with an agent, tangibles, corporate image, and competence. Later, Shu and Bala (2011) refined the SERVQUAL model and posited a seven-factor model with proficiency, media and presentations, physical and ethical excellence, service delivery process and purpose, security and dynamic operations, credibility, and functionality. Six dimensions namely, service delivery, sales agent quality, tangibles, empathy, value, core services in the insurance industry were posited by Mittal et al. (2013). Viewing SERVQUAL as inappropriate for a life insurance industry, Sharma and Shameem (2012) observed that the scale should swathe more elements for better understanding. Meanwhile, based on previous studies, Samarasinghe et al. (2018) developed a scale with thirty-five items for five dimensions of the SERVQUAL model pertinent for the life insurance sector.

According to Lovelock and Wirtz (2004), service quality is one of the key facets to achieve customer loyalty Lovelock and Wirtz (2004). Customer loyalty is defined as the potency of association between an individual outlook and repeats purchase behavior (Dick and Basu, 1994). It is manifested through intensely held devotion to purchase or show support to a favored product or service time and again in the future (Oliver, 2010). Extant literature exhibits that customer loyalty offers a competitive influence for the companies; and is positively related to their profit and market share (Reichheld, 1993). As per Donio et al. (2006), loyal customers are less influenced by the off-putting information regarding the products and services. Being a very critical requirement for the sustainability of the companies and to keep ahead vis-à-vis other competitors in the market, customer loyalty has emerged to be a key element in companies' marketing strategy.

Hence, it becomes imperative for practitioners and academia to explore and comprehend the association of service quality dimensions with customer loyalty (Tsoukatos and R, 2006). To conceptualize the model of the study, the researchers used a modified SERVQUAL instrument, stated to be a more inclusive measure of service quality, specific to the insurance industry (Kumar and Singh, 2010). For measuring customer loyalty, the researchers used the scale propounded by Nguyen and Leblanc (2001).

3 Formulation of hypotheses and model development

3.1 Relationship between service quality and customer loyalty

A review of existing literature on the subject suggests that perceived service quality has a positive relationship with customer loyalty (Baba and Majeed, 2018; Fida et al., 2020; Jones et al., 2002; Kumar et al., 2019; Tareq and Nafez, 2019). In their studies, Sanchez et al. (2006) posited a direct relationship between the levels of perceived service quality and customer loyalty. In the case of banking, Makanyeza and Chikazhe (2017) observed that better quality of services leads to higher customer loyalty. Juan and Yan (2009) posited that excellent customer experience with the service firms can only make a customer satisfied, and can further convert him/her into a loyal customer in the service industry. In the insurance sector, Gera et al. (2017) find a positive association of service quality with loyalty intentions such as repeat purchase behavior and service referrals to other peoples. Despite many studies confirming the association between these two constructs across various industries, the relationship between the different service dimensions and customer loyalty in the life insurance market is yet to be ascertained. Therefore, it becomes pertinent to gather more insights aimed at exploring the relationship of various dimensions of service quality with customer loyalty Bloemer et al. (1999). Hence, this study has framed hypothesized structural model as shown in Figure 1.

3.1.1 Relationship between perceived tangibility and customer loyalty

Related to the physical evidence of the services (McDougall and Snetsinger, 1990), tangibility is defined as the visibility facet of the materials, place, employees, etc. related to the service organization (Jadayil et al., 2020; Parasuraman et al., 1985). Customers give due consideration to something that can be touched, seen, and felt; therefore, tangibles act as an important attribute of service quality John (1990). In the context of life insurance, the tangibility aspect includes physical facilities and visual appearance of the branches, employees' appearance, and availability of modern equipment and technology. Gopi et al. (2020) exhibited that tangible aspect such as a physical image of the food truck's services plays a significant role in generating satisfaction and loyalty among customers. Yilmaz et al. (2018) noted that better quality of physical evidence in the banking sector leads to higher customer satisfaction, which inspires a higher level of loyalty among customers. As per studies like Kumar (2017); Leninkumar (2016); Mohmmmed et al. (2017) these tangibles in service quality have a huge positive impact on customer loyalty. Malik et al. (2011) observed that tangible elements of service quality like web aesthetics and guidance symbols affect customer loyalty indirectly. Accordingly, it is hypothesized:

H_1 : There is a positive impact of perceived tangibility on customer loyalty.

3.1.2 Relationship between perceived reliability and customer loyalty

Precise and responsible performance of the pledged services to the customer (Ramya et al., 2019), reliability depicts the firm's capability of performing the services at the first instance in an accurate manner (Jadayil et al., 2020; Parasuraman et al., 1985). Since customers want the services in the way they are promised to be delivered, therefore reliability is one

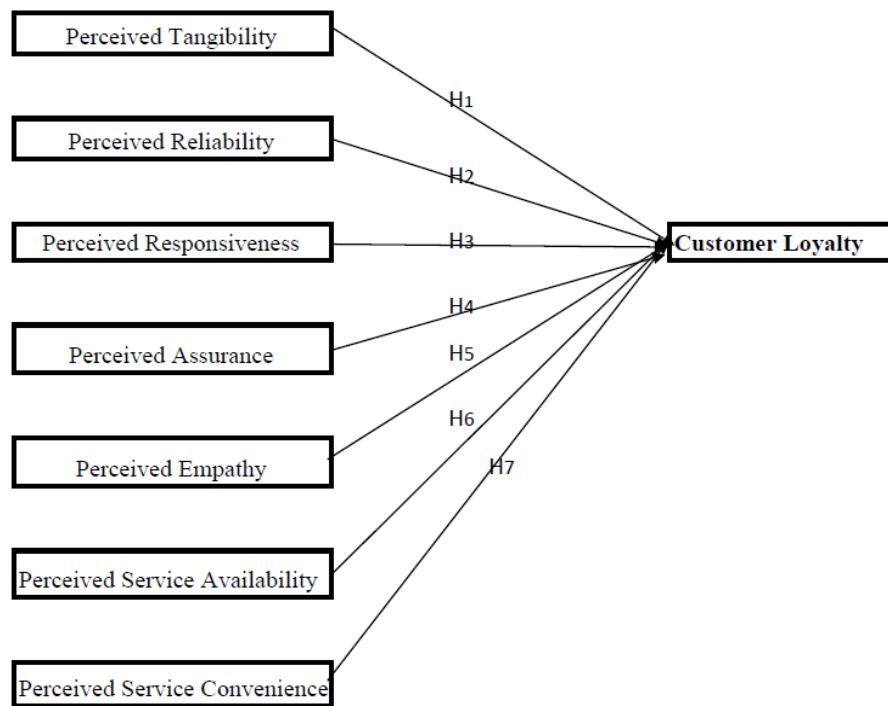


Figure 1. A hypothesized structural model

of the important aspects of service quality Gopi et al. (2020); Ramya et al. (2019). Concerning a life insurance company, reliability denotes the trustworthiness and consistency of its services, employees, and agents. These variables consist of characteristics related to the company's goodwill, sound financial strength, error-free records and transactions, employees and agents performing service at the first request and at the time they promised, and at last, includes employee's genuine concern in solving customers' problem. Existing studies like Bloemer et al. (1999); Kheng et al. (2010) and Kumar et al. (2019) have noted that the reliability factor of service quality has a direct and positive influence on customer loyalty. In their study in the telecommunication sector, Agyei and Kilika (2013) found a significant positive relationship between reliability and customer loyalty. Leninkumar (2016) suggested that financial services need to provide more reliable services for enhancing loyalty among customers. Thus, it is being postulated:

H_2 : There is a positive impact of perceived reliability on customer loyalty.

3.1.3 Relationship between perceived responsiveness and customer loyalty

Responsiveness describes the approach of companies' employees and agents in responding, replying to, and reacting with customers. It indicates whether employees and agents communicate regularly with customers, inform them about the time for the exact performance of services, use appropriate modes of communication and deliver prompt services. It is a reflection of employees' keenness to help customers. Fida et al. (2020) posited that banks need to focus highly on the firm's ability of responsiveness for creating better customer experience and loyal customers. Various studies have noted a significant and positive impact of responsiveness on customer loyalty (Glaveli et al., 2006; Kumar, 2017; Kumar et al., 2019; Mohammed et al., 2017). Yilmaz et al. (2018) found that the responsiveness of the bank employees indirectly affects customer loyalty in the banking sector. Thus, it is proposed that:

H_3 : There is a positive impact of perceived responsiveness on customer loyalty.

3.1.4 Relationship between perceived assurance and customer loyalty

Assurance is defined as employees' competence, politeness, and ability to inspire confidence among customers while performing services Parasuraman et al. (1985). In the case of life assurance, the assurance shall depict infusion of security and confidence among customers for transactions with the company, its employees, and agents. It is manifested through knowledgeable employees and agents who can deliver accurate information regarding products and services. Gopi et al. (2020) stated that a higher courtesy level of food trucks' employees instigates higher trust among customers which further helps in promoting more loyalty among customers. Kheng et al. (2010) observed that assurance acts as an important indicator of customer loyalty in Malaysian banks. The studies like Agyei and Kilika (2013); Kumar (2017) and Kumar et al. (2019) have noted that perceived assurance influences customer loyalty in a positive direction. The hypothesis proposed is:

H_4 : There is a positive impact of perceived assurance on customer loyalty.

3.1.5 Relationship between perceived empathy and customer loyalty

Referred to heeding care and attention to the customers (Dorrington, 2020), empathy defines the employees' closeness with the customers and their ability to understand the customer's problems and requisites (Jadayil et al., 2020). In the life insurance industry, empathy depicts the service performance keeping the customer's point of view at the centre. This construct denotes whether the company's employees and agents gave personal attention to customers, understood their needs and requirements, and responded to customer complaints in a positive manner. It is exhibited through ethical behavior and conduct; and compliance with customer relationship management programs. Fida et al. (2020) established that higher levels of empathy in banking lead to a higher degree of service quality which boosts higher satisfaction and loyalty among consumers. Empathy is marked to have a significant positive impact on customer loyalty (Kheng et al., 2010; Kumar, 2017; Kumar et al., 2019; Leninkumar, 2016; Mohammed et al., 2017; Malik et al., 2011; Mohammed et al., 2017). In the telecommunication sector, Agyei and Kilika (2013) found the highest positive impact of empathy on customer loyalty. Further, Bahdur et al. (2018) stated that firms in this sector can create greater leverage in loyalty outcomes and customer commitments, with its staff pursuing empathic behavior. In this light, the relationship between perceived empathy and customer loyalty is hypothesized as:

H_5 : There is a positive impact of perceived empathy on customer loyalty.

3.1.6 Relationship between perceived service availability and customer loyalty

Service availability is related to the availability of products and services with the companies for its customers. For an insurance company, service availability represents how diversified the offered product and services are and how are these different from that of competitive offers in the market, It also indicates competitiveness of offers in terms of quality and prices with assured guarantees. As per Han and Hyun (2014); Yuen and Chan (2010) better availability of products and services in terms of quality, variety, prices, etc. helps in the gradual formation of customer loyalty. In the Indian insurance sector, product differentiation and price innovation can influence the customer buying decision (Anderson et al., 1992) and customer post-purchase behavior (Rejikumar and Sreedharan, 2019). Here, the hypothesis postulated is:

H_6 : There is a positive impact of perceived service availability on customer loyalty.

3.1.7 Relationship between perceived service convenience and customer loyalty

Service convenience is defined as easiness with which customers can access the services. This attracts customers towards for purchase of that service (Brown, 1990). Seiders et al. (2005) had a view that service convenience and customer satisfaction are directly associated with each other and therefore, fortify the relationship between customer and the company. In the context of a life insurance company, service convenience describes clear and transparent terms of insurance policies, quick settlement of customer claims, and simple procedure of purchasing insurance policies. Hui et al. (1998) and Dapeng et al. (2013) viewed that that inconvenience in services negatively impacts the loyalty behavior of customers and leads to switching out of the company's fold. Similarly, Schaupp (2005) noted that convenience in the conduct of online banking services leads to more customer loyalty. In their studies, Brown (1990) and Seiders et al. (2005) observed that service convenience, in terms of place and process, is significantly and positively associated with customer loyalty. Hence, the causal relationship between service convenience and customer loyalty is postulated as:

H_7 : There is a positive impact of perceived service convenience on customer loyalty.

4 Research methodology

The study aimed to determine the impact of select service quality dimensions on customer loyalty. The structured questionnaire was designed to analyze the responses of customers towards various features concerning the measurement of the service quality and customer loyalty of private life insurance companies. The structured comprehensive questionnaire had three parts. The first part solicited demographic information of respondents. The next part had thirty-eight statements related to the service quality dimensions, which were adopted from Kumar and Singh (2010). The last part consisted of four statements related to customer loyalty, adopted from Nguyen and Leblanc (2001). These forty-two statements were rated by the respondents on a five-point Likert scale.

For the collection of data, it was decided to contact customers of the top five private life insurance companies. Based on their market share, these companies included ICICI Prudential Life Insurance, HDFC Standard Life Insurance, Bajaj Allianz Life Insurance, MAX Life Insurance, and SBI Life Insurance. The researcher used a judgemental sampling technique to survey the respondents. Overall, 431 datasets were collected from customers based in the national capital region of Delhi (India). Table 1 reflects the demographic profile of the respondents.

5 Results

Analysis of the data was performed in three stages. It commenced with the assessment of reliability and validity of the conceptualized research model using Cronbach's alpha and confirmatory factor analysis (CFA). Thereafter, structure equation modeling (SEM) was undertaken to test the hypotheses and to elucidate the association of seven factors of service quality namely tangibility, reliability, responsiveness, assurance, empathy, service availability, and service convenience with customers' loyalty. Later, the results obtained through SEM were used as an input for the Neural Network model to

Table 1. Demographic profile of the sample respondents

Demographic	Category/Class	Category/Class
Age (in Years)	Below 30	Below 30
	30-40	30-40
	40-50	40-50
	More than 50	More than 50
Gender	Male	Male
	Female	Female
Marital Status	Single	Single
	Married	Married
Profession	Business	Business
	Corporate Employee	Corporate Employee
	Government Service	Government Service
	Self Employed	Self Employed
	Others	Others
Monthly Income (In INR)	Below Rs 20000	Below Rs 20000
	Rs 20000-50000	Rs 20000-50000
	Above Rs 50000	Above Rs 50000
Academic Qualification	Undergraduate	Undergraduate
	Graduate	Graduate
	Post-graduate	Post-graduate
The decision regarding the Insurance company was taken by	Self	Self
	Family	Family
	Friends	Friends
	Others	Others
The medium through which insurance policy was purchased	Agent	Agent
	Counter	Counter
	Others	Others
Company Policy*	ICICI Prudential Life Insurance	ICICI Prudential Life Insurance
	Bajaj Allianz Life Insurance	Bajaj Allianz Life Insurance
	HDFC Standard Life Insurance	HDFC Standard Life Insurance
	Max Life Insurance	Max Life Insurance
	SBI Life Insurance	SBI Life Insurance

predict the sequence of the impact of service quality factors on customer loyalty. Statistical Package for Social Sciences (SPSS 21) and Analysis of Moment Structure (AMOS 21) were used to perform data analysis.

5.1 Analysis of reliability

Initially, principal component analysis with varimax rotation was applied. Statements with factor loadings of more than 0.5 were retained, which were categorized into seven constructs/dimensions of service quality. To check the reliability of the seven dimensions of the scale, Cronbach's alpha values were calculated. Table 2 reveals that respective Cronbach's alpha values for these dimensions and customer loyalty ranged between 0.868 and 0.944 (Hair et al., 2014). This confirms the adequate internal consistency and reliability of the scale.

Table 2. Reliability statistics

Construct	Cronbach's Alpha
Tangibility	0.887
Reliability	0.924
Responsiveness	0.921
Assurance	0.921
Empathy	0.944
Service Availability	0.940
Service Convenience	0.868
Customer Loyalty	0.934

Measurement Model:

To test the robustness and validity of the model structure, confirmatory factor analysis was undertaken. Goodness-of-fit indices such as Goodness-of-Fit Index (GFI = 0.825) and Incremental Fit Index (IFI = 0.943) had values more than 0.80, reflecting adequate fitness of the model with the data. Comparative Fit Index (CFI = 0.943) and Tucker-Lewis Index (TLI = 0.934) had values close to 1.0 which indicates a better fit of the model (Hooper et al., 2008). The values of Root Mean Square Error of Approximation (RMSEA) and Chi-Square Mean/Degree of Freedom (CMIN/DF) were 0.04 and 2.248, respectively. All these parameters suggested an adequate fit of the model (Hair et al., 2014).

Convergent validity for the seven dimensions was checked through standardized loading estimate, average variance extracted, and composite reliability. Table 3 reveals that all statements had standardized loading greater than 0.70 (Hair et al., 2014), composite reliability more than 0.70 (Fornell and Larcker, 1981) and the average variance extracted (AVE) greater than the required 0.5 value Hair et al. (2014). Thus, it is concluded that the constructs used in the study are reliable and valid. Table 4 reveals the discriminant validity for the constructs. The values of the square root of AVE, shown in bold on the diagonal, are greater than the corresponding row and column values, which indicates that the constructs - tangibility, reliability, responsiveness, assurance, empathy, service availability, and service convenience in this study, are not correlated to each other (Fornell & Larcker, 1981).

5.2 Testing of hypotheses

Structural Equation Modeling has been used to test the hypothesized relationships in the proposed model. Accordingly, the impact of service quality dimensions - tangibility, reliability, responsiveness, assurance, empathy, service availability, and service convenience on customer loyalty is determined. The figures from Table 6 confirm the hypothesized model's goodness of fit with the collected data (Hair et al., 2014). The factors - perceived tangibility ($\beta = 0.401$), perceived reliability ($\beta = 0.349$), perceived responsiveness ($\beta = 0.545$), perceived assurance ($\beta = 0.252$), perceived empathy ($\beta = 0.156$), and perceived service availability ($\beta = 0.443$) have p-value less than .05 and therefore have a significant positive impact on customer loyalty. Thus, hypotheses H1, H2, H3, H4, H5, and H6 are supported. Also, it is observed that perceived responsiveness has the maximum influence on customer loyalty followed by perceived service availability, perceived tangibility, perceived reliability, and perceived assurance. Perceived empathy has the least influence on the formation of customer loyalty. Perceived service convenience with a β value of 0.028 had no impact on the loyalty of customers (Table 6)

5.3 Neural network analysis

Developed from medical science and mathematics, the neural network is a blend of interrelated predicting variables, and each variable is attached with weightage E. et al. (1986). These variables can be continuous or categorical. It is considered a good predicting model in comparison to econometric models like linear regression Hruschka (1993) or logistic regression model Chiang et al. (2006). Being a member of data-mining techniques, the artificial neural networks model could allay several assumptions of statistical techniques, including the issues of linearity, multicollinearity, and normally distributed data. This makes the technique perform better vis-a-vis traditional statistical techniques Garver (2002).

Using the multi-analytic approach, the results of SEM were taken as input variables in neural network analysis. Thus, the six dimensions of tangibility, reliability, responsiveness, assurance, empathy and service availability were employed as input variables to validate and check the prediction results for customer loyalty. The model is structured into three layers - input layer comprising of independent variables (six determinants of service quality), hidden layer (processing layers), and output layer consisting of a dependent variable (customer loyalty). The predictive model helps in determining the effect of six input variables on customer loyalty.

To perform NN analysis, the respondents' dataset was randomly classified into two groups - training set and test set, comprising 68.2 and 31.8 percent respondents, respectively. While the training set was used to construct a model aimed at finding out the predictive outcomes, the test set, also known as the validation set, helped in testing the model and thus, authenticating the predictive ability of the model. Due care was taken not to include the data used in constructing the training set in the test set. Since customer loyalty is required to be in binary numbers, the variable average was taken and converted into binary form. The values less than 3 and more than 3.5 were considered as "0" and "1", respectively. Thus, predictions related to customer loyalty were grouped into two classes - '0' for non-loyal customers and '1' for loyal customers. The neural network approach consists of sensitivity analysis and the output of the NN model is displayed in the form of a classification matrix and ROC curve.

Sensitivity analysis: The foremost aim of performing sensitivity analysis on the training data set is to recognize and eliminate the service factors having a low impact on predicting customer loyalty out of six selected service quality factors. This provides the list of input factors affecting the output i.e. customer loyalty. This technique is repeated again and again until all the irrelevant factors are removed. The sensitivity values observed in the study were shown in Table 6. It is found that the highest absolute sensitivity value obtained was 0.708 and the lowest was 0.044. The sensitivity value obtained for each of the six input factors is neither zero nor near to zero. Therefore none of the factors are removed and considers all the six-factor i.e. perceived tangibility, perceived reliability, perceived responsiveness, perceived assurance, perceived empathy, and perceived service availability for the application of NN method. The second aim of sensitivity analysis is to prioritize the six predictor variables (six service factors) in determining the amount of impact on the predicted value (customer loyalty). Thus the trained network model is used on testing data set to calculate its predictive accuracy (Table 7)

Classification matrix: The quality of any model is determined by calculating the accuracy of the predictions made from that model. The term accuracy is defined as the fraction of the total number of correct predictions made based on the model. Table 7 presents the predictive accuracy of a NN model. As a whole, the predictive accuracy for the training set obtained is 86.3 percent. As a whole 294 respondents are put in the training set. It is observed that 254 respondents from the total 294 respondents are predicted correctly. It is observed that 247 out of 280 loyal customers are predicted correctly. It also explained that 7 out of 14 non-loyal customers are predicted correctly. Similarly, the data for the test set is analyzed. As a whole, the predictive accuracy for the test set obtained is 89.8 percent i.e. 90 percent. As a whole 137 respondents are put in

Table 3. Results of confirmatory factor analysis

	Items	Statements	Standardized Loading Estimate	Average Variance Extracted - AVE (rule of thumb - should exceed 0.5)	Composite Reliability - CR (rule of thumb - exceed 0.7)
Tangibility	T4	Materials associated with the services are appealing	0.799	0.66	0.89
	T3	Employees and agents are neat in appearance	0.802		
	T2	Physical facilities of the branch are visually appealing	0.776		
	T1	Company have modern Equipment and technology	0.87		
Reliability	R11	Company's goodwill in the market is good	0.809	0.64	0.92
	R10	Company have the sound financial strength	0.741		
	R9	The company have error-free record and transactions	0.762		
	R8	Employees and agents provide their services at the time they promise to do so	0.84		
	R7	Employees and agents perform the service at the first instance	0.792		
	R6	Employees and agents show sincere interest in solving customer's problems	0.822		
	R5	Employees and agents fulfill the promise to do something by a certain time	0.817		
Responsiveness	RS17	Method of communication suits the customer's need	0.796	0.65	0.92
	RS16	Employees and agents constantly communicate with customers	0.787		
	RS15	Employees and agents are never too busy to respond to customer's requests	0.781		
	RS14	Employees and agents are willing to help customers	0.831		
	RS13	Employee and agents give prompt services to customers	0.821		
	RS12	Employees and agents tell customers exactly when services will be performed	0.818		
Assurance	A22	Employees and agents give an accurate presentation of products and services	0.811	0.69	0.92
	A21	Employees and agents have the knowledge to render professional service to customers	0.831		
	A20	Employees and agents are courteous with customers	0.843		
	A19	Customers feel that their transactions are safe	0.824		
	A18	The behavior of employees and agents instills confidence in customers	0.853		
Empathy	E30	Company commit to ethics and promote ethical behavior among employees and agents	0.836	0.67	0.94
	E29	Company organize consumer awareness programs under customer relationship management	0.761		
	E28	Employees welcome complaints and criticism from customers and respond to them positively	0.82		
	E27	Employees and agents understand the specific needs of their customers	0.855		
	E26	Employees and agents have their customer's best interests at heart	0.859		
	E25	Employees and agents give personal attention to customers	0.846		
	E24	The company have convenient operating hours for their customers	0.781		
	E23	Employees and agents give individual attention to customer's needs and demands	0.806		

Service Availability	SA35	Company differentiate adequately their products and services in the market	0.865	0.74	0.95
	SA34	Customers assured about the quality of product and services through appropriate guarantees	0.868		
	SA33	Company provides the competitive price of its products and services	0.847		
	SA32	Company provides diversified products and policies	0.842		
	SA31	Company's products and services are of the utmost quality	0.888		
Service Convenience	SC36	There are clear and transparent terms in the contract of insurance policies	0.851	0.68	0.87
	SC37	Company settles customer's claims without any hassle and delay	0.855		
	SC38	Company provide simple formalities for purchasing its policy	0.771		

Note: CMIN/DF= 2.248; GFI= 0.825; CFI= 0.943; TLI= 0.934; IFI= 0.943; RMSEA= 0.04

Table 4. Discriminant validity

Tangibility	Tangibility 0.813	Reliability	Responsiveness	Assurance	Empathy	Service Availability	Service Convenience
Reliability	0.559	0.798					
Responsiveness	0.554	0.651	0.806				
Assurance	0.544	0.642	0.676	0.833			
Empathy	0.524	0.562	0.623	0.615	0.822		
Service Availability	0.525	0.55	0.549	0.615	0.555	0.862	
Service Convenience	0.454	0.537	0.594	0.564	0.616	0.56	0.827

Table 5. Results of the hypothesized model

Independent Variable	Hypotheses	Dependent Variable	Beta	P-value	Result
Perceived Tangibility	H1	Customer Loyalty	0.401	0.002	Accepted
Perceived Reliability	H2	Customer Loyalty	0.349	0.006	Accepted
Perceived Responsiveness	H3	Customer Loyalty	0.545	0.015	Accepted
Perceived Assurance	H4	Customer Loyalty	0.252	0.048	Accepted
Perceived Empathy	H5	Customer Loyalty	0.156	0.001	Accepted
Perceived Service Availability	H6	Customer Loyalty	0.443	0.0001	Accepted
Perceived Service Convenience	H7	Customer Loyalty	0.028	0.438	Not Accepted

Note: CMIN/DF=4.75; GFI=0.880; CFI= 0.911; IFI=0.912; NFI= 0.871; RMSEA=0.07; TLI= 0.93; AGFI= 0.84; RMR= 0.07

Table 6. Output of sensitivity analysis

Predictor		Hidden Layer 1		
		H(1:1)	H(1:2)	H(1:3)
Input Layer	(Bias)	0.405	0.289	0.263
	Perceived Tangibility	0.497	0.191	0.220
	Perceived Reliability	0.145	0.321	0.082
	Perceived Responsiveness	0.286	0.693	0.556
	Perceived Assurance	0.044	0.317	0.708
	Perceived Empathy	0.684	0.648	0.211
	Perceived Service Availability	0.426	0.108	0.105

the test set. It is observed that 123 respondents from a total of 137 respondents are predicted correctly. It is observed that 120 out of 132 loyal customers are predicted correctly. It also explained that 3 out of 5 non-loyal customers are predicted correctly. 90 percent of overall predictive accuracy showed that the model is highly accurate and good for predicting the loyal as well as non-loyal customers for the private life insurance companies (Table 7).

Note: Dependent variable: loyalty, TN: True Negative; TP: True Positive; FN: False Negative, FP: False Positive.

Receiver Operating Characteristic (ROC) curve: ROC curve is a graphical plot to show the analytical capability of the binary classification matrix in the NN model. It is generally plotted for the test set in the NN model. For further analysis, the graphic demonstration of a true-positive rate recognized as sensitivity or probability for true rate for customer loyalty is shown on the y-axis and a false positive rate recognized as specificity or probability for false rate for customer loyalty is shown on the x-axis for all threshold settings. This diagnosis made it possible to choose an optimal model and reject sub-optimal model (Figure 2). According to Zweig and Campbell (1993), the accuracy of a test set is high when the ROC curve touches the upper left corner. In the current study, the measure customer loyalty (dependent variable) has only two

Table 7: Classification matrix for training and test set

Sample	Observed	Predicted		Percent Correct
		No	Yes	
Training	No	7 (TN)	33 (FP)	17.5%
	Yes	7 (FN)	247 (TP)	97.2%
	Overall Percent	4.8%	95.2%	86.3%
Testing	No	3 (TN)	12 (FP)	35.7%
	Yes	2 (FN)	120 (TP)	98.4%
	Overall Percent	3.6%	96.4%	89.8%

classes, class ‘No’ for a non-loyal customer and class ‘Yes’ for a loyal customer. From figure 2, it is found that the ROC curve was near to the upper left corner; therefore, this predictive model might be classified as an extremely appropriate measure for the study.

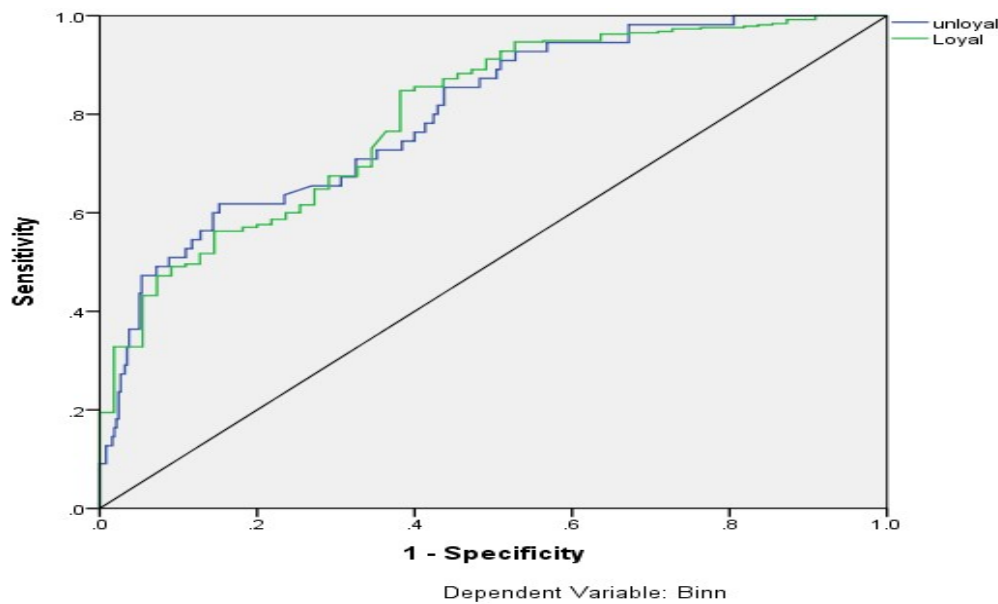


Figure 2. ROC curve

In the ROC curve, the statistical summary of the ROC curve is represented by the area under the curve (AUC). It indicates the complete area below the ROC curve. The AUC represents a combined method of sensitivity and specificity on the relative position of it. The value of AUC explains the validity of the NN model. The value of AUC near 1 indicates the high-quality predictive capability of the model whereas if the ROC curve lies near to diagonal with the AUC value equal to or less than 0.5 indicates the poor predictive capability of the model. Table 8 shows that the AUC value obtained help of the NN method is 0.798, which is near to 1. It means that if loyal and non-loyal customers are selected randomly then there are 0.798 possibilities that the model-predicted pseudo-probability of loyal customer would be higher for the loyal than for the non-loyal customer (Table 8).

Table 8: Area under the curve

		Area
Binary out	No	0.798
	Yes	0.798

Importance of the six selected predictor variables: The sensitivity analysis has helped to find the relative contribution of the six predictor variables (tangibility, reliability, responsiveness, assurance, empathy, and service availability) in the prediction of the dependent variable i.e. customer loyalty. Table 9 reflects the importance of the six factors in predicting the loyalty of a customer. As noted from the results of the NN methodology, the service factor which has the maximum impact on customer loyalty is reliability with an importance value (0.246). This is followed by responsiveness (0.240) and assurance (0.194). Tangibility and empathy emerged as a fourth and fifth factor respectively in respect to their influence on stirring the loyalty of a customer. Service availability (0.072) is the factor having the least influence on predicting whether

a customer will be loyal or not. The model indicates that one unit change in the value of reliability will lead to a 0.246 unit change in the prediction value of the NN model. Similarly, it is concluded that one unit change in responsiveness, assurance, tangibility, empathy and service availability will lead to respective 0.240, 0.194, 0.163, 0.084, and 0.072 unit changes in the prediction value of the NN model (Table 9).

Table 9: Relative significance of selected independent variables

	Importance	Normalized Importance	Rank
Tangibility	0.163	66.0%	4
Reliability	0.246	100.0%	1
Responsiveness	0.240	97.5%	2
Assurance	0.194	78.9%	3
Empathy	0.084	34.0%	5
Service Availability	0.072	29.4%	6

6 Discussions

SEM is one of the good techniques to analyze linear and causal relationships between variables; therefore used in this study to verify the hypothesized linear relationship between the service quality dimensions and customer loyalty. The study discovers six factors of service quality namely perceived responsiveness, perceived service availability, perceived tangibility, perceived reliability, perceived assurance, and perceived empathy with a p-value less than .05, having a significant and positive impact on Customer Loyalty. Service convenience had no impact on customer loyalty. Aforesaid results of the study are consistent with previous work done on the impact of service quality on customer loyalty (Alauddin et al., 2019; Kumar et al., 2019; Tareq and Nafez, 2019). The result of SEM and NN methodology reveals the sequence of various service quality factors in terms of their impact on customer loyalty. Nevertheless both the technique has given different sequence (Chong, 2013; Chong and Bai, 2014). SEM technique being unable to measure complex and non-linear relationships; is unsuitable to predict the sequence for the impact of service quality dimension on customer loyalty. NN methodology overcomes the limitation of the SEM technique and helps to analyze the complex, non-compensatory, and nonlinear relationships between variables, thus NN methodology is a better technique to predict the sequence of service quality dimension's impact on customer loyalty Chong (2013); Morris et al. (2004). However, the SEM technique has given significant service quality dimensions having an impact on customer loyalty. When these significant dimensions are used as an input variable for NN methodology, it provides better predictions for the sequence of service quality dimensions influencing customer loyalty (Asadi et al., 2019; Scott and Walczak, 2009). Thus, the author considers the results from the NN methodology to define the sequence for the impact of service quality dimensions on customer loyalty. Consequently, the study explores reliability as the most important factor and discerns that when employees and agents fulfill the promise of solving customer's problem, perform the services at the first instance and on the promised time, and the company has good financial strength and reputation in the market; then their customers tend to be more loyal. These results are similar to the work of Baba and Majeed (2018); Glaveli et al. (2006); Kheng et al. (2010) and Kumar et al. (2019) and in contrast to the work of Kumar (2017). Responsiveness is the second most important factor that impacts customer loyalty. The company whose employees and agents are highly responsive in replying and reacting to the customers, in such case companies' customers have enhanced loyalty. The authors Baba and Majeed (2018); Glaveli et al. (2006); Kumar (2017) and Kumar et al. (2019) also have similar perspectives, whereas Kheng et al. (2010) and Malik et al. (2011) gave dissimilar observations. The third factor after reliability and responsiveness that impact customer loyalty is assurance. Assurance determines the knowledge of employees and agents for accurate delivery of presentation and professional service about products and services. A company that can infuse more security, and confidence for their transactions, employees, agents, and themselves among the customers, can enhance customer loyalty more. Baba and Majeed (2018); Kheng et al. (2010); Kumar (2017); Kumar et al. (2019) and Lympelopoulos et al. (2006) in their studies, elucidated the similar positive influence of assurance on customer loyalty. The fourth and fifth factor having a significant positive influence on customer loyalty is tangibility and empathy. Tangibility explains all about the appearance of physical facilities, agents, employees, equipment, and other materials. Empathy defines an employee's service performance keeping in mind the customer viewpoint. Additionally, employees and the company focus on providing services as per the requirements of the customer. The authors Baba & Majeed (2018), Kumar (2017), and Malik et al. (2011) also agreed with the above results. However, Kumar et al. (2019) in his work disagreed with the significant and positive impact of tangibility on customer loyalty. Finally, service availability has the least but significant and positive impact on customer loyalty. The attributes such as diversified products and services, differentiated products and services in the market, competitive prices, and good quality with assured guarantees have the least effect on the loyalty of customers. The studies of Han and Hyun (2014) and Yuen and Chan (2010) also gave similar results.

The study supports all proposed hypotheses except that of a positive influence of perceived service convenience on customer loyalty. Thus, it elucidates that simple and easy procedures for policy purchase, claim settlement, etc. had no impact on customer loyalty. In contrary to it, many of the authors viewed that service convenience has a significant positive

influence on customer loyalty (Brown, 1990; Dapeng et al., 2013; Seiders et al., 2005).

7 Implications

The present study will be of great help to private life insurance companies in devising strategies to influence the loyalty intentions of customers. Companies need to adopt the best service quality approaches to improvise their services for the growth and survival of private life insurance players. Increased number of private as well as foreign player's entrance into the life insurance sector is making the competition a tough fight. Therefore, companies need to concentrate on the quality of the services they are offering. The findings of this study can be helpful for private life insurance service providers to perk up their marketing strategies, product, and service offerings. Furthermore, it can assist private life insurance service providers to make a strong grip and position in the market. It can be used to enhance the loyalty of their customers; which can additionally assist the companies in customer retention over a long period. Ultimately, it will help the company in achieving more market share for their products and services i.e. increase in sales. This study will facilitate private life insurance companies to understand the customer's requirements to plan an approach to create eternal and lifelong bonding with the customers. All the above-stated facts will let the company keep their current customers intact with them, will decrease the stirring rate of customers, and will accomplish the loyalty of customers. As per the above study, all service quality dimensions (reliability, responsiveness, assurance, tangibility, empathy, and service availability) except service convenience has a significant positive impact on customer loyalty. The companies need to focus on the above-depicted features to enhance their service quality and customer loyalty. Private life insurance companies should focus more on reliability, responsiveness, assurance, and tangibility in descending order to convert a non-loyal customer into a loyal customer; as well as, to increase the level of loyalty also. The insurance industry is of strategic importance since it contributes to the financial sector, economy, and societal benefits of a country substantially. Therefore, based on the above study, private life insurance companies should plan appropriate strategies for their growth as well as for contribution to the country's growth. This research will act as a base for life insurance companies in guiding their thought process, making better plans, and imparting new extent to their marketing tactics. This study will act as a base and pave way for further exploration for service quality and customer loyalty aspects in the insurance segment.

8 Limitations

Every study has its shortcomings; similarly, this study is also not free from limitations. The study is conducted only in the six areas of the National Capital Region. Another drawback of the study is that this study has been confined only to customers of the top five private life insurance companies in six major regions of the National Capital Region (India); otherwise, the scope of the study would have become extremely large. Therefore, this study can be extended to other private insurance companies as well as to other regions for the better generalization of the results in the future. Another shortcoming of the study is that it may include some subjectivity and mistakes on part of the researcher and respondents. Hence, there might be the inclusion of some biasness on the social and personal accounts.

References

- Agyei, P.M., Kilika, J.M., 2013. The relationship between service quality and customer loyalty in the kenyan mobile telecommunication service industry. *European Journal of Business and Management* 5, 26–36.
- Alauddin, M., Ahsan, S.M., Mowla, M.M., Islam, M.M., Hossain, M.M., 2019. Investigating the relationship between service quality, customer satisfaction and customer loyalty in hotel industry: Bangladesh perspective. *Global Journal of Management and Business Research* 19, 28–35.
- Alexris, K., Dimitriadis, N., Markata, D., 2002. Can perceptions of service quality predict behavioral intentions? an exploratory study in the hotel sector in greece. *Managing Service Quality* 12, 224–232.
- Anderson, S.P., Palma, D.A., Thisse, J., 1992. *Discrete Choice Theory of Product Differentiation*.
- Ansari, A., Riasi, A., 2016. Modelling and evaluating customer loyalty using neural networks: evidence from startup insurance companies. *Future Business Journal* 2, 15–30.
- Asadi, S., Abdullah, R., Safaei, M., Nazir, S., 2019. An integrated sem-neural network approach for predicting determinants of adoption of wearable healthcare devices. *Mobile Information Systems*.
- Baba, M.M., Majeed, R., 2018. Service quality and customer loyalty: a study in telecom sector. *Asian Review of Social Sciences* 7, 60–66.
- Bahdur, W., Aziz, S., Zulfiqar, S., 2018. Evaluating the effect of employee empathy on customer satisfaction and loyalty during employeecustomer interactions: The mediating role of customer affective commitment and perceived service quality. *Cogent Business and Management* 5.
- Bapat, D., 2017. Exploring the antecedents of loyalty in the context of multi-channel banking. *International Journal of Bank Marketing* 35, 174–186.
- Berry, L., Parasuraman, A., Zeithaml, V., 1988. The service quality puzzle. *Business Horizons* 31, 35–43.
- BimaBazaar, 2017. Current scenario and challenges of insurance business in india.

- Bloemer, J., Ruyter, K.D., Wetzels, M., 1999. On the relationship between perceived service quality, service loyalty and switching costs. *International Journal of Service Industry Management* 5, 436–453.
- Boonlertvanich, K., 2019. Service quality, satisfaction, trust and loyalty: the moderating role of main-bank and wealth status. *International Journal of Bank Marketing* 37, 278–302.
- Brown, L., 1990. Convenience in services marketing. *The Journal of Services Marketing* 4, 53–59.
- Brown, S.W., Swartz, T., 1989. A gap analysis of professional service quality. *Journal of Marketing* 53, 92–98.
- Brysl, A., Curry, A., 2001. Service improvements in public services using servqual. *Managing Service Quality* 11, 389–401.
- Cabanillas, L.F., Marinkovic, V., Kalinic, Z., 2017. A sem-neural network approach for predicting antecedents of m-commerce acceptance. *International Journal of Information Management* 37, 14–24.
- Caruana, A., 2002. Service loyalty: the effects of service quality and the mediating role of customer satisfaction. *European Journal of Marketing* 36, 811–828.
- Chiang, W.K., Zhang, D., Zhou, L., 2006. Predicting and explaining patronage behaviour toward web and traditional stores using neural networks: a comparative analysis with logistic regression. *Decision Support System* 41, 514–531.
- Chong, A.L., Bai, R., 2014. Predicting open ios adoption in smes: an integrated sem-neural network approach. *Expert Systems with Applications* 41, 221–229.
- Chong, A.L.Y., 2013. A two-staged sem-neural network approach for understanding and predicting the determinants of m-commerce adoption. *Expert Systems with Applications* 40, 1240–1247.
- Company, B., 2017. *Customer behaviour and loyalty in insurance: Global edition 2017*.
- Cook, C., Heath, F., Thompson, B., 2001. Users' hierarchical perspectives on library service quality: A libqual + study. *College and Research Libraries* 62, 147–53.
- Cronin, J.J., Taylor, B., 1992. Assessing the value and quality of customer satisfaction in service industry. *Journal of Retailing* 53, 93–98.
- Dapeng, L., Zhenzhong, M., Liyun, Q., 2013. Service quality and customer switching behavior in china's mobile phone service sector. *Journal of Business Research* 66, 1161–1167.
- Dick, A., Basu, K., 1994. Customer loyalty: toward an integrated conceptual framework. *Journal of the Academy of Marketing Science* 22, 99–113.
- Donio, J., Massari, P., Passiante, G., 2006. Customer satisfaction and loyalty in a digital environment: an empirical test. *Journal of Consumer Marketing* 23, 445–457.
- Dorrington, 2020. How does empathy influence customer service- and what is working well".
- E., R.D., Hinton, G.E., Williams, R.J., 1986. Learning internal representation by error propagation.
- Fida, B.A., Ahmed, U., Al-Balushi, Y., Singh, D., 2020. Impact of service quality on customer loyalty and customer satisfaction in islamic banks in the sultanate of oman. *Sage Open* 1–10.
- Fornell, C., Larcker, F., 1981. Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research* 18, 39–50.
- Garver, M.S., 2002. Using data mining for customer satisfaction research. *Marketing Research* 14, 8–17.
- Gera, R., Mittal, S., D., B., Prasad, B., 2017. Effects of service quality, customer satisfaction, and service value on behavioral intentions with life insurance customers in india. *Management* 8.
- Girdlestone, M., 2018. Building customer loyalty in the insurance sector.
- Glaveli, N., Petridou, E., Liassides, C., Spathis, C., 2006. Bank service quality: evidence from five balkan countries. *Managing Service Quality* 16, 380–391.
- Gopi, B., Alam, S., Samat, N., 2020. The influence of food trucks' service quality on customer satisfaction and its impact toward customer loyalty. *Bristish Food Journal* 122, 3213–3226.
- Gronroos, C., 1984. A service quality model and its marketing implication. *European Journal of Marketing* 18, 36–44.
- Guillen, M., Neilsen, J.P., Perez-Marin, A.M., 2008. The need to monitor customer loyalty and business risk in the european insurance industry. *The Geneva Papers on Risk and Insurance* 33, 207–218.
- Hair, J.F., Black, W.C., Babin, B.J., Anderson, R., 2014. *Multivariate Data Analysis*.
- Han, H., Hyun, S., 2014. Customer retention in the medical tourism industry: Impact of quality, satisfaction, trust, and price reasonableness. *Tourism Management* 46, 20–29.
- Harrison-Walker, L.J., 2001. The measurement of word-of-mouth communication and an investigation of service quality and customer commitment as potential antecedents. *Journal of Service Research* 4, 60–75.
- Heskett, J.L., Sasser, W.E., Schlesinger, L.A., 1997. *The Service Profit Chain*.
- Hooper, K., Coughlan, J., Mullen, M.R., 2008. Structural equation modelling; guidelines for determining model fit. *The Electronic Journal of Business Research Methods* 6, 53–60.
- Hruschka, H., 1993. Determining market response functions by neural network modeling: a comparison to econometric techniques. *European Journal of Operational Research* 66, 27–35.
- Hui, M.K., Thakor, M.V., Gill, R., 1998. The effect of delay type and service stage on consumers' reactions to waiting. *Journal of Consumer Research* 24, 469–479.
- Insurance, A., 2017. *What's driving customer loyalty in insurance?*
- Intelligence, M., 2020. *Life and non life insurance market in india- growth, trends and forecasts (2020-2025)*.
- J., D., 2015. *A research proposal: the relationship between customer satisfaction and consumer loyalty*.
- Jadayil, W.A., Shakoor, M., Bashir, A. and Selmi, H., Qureshi, M., 2020. Using serviqual to investigate the quality of provided wireless communication services in uae. *International Journal of Quality and Service Sciences* 12, 109–132.

- John, N., 1990. What is this thing called service? *European Journal of Marketing* 33, 958–967.
- Jones, M.A., Beatty, S.E., Mothersbaugh, D.V., 2002. Why customers stay: measuring the underlying dimensions of services switching costs and managing their differential strategic outcomes. *Journal of Business Research* 55, 441–50.
- Juan, L., Yan, L., 2009. Dimensions and influencing factors of customer loyalty in the intermittent service industry. *Frontiers of Business Research in China* 3, 63–78.
- Kampully, J., Zhang, T., Bilgihan, A., 2015. Customer loyalty: a review and future directions with a special focus on the hospitality industry. *International Journal of Contemporary Hospitality Management* 27, 379–414.
- Kheng, L., Mahamad, O., Ramayah, T., 2010. The impact of service quality on customer loyalty: a study of banks in penang, malaysia. *International Journal of Marketing Studies* 2, 57–66.
- Knutson, B., Stevens, P., Wullaert, C., Patton, M., Yokoyama, F., 1990. Lodgserv: a service quality index for the lodging industry. *Hospitality Research Journal* 14, 227–284.
- Kotler, P., Armstrong, G., 2007. *Marketing: an introduction* (10th ed).
- Kumar, A., 2017. Effect of service quality on customer loyalty and the mediating role of customer satisfaction: an empirical investigation for the telecom service industry. *Journal of Management Research and Analysis* 4, 159–166.
- Kumar, K., Rai, R.S., Dugar, A., 2019. Impact of service quality on customer satisfaction and loyalty in the sector of telecom service provider in delhi-ncr. *International Journal of Innovative Technology and Exploring Engineering* 8, 2841–2846.
- Kumar, R., Singh, M., 2010. Using servqual model for comparative service quality analysis of the indian non-life insurance sector. *Paradigm* 14, 56–63.
- Leninkumar, V., 2016. The effect of service quality on customer loyalty. *European Journal of Business and Management* 8, 44–49.
- Lovelock, C.H., Wirtz, J., 2004. *Services marketing: People, technology, strategy*.
- Lymperopoulos, C., Chaniotakis, I.E., Soureli, M., 2006. The importance of service quality in bank selection for mortgage loans. *Managing Service Quality* 16, 365–379.
- Mahyavanshi, D., 2020. Outlook for insurance sector in 2020.
- Makanyeza, C., Chikazhe, L., 2017. Mediators of the relationship between service quality and customer loyalty: evidence from the banking sector in zimbabwe. *International Journal of Bank Marketing* 35, 540–556.
- Malik, M.E., Naeem, B., Arif, Z., 2011. Impact of perceived service quality on banking customers' loyalty. *Interdisciplinary Journal of contemporary research in Business* 3, 637–645.
- Manatt, S., 2014. What does customer loyalty really mean.
- McDougall, G.H., Snetsinger, D.W., 1990. The intangibility of services: measurement and competitive perspectives. *The journal of service Marketing* 4, 27–40.
- Mehta, S.C., Lobo, A., 2002. Mss, msa and zone of tolerance as measures of service quality: a study in the life insurance industry.
- Mittal, S., Gera, R., Singhvi, S., 2013. Developing and testing a hierarchical model of customer perceived service quality for life insurance services. *Asia-Pacific Journal of Management Research and Innovation* 9, 63–76.
- Mohammed, G., 2013. The impact of service quality on customers loyalty: a study on five stars hotel's customers in riyadh, ksa. *European Journal of Business and Management* 5, 231–240.
- Mohammed, A.A., Ibrahim, S.S., Hasaballah, A.H.A., 2017. The impact of service quality on the customer loyalty in sudanese banking sector. *Journal of Economic Sciences* 18, 1858–6740.
- Morris, S.A., Greer, T.H., Hughes, C., Clark, W., 2004. Prediction of case adoption: a neural network approach. *Industrial Management and Data Systems* 104, 129–135.
- Musembi, J.N., 2016. Service quality and customer loyalty in the insurance industry in Kenya.
- Naujoks, H., Brettel, T., Singh, H., Darnell, D., Schwedel, A., 2017. Customer behaviour and loyalty in insurance: Global.
- Nguyen, N., Leblanc, G., 2001. Corporate image and corporate reputation in customers retention decisions in services. *Journal of Retailing and Consumer Services* 8, 227–236.
- Oliver, R., 2010. *Satisfaction: a behavioral perspective on the consumer* (2nd edition).
- Pantouvakis, A., Lymperopoulos, K., 2008. Customer satisfaction and loyalty in the eyes of new and repeat customers: Evidence from the transport sector. *Managing Service Quality: An International Journal* 18, 623–643.
- Parasuraman, A., Berry, L.L., Zeithaml, V., 1991a. Understanding customer expectations of service. *Sloan Management Review* 32, 39–48.
- Parasuraman, A., Berry, L.L., Zeithaml, V., 1991b. Refinement and reassessment of the servqual scale. *Journal of Retailing* 67, 420–50.
- Parasuraman, A., Zeithaml, V.A., Berry, L., 1985. A conceptual model of service quality and its implications for further research. *Journal of Marketing* 49, 41–50.
- Parasuraman, A., Zeithaml, V.A., Berry, L.L., 1988. Servqual: a multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing* 64, 12–40.
- Ramya, N., Kowsalya, A., Dharanipriya, K., 2019). Service quality and its dimensions,. *International Journal of Research and Development*, 4, 38–41.
- Reichheld, F.F., 1993. Loyalty-based management. *Harvard Business Review* 71, 64–71.
- Rejikumar, G., Sreedharan, V. R. and Saha, R., 2019. An integrated framework for service quality, choice overload, customer involvement and satisfaction: Evidence from india's non-life insurance sector. *Management Decision* 59, 801–828.
- Riasi, A., 2015. Competitive advantages of shadow banking industry: an analysis using porter diamond model. *Business*

- Management and Strategy 6, 15–27.
- Rudie, M., Wansley, B., 1985. The Merrill Lynch quality program in services marketing in a changing environment.
- Samarasinghe, U., Thushari, C., Weerakkodi, P., Saruwan, M., Rathnayake, K., Mathotaarachchi, K., 2018. Impact of service quality on customer satisfaction: with reference to life insurance services in srilanka. *IOSR Journal of Business and Management* , 55–62.
- Sanchez, J., Callarisa, L., Rodriguez, R.M., Moliner, M.A., 2006. Perceived value of the purchase of a tourism product. *Tourism Management* 27, 394–409.
- Schaupp, L. H. Belanger, E., 2005. A conjoint analysis of online customer satisfaction. *Journal of Electronic Commerce Research* 6, 95–111.
- Scott, J.E., Walczak, S., 2009. Cognitive engagement with a multimedia erp training tool: assessing computer self-efficacy and technology acceptance. *Information and Management* 46, 221–232.
- Seiders, K., Voss, G.B., Grewal, D., Godfrey, A., 2005. Do satisfied customers buy more? examining moderating influences in a retailing context. *Journal of Marketing* 69, 26–43.
- Sharma, K., Shameem, B., 2012. Servqual in financial services: case study of life insurance corporation of india. *International Journal of Research in Computer Application and Management* 2, 56–59.
- Shu, S.H., Bala, N., 2011. Customers' perception towards service quality of life insurance corporation of india: a factor analytic approach. *International Journal of Business and Social Science* 2, 219–231.
- Storbacka, K.T., Strvik, T., Gronroos, C., 1994. Managing customer relationships for profit: the dynamics of relationship quality. *International Journal of Service Industry Management* 5, 21–38.
- Sultana, S., S., R., 2010. Service quality (service gap analysis) a case study-komvux.
- Tareq, H., Nafez, A., 2019. The impact of service quality on customer loyalty: A study of dental clinics in jordan. *International Journal of Medical and Health Research* 5, 65–68.
- Taylor, S.A., 2001. Assessing the use of regression analysis in examining service recovery in the insurance industry: relating service quality, customer satisfaction and customer trust. *Journal of Insurance Issues* 24, 30–57.
- Toncar, M., Reid, J., Burns, D., erson, C., Nguyen, H., 2006. Uniform assessment of the benefits of service learning, the development, evaluation, and implementation of the seleb scale. *Journal of Marketing Theory and Practice* 14, 223–238.
- Toran, D., 1993. Quality service (quality everything!).
- Tsoukatos, E., R, G.K., 2006. Path analysis of perceived service quality, satisfaction and loyalty in greek insurance. *Managing Service Quality* 16, 501–519.
- Van, I.J., Van, D.W.T., Ball, L., Millen, R., 2003. Applying servqual to web sites: An exploratory study. *International Journal of Quality and Reliability Management* 20, 919–935.
- Yilmaz, V., Ari, E., Gurbuz, H., 2018. Investigating the relationship between service quality dimensions, customer satisfaction and loyalty in turkish banking sector: an application of structural equation model. *International Journal of Bank Marketing* 36, 423–440.
- Yoo, B., Donthu, N., 2001. Developing a scale to measure the perceived quality of internet shopping sites (sitequal). *Quarterly Journal of Electronic Commerce* 2, 31–47.
- Yuen, F.E., Chan, S.L., 2010. The effect of retail service quality and product quality on customer loyalty. *Journal of Database Marketing and Customer Strategy Management* 17, 222–240.
- Zweig, M.H., Campbell, G., 1993. Receiver-operating characteristic (roc) plots: a fundamental evaluation tool in clinical medicine. *Clinical Chemistry* 39, 561–577.