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The Role of Quality in Bit Stream Access Internet Service Providers on Customer Loyalty

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Abstract: ***The Internet Service Provider (ISP) sector in Palestine operates in a highly competitive market that presents many challenges related to Israeli rules and regulations concerning internet services. Such challenges emphasize the need for the various ISPs to have a detailed and clear understanding of the critical service quality dimensions that affect the loyalty of customers, and to constantly evaluate and strengthen the service they provide. Therefore, the aim of this work is to study the influence of service quality on customer satisfaction and loyalty in the Palestinian internet sector. The study used a quantitative approach based on the SERVQUAL dimensions to collect the data from internet subscribers through a questionnaire and the data was analyzed using statistical methods. The survey data was gathered from 403 valid responses covering more than eight ISP companies in the West Bank. An examination of the study variables based on the conceptual framework was achieved by using SPSS, where means of quantitative methods such as a comparison of means, and simple and multiple regressions were calculated. The results indicate that, in general, the level of service quality does not meet customer expectations. In addition, a descriptive analysis of the study variables indicates that the means of three service quality dimensions (reliability, responsiveness, and tangibility) have a medium degree level, while empathy and assurance have a high degree level. It is showed that service quality positively affects customer satisfaction. A positive relationship exists between customer satisfaction and customer loyalty. The study suggests that the effect of the "responsiveness" dimension on consumer satisfaction and loyalty is stronger than the effects of the other dimensions, with "tangibility" having the lowest effect. Finally, the study recommends to ISPs to improve the level of service quality in order to meet customers' needs and wants, and in order to gain long-term customer loyalty.***

Keywords: ISP, quality, questionnaires, SERVQUAL, Palestine, internet.

I. INTRODUCTION

In most developed countries, the economy has been moving from product-based to service-driven markets. Services have become the biggest part of most industrialized countries' economies over the past three decades [1]. According to the central intelligence agency [2], the service sector represented more than 79% of the USA Gross Domestic Product (GDP) in the year 2016, and according to [3], the service sector represented more than 62% of the Palestinian GDP in the year 2015. In economics and business science, reference [4] defined the service-based economy as value creation of the non-material equivalent of goods, where value is created by servicing the consumer. Services are not economic activities that produce physical products for consumption in general. They produce and provide added value in different forms, such as convenience, amusement, timeliness, comfort, and [5]. However, it is essential to distinguish between services and goods, and the different service qualities. Parasuraman et al [6] found the characteristics of services that pinpoint crucial differences between products and services. More precisely, the differences relate to simultaneity, intangibility or inseparability, perishability, and heterogeneity. Moreover, the difference between services and goods brings features to their quality.

A service is gauged to be of high quality if the provided service conforms with the expectations of the customer. Service providers frequently examine the quality of services offered to their customers in order to improve the services provided, quickly recognize problems, and better measure customer satisfaction [5]. The initial steps in developing service quality are measurement and analysis. There has been a disagreement on the measurement of the service quality (SQ) concept. Most of researchers have tried to use the SERVQUAL model, which was [6].

The SERVQUAL scale was a major tool used to measure the SQ perceptions of consumers. It measures differences between customer expectations and their perceptions of the delivered service in five dimensions: reliability, tangibility, responsiveness, empathy, and assurance [7]. The five quality dimensions have varying influences on customer satisfaction and customer loyalty, [8] and [9].

The SERVQUAL scale possesses higher diagnostic powers compared to other scales such as SERVPERF and SIMALTO, which can pinpoint areas for managerial interventions in the event of shortfalls in SQ [10]. It is generally the preferred scale employed to assess customer satisfaction and loyalty. The SERVQUAL scale constitutes an important landmark in the literature on SQ and has been extensively applied in different service markets [10]. The SERVQUAL model has been described by its original founders "as a simple and comprehensive multi-dimensional measuring scale that has good reliability and validity in its results. It can be applied to a large and diverse number of services and commercial enterprises" [8] [9].

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A. BROADBAND INTERNET INDUSTRY

The term broadband usually refers to fast internet access that is continuously on and faster than the outdated dial-up access. Broadband comprises numerous high-speed transmission technologies for example:
digital subscriber line (DSL), cable, broadband over power lines, satellite, wireless, and fiber.

Availability, price, location (urban or rural area), and value-added service are the main factors that affect the customer's choice for broadband technology [11].

DSL is a broadband digital transmission service offered through traditional copper telephone lines. DSL is normally used to offer voice/data/video services in parallel. There are several types of DSL transmission technologies. The leading DSL technologies being deployed today consist of: asymmetrical (ADSL), symmetrical (SDSL), high data rate (HDSL) and very high data rate (VDSL) [11].

B. PROBLEM STATEMENT

In a developing country such as Palestine, broadband internet connectivity is becoming an imperative step toward the growth of the information and communication technology (ICT) sector. Mobile and wireless internet technology is currently available in Palestine. Jawwal and Wataniya offer internet and data services through their networks. Their systems rely on the third generation wireless network referred to as 3G. It is considered as a low internet speed in comparison to the upcoming 4G and 5G networks, or to the Bit Stream Access (BSA) model.

ISPs in Palestine deeply seek long-lasting success through building strong relationships with customers. Meeting customers' expectations is a challenge facing ISPs. The Palestinian internet sector is considered as a competitive market. Therefore, ISP companies must evaluate the quality level they offer to their customers. They must also comprehend the critical SQ factors that affect customer loyalty in order to accomplish more benefits and high returns. This complex situation needs ongoing analysis by the ISP sector and efforts to obtain quantitative results as outputs. These results better represent the current status of the ISP market and could lead to well-informed decisions. However, there is no data available in the open literature that deals with the internet sector in Palestine in terms of SQ and its relationship to customer loyalty. Therefore, this research tries to study the effects of SQ on customer satisfaction and loyalty.

The research attempts to study SQ in the BSA ISPs in Palestine using the SERVQUAL tool, in order to enhance quality and to promote customer loyalty and therefore to decrease the rate of customer turnover. The possibility of introducing new technologies into the ISP market such as 3G or 4G may have an influence on SQ and customer loyalty. This factor is not covered by this study. This study also attempts to develop an understanding of the relationship between ISP SQ and customer loyalty in Palestine, if there is any, and to assess the strength of such a relationship, and how ISPs must change their business models to increase customer loyalty. In fact, having loyal and repeat customers is a crucial factor in having a successful business. This requires providing excellent customer experiences across all channels and all the time. In addition, it is very important to understand the expectations of customers as well as what competitors are doing. Getting feedback from them may help the business grow. Such feedback could include what other products a business provides, prices, etc. Doing so can prevent customer turnover and may attract new customers.

Therefore, it is very important for any business to regularly assess the level and quality of the services provided to their customers. Given the apparent lack of research on the subject, the current study attempts to measure the quality of internet services provided to customers, as service quality is one of the main points that help the ISP sector increase its profitability, improve the services it provides and increase its market share. This can assist the managers of the ISP sector in Palestine to identify areas that they need to address to improve the quality of customer service. This study aims to find the aspects of quality that affect the customer's loyalty towards BSA ISPs, and therefore is expected to provide suggestions and recommendations to the BSA ISPs to enhance SQ and to improve customer loyalty.

Service can be defined as those activities and intangible events that aim to satisfy the final consumer's needs in exchange for payment of a certain price, without any exchange or sale of physical goods. It is also defined as any act or performance of an intangible nature provided by one party to another without resulting in the ownership of something [4]. In this regard, services can be defined as "the application of specialized competences through deeds, processes, and performances for the benefit of another entity or the entity itself" [4].

C. DIMENSION OF SERVQUAL

The SERVQUAL scale is one of the major tools used to measure consumer perceptions of SQ. It measures the difference between customer expectations and customer perceptions of the delivered service. SERVQUAL has five dimensions, which can be defined as [7]:

1) Tangibility*:* physical aspects of a service firm such as buildings, equipment, interior design of buildings, facilities necessary to deliver the service, and the presentation of staff.

2) Reliability*:* expressed as the organization's ability from the viewpoint of customers to deliver a service at the time needed by the customer and to accurately satisfy their desires. It also reflects the degree of the fulfillment of the organization's duties towards customer expectations.

3) Responsiveness: "the ability to deal effectively with all customer requirements and to respond to complaints and work to resolve them quickly and efficiently. This includes convincing customers that they are appreciated and respected by the institution they are dealing with. In addition, the response reflects the initiative to provide service by the staff willingly" *[7]*.

4) Assurance: the confidence that the service provided to the customer is free of mistakes, hazards or uncertainty, including psychological and physical sureness.

5) Empathy*:* providing caring attention to customers, which includes access and communication, as well as understanding customers.

The process of measuring quality gaps using the SERVQUAL scale [12] is depicted in Figure (1). There are five dimensions that are used to evaluate SQ that constitute a general framework to measure the quality and to evaluate SQ level. There are five levels of SQ that can be summarized as follows [13]:

1) The expected quality by customers. This represents the level of quality of the services expected to be received from the provider.

2) Perceived quality by the provider. This is the management perception of the provided service to its customers,

3) and that the management considers satisfies the needs of its customers

4) Quality. This means the way that leads out of the service by the firm's employees, which is subject to the guidelines of the quality of the provided service.

5) The actual quality. This is perceived by customers and is delivered by the provider. It reflects the compatibility and the ability to use the service methods, which lead to customer satisfaction.

6) The desired quality for customers. This means any satisfaction and acceptance level that one can get from the customers when services are provided to them.

Figure 1: Quality gaps measurement applying the SERVQUAL scale [12]

D. CUSTOMER LOYALTY

Serving a loyal customer costs less than serving a new customer [14]. Customer loyalty could be defined as “the degree to which a customer exhibits repeat purchasing behavior from a service provider, possesses a positive attitudinal disposition toward the provider, and considers using only this provider when a need for the service exists" [15]. Al-Zoubi and Radi commented quoted “even a problem is not solved; approximately half of the customers would remain with the firm” [9]. This is probably due to costs of switching, lack of apparent alternatives, differentiation, location restrictions on choice, money or time restrictions, habits or inertia that are not connected to loyalty [9].

Customer loyalty is one of the key components for any brand’s long-term existence [16]. The loyalty of customers is found to be the main intermediating variable in explaining customer retention. The latter is defined as the likelihood of a customer recurring, or making business referrals, providing good and strong word-of-mouth, referencing and publicity in many forms [17].

E. CUSTOMER SATISFACTION

Customer satisfaction is a concept that piqued the interest of several researchers and those interested in the field of management and marketing. As a result, most institutions strive for excellence based on respect of the customers and working hard to please them [16]. A comprehensive research piece to examine customer satisfaction was performed by [9]. They defined customer satisfaction as an "emotional or cognitive response, relating to a focus on expectations, product or consumption experience, and happening at a specific instant in time after experience or consumption [9]. In customer satisfaction literature, numerous scientists found evidence for the relationship of customer satisfaction and [9]. Customer satisfaction is strongly related to SQ [14]. A major positive relationship between customer loyalty/retention was claimed in [8].

F. LINKING SQ, CUSTOMER SATISFACTION, AND LOYALTY

The work of Potluri and Hawariat [18] shows that low customer satisfaction arises in part due to lack of clarity, tardiness in decision-making regarding customer complaints, and inefficiency of staff when delivering after-sales services. The study concludes that after-sales services, such as maintenance, service bills, and dealing with complaints were at the lowest level of quality.

A study which aimed to find factors contributing to the loyalty of customers in the field of telecommunication was conducted on a Malaysian service provider [4]. The data was collected from over 180 telecommunication users. They found that corporate image, SQ perceived by customers, trust, and cost of switching to another provider, were significantly and positively related to customer loyalty. SQ is the main factor affecting customer loyalty. The study concluded that customers could judge the quality of excellent service offered by telecommunications service providers, and therefore could commit to telecom service providers and repeatedly purchase products from them.

Another investigation exists about the antecedents to the attitudinal and behavioral loyalty of customers. The work this time focused on ISPs [14]. Moreover, it endeavored to identify the relationship between SQ and cognitive and affective evaluations. An assessment of SQ dimensions was added to fill the research gap on modeling SQ in hi-tech services by making customers of a company a central part in its operations. These strategies reduce the expenses related to gaining new customers. This study found that overall SQ affects customer trust, satisfaction, and commitment. This leads to an increase in positive attitude towards the company and behavioral loyalty.

II. METHODOLOGY

This research can be categorized as explanatory, exploratory, and/or descriptive. Exploratory research is concerned with understanding what is happening in order to seek novel insights, raise questions, and evaluate phenomena differently, by identifying any new potential knowledge, developing a new understanding, and discovering other factors associated with the topic [19].

Descriptive research attempts to define the situation and the phenomenon, which makes it possible to answer certain questions. Therefore, it is intended to quantity the characteristics described in the research questions. Hypotheses typically assist with monitoring the progress of the research. They also offer a list of measurable characteristics. Even though a descriptive analysis defines the concepts and fundamentals of a theory, it does not describe the nature of interactions between the various fundamentals [19].

Explanatory studies identify a comprehensive and reasonable set of causal actions connecting certain variables and construct a story on why they happen.

As the goal of this study is to determine the relationship, if any, between customer satisfaction and loyalty for ISPs in Palestine, this study is mainly exploratory in nature and descriptive in its data analysis.

The research strategy is entailed in a comprehensive procedure describing how the researchers will answer the research questions. The researchers should identify the sources of data, and state possible constraints such as data access, time-frame, place, and ethical considerations [19].

Moreover, the researchers must determine the approach and data collection tools, as well as the purpose of the data to accomplish the ultimate objectives of the study.

A literature review enriched the researchers' knowledge on the findings of previous empirical studies on the relationship of quality and customer loyalty and satisfaction in the service sector. Based on this review, a survey was developed and conducted. The survey contained demographic items, quality dimension items, and items relying on customer satisfaction and loyalty as outlined by the SERVQUAL tool research population and sample.

A. RESEARCH POPULATION AND SAMPLE

The study population consists of internet ADSL customers of Bit-Stream Access (BSA) ISPs in Palestine, where the estimated number of customers is about 300,000. Customers are the target of the study, in order to know the degree of their satisfaction with the quality of internet services supplied by Palestinian companies and their loyalty to them. There are eight companies providing internet services in the West Bank.

Due to the relatively large size of the study population (about 300,000), the sample size according to the [20] should be around 385. The researchers used a random MS-Excel technique to choose 700 customers from a database consisting of about 100,000 Palestinian ADSL subscribers. The list was distributed to six trainees in the marketing department of Zaytona Company, who then conducted a telephone survey. A telephone survey was chosen as it is a relatively easy and effective collection method for a lot of data, in addition to be a straightforward way of contacting the population of the study. This approach gave the researchers the ability to assess the data and acquire the results, while targeting certain categories. In total, 431 questionnaires were subsequently collected after being answered by the respondents. After revising the collected questionnaires, the researchers only accepted 403, as all questions were answered, and then rejected the other 28 questionnaires due to missing answers.

B. QUESTIONNAIRE DEVELOPMENT

The questionnaire was developed following previous studies that dealt with the dimensions of SQ and customer satisfaction and loyalty. Certain changes and modifications were made to adapt the questionnaire to the conditions of this research. The study relied on [20] and [17] for the creation of the study questionnaire.

Based on findings of previous studies, SQ is likely to be one of the determinants of customer satisfaction and loyalty. Since services are not tangible, it is a challenge to measure the level of quality in comparison with the physical characteristics of goods. However, consumer services, like consumer goods, have a set of characteristics that are the basis for comparison of other comparable services and/or implicit perceptions in the mind of the buyer, which cannot be expressed explicitly. The five dimensions of SQ used in the study are: empathy of the service provider, reliability, responsiveness, tangibility, assurance, customer satisfaction, and customer loyalty.

The survey questionnaires were translated from various references into Arabic in order to facilitate a better understanding by the respondents. The questionnaires consisted of three parts. The first included demographic information about all respondents. All questions had fixed-alternative answers. The second section consisted of three portions.

The first portion dealt with SQ dimensions. SQ was measured by asking nineteen questions on the five dimensions (empathy, reliability, responsiveness, tangibility, and assurance) on a five level Likert-scale ranging from "strongly agree" to "strongly disagree". The second portion consisted of customer satisfaction measurement. Customer satisfaction was measured by asking three questions using a five-point Likert-scale. The third portion consisted of a customer loyalty assessment. Customer loyalty was evaluated by asking three questions using a five-point Likert-scale.

Finally, the third section consisted of two parts. The first part was related to which dimensions of SQ were most satisfying to the customer. In the second part the respondents were requested to provide general observations and comments based on their experience with their respective ISP.

C. DATA ANALYSIS FRAMEWORK

The collected data was evaluated using a SPSS statistical package, with the statistical methods that include Cronbach's α to test the reliability of the data. In this study, the researcher secured the reliability of the survey by checking its consistency using the Cronbach alpha test for all study variables (empathy, reliability, responsiveness, tangibility, assurance, satisfaction, and loyalty) in each item.

- Means, standard deviations, and frequency distributions were calculated by descriptive statistics.
- Relative degree level was determined for each study variable as suggested by [19], and is defined as: low degree has a mean score between 1.00 and 2.33, medium degree between 2.34 and 3.66, and a high degree between 3.67 and 5.00.
- Testing the study hypotheses was done by simple and multiple regression tests and the ANOVA test.

Depending on the Likert-scale that applied to the answers of the respondent's attitude toward each statement of the study variables, the researcher used the following scale: strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1). Degree level was classified based on the arithmetic mean in three categories: low, medium, and high. In order to get the relative degree level, the researcher applied equation 3.1, where the low degree lies between 1.00 and 2.33, the medium degree lies between 2.34 and 3.66, and the high degree lies between 3.67 and 5.00.

D. VALIDITY

Test validity refers to a construct measuring what the test was intended to measure [21]. To maintain test validity in this study, several measures were taken including:

- The survey was constructed based on a thorough review of the literature and under the supervision of a professor.
- An expert translated the survey from English into Arabic as the native language of the respondents was Arabic.
- The survey was sent to several arbitrators who are specialists in the services sector quality to refine the questions further and modifications to the instrument were made as required.
- A quantitative approach was adopted for data collection to ensure more representative results.

E. RELIABILITY

Reliability refers to the consistency of a test, meaning its ability to produce similar results each time it is used. According to [21], reliability requires both objectivity and consistency. In this study, the researcher secured the reliability of the survey by checking its consistency using the Cronbach alpha test for all levels (empathy, reliability, responsiveness, tangibility, assurance, satisfaction, and loyalty) in each item. To test the reliability of the questionnaire, the Cronbach alpha test was conducted, at a minimum acceptable level (alpha $\geq$ 0.60) as suggested by [19]. The overall Cronbach alpha is 0.915. The variable "tangibility" exhibited the highest Cronbach alpha value of 0.753, while the variable "assurance" had the lowest Cronbach alpha at 0.667. These results are acceptable levels as suggested by [21].

III. RESULTS AND DISCUSSION

The results of the statistical analysis of the collected data are discussed below. First, the descriptive sample of the demographic variables is presented. Then, the results of the data analysis are presented, including a description of the means and standard deviations for the questions of the study and the degree level of each item. Finally, the outcome of the simple and multiple linear regression analysis used to test the hypotheses are outlined. The results that relate to quality dimensions, customer satisfaction, and customer loyalty in the internet sector in Palestine are also analyzed. There is also a detailed discussion of the impact of each individual quality dimension in the SERVQUAL model on the customer's satisfaction and the customer's loyalty.

Table 1: Summary of the descriptive analysis of study variables.

N	Variables	Mean	SD	Degree level
1	Empathy	3.69	0.57	High
2	Reliability	3.61	0.54	Medium
3	Responsiveness	3.57	0.64	Medium
4	Tangibility	3.63	0.52	Medium
5	Assurance	3.91	0.51	High
All Quality Dimension		3.66	0.41	Medium
6	Customer Satisfaction	3.38	0.86	Medium
7	Loyalty	3.47	0.79	Medium

A. DESCRIPTIVE ANALYSIS

The questionnaire tool that was used in the research contained demographic factors in the first section including gender, age, education level, position, monthly income, ISP, and geographic area. Table 1 shows the respondents' frequency and percentage according to each category of the demographic factors.

Table 2: Demographic information of the respondents

N	Demographic Variables	Categorization	Frequency	%
1	Gender	Males	317	78.7
		Females	86	21.3
2	Age	Less than 20 years	4	1.0
		21 – 30 Years	165	40.9
		31 – 40 years	125	31.0
		41 – 50 Years	84	20.8
		51 – 60 Years	23	5.7
		Above 60 Years	2	0.5
3	Education level	Less than Secondary School	45	11.2
		Secondary School	113	28.0
		Diploma	54	13.4
		BSc	174	43.2
		High Education	17	4.2
4	Position	Student	16	4.0
		Retired	5	1.2
		Public Employee	67	16.6
		Self-employed	96	23.8
		Housewife	41	10.2
		Businessman	163	40.4
		Unemployed	15	3.7
5	Monthly income	Less than 380 USD	9	2.2
		381 – 800 USD	123	30.5
		801 – 1333 USD	86	21.3
		Above 1333 USD	52	12.9
		No Income	72	17.9
		Do not wish to disclose	61	15.1
6	Internet service provider company	B net	22	5.5
		Gemzo	11	2.7
		Hadara	122	30.3
		Zone	10	2.5
		Zaytona	65	16.1
		Super link	38	9.4
		Call U	49	12.2
		Mada	68	16.9
		Another ISP	18	4.5
7	Governorate	Jenin	43	10.7
		Tulkarem	17	4.2
		Qalqilia	13	3.2
		Tubas	6	1.5
		Nablus	74	18.4
		Salfit	13	3.2
		Ramallah and Al-Bireh	95	23.6
		Jerusalem	9	2.2
		Jericho	3	0.7
		Bethlehem	62	15.4
		Hebron	68	16.9

B. DESCRIPTIVE ANALYSIS OF THE STUDY VARIABLES

IV. RESEARCH HYPOTHESES TESTS

A. HYPOTHESES (1)

H1: There is a significant effect of SQ (empathy, reliability, responsiveness, tangibility, and assurance) on customer satisfaction in the ISP Sector in Palestine, at a significance level of 95%.

To test this hypothesis, a multiple regression analysis is used to determine how significant, if at all, the impact of the dimensions of SQ are on customer satisfaction. Depending on our result, we can develop multiple regression tests to find the equations of SQ dimensions on customer satisfaction. We observe that there is a variation among the various dimensions of quality service in terms of their impact on customer satisfaction, where the p-value of all dimensions of SQ are lower than 0.05.

The R was 0.717 at level $\alpha \leq 0.05$. Whereas the R^2 was 0.514. This means that the 0.717 of customer satisfaction changeability results from the changeability in quality service dimensions as shown in Table 3.

Table 3: Summary result of the impact of quality on satisfaction

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.717[a]	0.514	0.508	0.60643
Predictors: (Constant), Assurance, Tangibility, Empathy, Reliability, Responsiveness				

The findings of the ANOVA test show that there is a significant effect of SQ (empathy, reliability, responsiveness, tangibility, and assurance) on customer satisfaction in the ISP sector in Palestine, where $F_{calculated} = 83.927$ is higher than $F_{tabulated} = 2.21$ at a significance level of 0.000. This means

Regression	107.55	1	107.553	297.7	0.000[b]
Residual	144.85	401	0.361		

that we can accept the H1 hypothesis, which states that there is a significant effect of SQ (empathy, reliability, responsiveness, tangibility, and assurance) on customer satisfaction in the ISP sector in Palestine. The results are tabulated in Table 4 and Table 5.

Table 4: ANOVA results of the impact of quality on satisfaction

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	154.325	5	30.865	83.927	0.000
Residual	146.001	397	0.368		
Total	300.326	402			
Dependent Variable: Satisfaction					

Table 5: Regression test of the impact of quality on satisfaction

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	β	Std. Error	Beta		
(Constant)	-1.838	0.295		-6.233	0.000
Empathy	0.332	0.071	0.219	4.641	0.000
Reliability	0.308	0.080	0.191	3.861	0.000
Responsiveness	0.371	0.068	0.275	5.464	0.000
Tangibility	0.195	0.062	0.118	3.171	0.002
Assurance	0.225	0.077	0.132	2.934	0.004
Dependent Variable: Satisfaction					

The findings of the previous table show that the beta (β) coefficient of the quality dimension "responsiveness" is the highest at 0.371 and thus the most influential dimension on customer satisfaction. On the other hand, the beta coefficient of the quality dimension "tangibility" is the lowest at 0.195 as shown in Table 5. The following equation shows the effect of each dimension of SQ on customer satisfaction.

Satisfaction = -1.838 + 0.332(Empathy) + 0.308(Reliability) + 0.371(Responsiveness) + 0.195(Tangibility) + 0.225 (Assurance) (1)

β coefficient represents the increase of one unit in the quality service variables will increase the customer satisfaction value by one. In conclusion, there is a significant impact of SQ (empathy, reliability, responsiveness, tangibility, and assurance) on customer satisfaction at $\alpha = 0.05$ level of confidence.

B. HYPOTHESIS (2)

H2: There is a significant effect of customer satisfaction on customer loyalty in the ISP sector in Palestine.

To test this hypothesis, a simple regression analysis was used to determine how significant the impact of customer satisfaction is on customer loyalty as shown in Tables 6, 7 and 8.

Table 6: R, R^2, and Adjusted R^2

Table (4.14a): Summary [b] of regression test applied on hypothesis H2					
Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Durbin-Watson
1	.653	.426	.425	.60102	2.172

The finding in the previous table show that there is positive relationship between customer satisfaction and customer loyalty where R=0.653.

To find out if there is a significant effect of customer satisfaction on customer loyalty in the ISP sector in Palestine, we apply the one-way ANOVA test.

Table 7: Result of the ANOVA test applied on hypothesis H2

Model	Sum of Squares	df	Mean Square	F	Sig.
Total	252.40	402			
a. Dependent Variable: Loyalty					
b. Predictors: (Constant), Satisfaction					

The findings presented in the previous table show that there is a significant effect of customer satisfaction on customer loyalty in the ISP sector in Palestine, where $F_{calculated} = 297.747$ is higher than $F_{tabulated} = 3.84$ at a significance level of almost zero. This means that the H2 hypothesis can be accepted (the H2 hypothesis states that there is a significant effect of customer satisfaction on customer loyalty in the ISP sector in Palestine).

In order find out the equations for the effect of customer satisfaction on customer loyalty, we applied the coefficients' values. Table 8 shows these results.

Table 8: Regression test between satisfaction and loyalty

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.448	0.121		11.964	0.00
Satisfaction	0.598	0.035	0.653	17.255	0.00

The finding of the previous tables shows that if customer satisfaction increases by one unit, customer loyalty will increase by 0.598.

A simple linear regression equation can be taken from equation 2a and 2b:

$$Y = \beta_0 + \beta X_1 \pm e \quad (2a)$$

$$\text{Loyalty} = 1.448 + 0.598\ (\text{satisfaction}) \quad (2b)$$

We conclude that there is a significant impact of customer satisfaction on customer loyalty at the $\alpha \leq 0.05$ level of confidence.

The research result shows that customer satisfaction has a statistically significant effect on customer loyalty in the internet sector. This result is consistent with that's of [22], who examined the relationship between client satisfaction and loyalty, and concluded that satisfaction influenced customer loyalty.

C. HYPOTHESIS (3)

H3: There is a significant effect of SQ dimensions on customer loyalty through customer satisfaction in the ISP sector in Palestine.The study used a multiple regression test to find out if there was a significant effect of SQ dimensions on customer loyalty through customer satisfaction in the ISP sector in Palestine.

First, the dimensions of SQ were considered as independent variables, and the dependent variable was taken to be customer loyalty in order to find out if there was a significant effect of SQ dimensions on customer loyalty in the ISP sector in Palestine. Tables 9 and10show these results.
H3A: There is significant effect of SQ dimensions on customer loyalty in the ISP sector in Palestine.

Table 9a: model summary applied on hypothesis H3A

1	0.596[a]	0.356	0.347	0.64008
Predictors: (Constant), Assurance, Tangibility, Empathy, Reliability, Responsiveness				

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

The findings of Table 9a show that there is a relationship between quality service dimensions and customer loyalty where R = 0.596. This means that we can apply the one-way ANOVA test to find out the significant effect of the independent variable (quality service dimensions) on the dependent variable (customer loyalty). Table 9b shows this result.

Table 9b: ANOVA test applied on hypothesis H3A

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	89.749	5	17.950	43.81	0.000
Residual	162.654	397	0.410		
Total	252.403	402			
a. Dependent Variable: Loyalty					

The findings of the previous table show that there is significant statistical effect of the quality service dimension on customer loyalty where $F_{calculated} = 43.811$, which is higher than $F_{tabulated}$ at a significant level p-value = 0.000, which is lower than the significant level 0.05. Therefore, we accept the hypothesis that states that there is a significant effect of SQ dimensions on customer loyalty in the ISP sector in Palestine.

To find out the predicted equations that show how much quality service dimensions affect customer loyalty, we applied the coefficient test. Table 4.16c summarizes these results.

Table 10: Regression test of the impact of quality on loyalty

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	-0.450	0.311		-1.445	0.149
Empathy	0.243	0.075	0.175	3.219	0.001
Reliability	0.110	0.084	0.074	1.304	0.193
Responsiveness	0.351	0.072	0.284	4.903	0.000
Tangibility	0.138	0.065	0.092	2.130	0.034
Assurance	0.229	0.081	0.146	2.820	0.005
a. dependent variable: Loyalty					

The findings of the previous table show that there is significant statistical effect of quality service dimensions (empathy, responsiveness, tangibility, and assurance) on customer satisfaction, while the reliability dimension showed no significant statistical effect where p-value = 0.193 was high in comparison to the assumed significant level of 0.05. Therefore, we accept that there is significant effect of empathy, responsiveness, tangibility, and assurance on customer loyalty in the ISP sector in Palestine. We therefore used these four quality service dimensions as the effective quality service dimensions on customer loyalty. Table 11 shows the coefficients of these four dimensions on customer loyalty.

Table 11: Modified regression test of the impact of quality on loyalty.

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	-.399	0.309		-1.29	0.198
Empathy	0.274	0.072	0.197	3.827	0.000
Responsiveness	0.380	0.068	0.307	5.556	0.000
Tangibility	0.152	0.064	0.100	2.364	0.019
Assurance	0.250	0.079	0.160	3.144	0.002

Second, the research sought to find out if customer satisfaction plays a mediating role between the accepted four quality dimensions (empathy, responsiveness, tangibility, and assurance) on customer loyalty in the ISP sector in Palestine. We applied multiple regression tests between the four quality service dimensions and customer satisfaction as the independent variable in order to find out their effect on customer loyalty. Table 12 shows these results.

Table 12: Summary of quality dimensions effect on loyalty

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.680[a]	0.463	0.456	0.58450
a. Predictors: (Constant), Satisfaction, Tangibility, Assurance, Empathy, Responsiveness			

The findings in the previous table show that there is a relationship between all four dimensions of quality service and customer satisfaction and customer loyalty in the internet sector in Palestine.

So, by applying the one-way ANOVA test on the hypothesis we can find out if the customer satisfaction variable plays a mediator effect of the accepted through the accepted four quality dimensions (empathy, responsiveness, tangibility, and assurance) on customer loyalty in the ISP sector in Palestine. Table 13 shows this result

Table 13: ANOVA test for the effect of empathy, responsiveness, tangibility, assurance, and satisfaction on loyalty

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	116.769	5	23.354	68.357	0.000[b]
Residual	135.633	397	0.342		
Total	252.403	402			
a. Dependent Variable: Loyalty					
b. Predictors: (Constant), Satisfaction, Tangibility, Assurance, Empathy, Responsiveness					

Table 14: Regression test for the effect of empathy, responsiveness, tangibility, assurance, and satisfaction on loyalty

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.326	0.293		1.113	0.266
Empathy	0.095	0.068	0.068	1.387	0.166
Responsiveness	0.187	.066	0.151	2.837	0.005
Tangibility	0.052	0.06	0.035	0.876	0.382
Assurance	0.128	0.074	0.082	1.735	0.084
Satisfaction	0.428	0.047	0.467	9.007	0

By comparing between p-values in Table 13 and Table 14, where the p-values of empathy, tangibility, and assurance in the absence of the customer satisfaction variable as independent factors were 0.00, 0.019, and 0.02, respectively, with those when customer satisfaction was included as a variable (0.166, 0.382, 0.084), it can be concluded that customer satisfaction is a mediator between quality dimensions (empathy, tangibility, and assurance) and customer loyalty. In addition, there seems to be a direct effect of quality dimensions (empathy, tangibility, and assurance) on customer loyalty.

By comparing the p-value and the coefficient of the quality dimension (responsiveness) in Tables 13 and 14, we find that the responsiveness dimension maintained its effect on customer loyalty with or without using the customer satisfaction variable as an independent factor. This means that there is a direct effect of quality dimension responsiveness on customer loyalty and an indirect effect of the same dimension on customer loyalty.

The previous results indicate that customer satisfaction plays a mediator role in the effect of quality service dimensions (empathy, responsiveness, tangibility, and assurance) on customer loyalty in the internet sector in Palestine.

There is a significant impact of four quality service dimensions (empathy, responsiveness, tangibility, and assurance) on customer loyalty through customer satisfaction at $\alpha = 0.05$ level of confidence, while there is no significant impact of quality dimension (reliability) on customer loyalty through customer satisfaction at $\alpha = 0.05$ level of confidence

The conceptual model for the result of quality service dimensions (empathy, responsiveness, tangibility, and assurance) that affect customer loyalty through customer satisfaction is shown in Figure 2.

This study has suggested that responsiveness, assurance, tangibility, and empathy have significant statistical effects on client loyalty through customer satisfaction, while reliability dimension have no statistically significant effect. The beta coefficients for empathy, reliability, responsiveness, tangibility, and assurance are 0.332, 0.308, 0.371, 0.195 and 0.225 respectively. These results indicate that the effect of the responsiveness dimension on consumer satisfaction is stronger than the effects of the other dimensions.

Based on these results, the proposed model shows that quality service dimensions (empathy, responsiveness, tangibility, and assurance) affect customer loyalty through customer satisfaction after neglecting the non-statistical (reliability).

V. CONCLUSION

The study suggested that the level of SQ is, in general, acceptable, where assurance scored the highest among all quality dimensions and empathy scored the second highest. The study found that SQ with all its dimension had a good influence on customer satisfaction. Customer satisfaction positively affected customer loyalty, which supported the main hypotheses (H1, H2, and H3). The results indicated that the effect of the responsiveness dimension on consumer satisfaction was stronger than the effects of the other dimensions in the internet sector in Palestine. It was found that there was a significant statistical effect of SQ on customer satisfaction. This result is consistent with the results of [4], who argued that perceived SQ is significantly and positively related to consumer loyalty. Results obtained are also in agreement with the result of [9] on the significant effect of SERVQUAL on customer loyalty in the Jordanian telecom market. The present study had some dif[9], who found that the three dimensions, empathy, reliability, and responsiveness, were while the other two dimensions, tangibility and assurance did not affect customer loyalty. In cthe results here show the quality dimensions, responsiveness, assurance, tangibility, and empathy have a significant statistical effect on customer loyalty, while the reliability dimension has no statistical significance effect on customer loyalty. The study results show that customer satisfaction plays an important mediating role in the relation between quality service and customer loyalty.

In general, results show that there is a significant effect of SQ on customer satisfaction ($R2 = 0.514$). Also, a descriptive analysis of the study variables indicates that the means of all dimensions of quality service are medium. The level of SQ needs to be improved to meet customer needs. ISPs understand the needs of their customers, and the services of the ISPs that are available at the appropriate time for all categories of customers and subscribers.

The ISPs need to improve employee skills in order to pay more personal attention to their subscribers, and to ensure that they leave the impression that they always prioritize what is best for a customer.

ISP reliability positively affects customer satisfaction.

Employees make efforts to solve customers' problems.

The ISP staff is committed to providing services within agreed deadlines and the ISPs provide reliable information free of mistakes.

Responsiveness positively affects customer satisfaction as the study suggests. This result indicates that services offered by the ISPs are available all time. However, service needs more attention in order to be implemented faster.

Employees in the ISP sector need to pay more attention to providing customers with all the necessary information, and need to be ready to assist clients at any moment

Tangibility also plays a role in customer satisfaction. The study indicates that employees have a professional appearance and companies are visually appealing and easy to understand. However, customers believe that ISPs do not have modern equipment and that the interior design of ISPs is not attractive.

Regarding assurance, the study revealed that it positively affects customer satisfaction. In general, assurance is the best dimension, as it scored the highest in service quality. This indicates that employee behavior raises customers' confidence, and that they are friendly and aware of every service item. Also, employees are polite to their customers and have the necessary knowledge to answer all questions raised by customers.

Despite the assurance dimension receiving the highest score in quality service variables, customers believe that the best quality service dimension is responsiveness. That is, employees have the desire to help subscribers and to provide services quickly and reliably. Customers see the tangibility dimension as less important than other dimensions. This indicates that overall appearance of the service provider, the appearance of the equipment, the materials used, and the personnel are less important for customers.

A descriptive analysis of the study variables (customer satisfaction and loyalty) indicates that customers are moderately satisfied with the services provided by ISP companies (satisfaction level is medium). Also, loyalty is affected by satisfaction and receives the same score level. In general, this study supports the existence of a relationship between quality service and customer loyalty in the ISP sector in Palestine.

VI. RECOMMENDATIONS

ISP companies should be aware of the importance of SQ for customers, which leads to better customer loyalty. These companies should also improve the level of SQ in order to meet customer needs and wants by developing and improving employee skills in order to pay a high level of personal attention to their subscribers. Companies' management teams should provide employees with modern equipment and tools with training courses in quality management and customer service in order to provide a fast service with accurate information.

The ISPs should constantly develop, improve, and acquire the most advanced equipment in order to meet the requirement of the various stakeholders, to increase customers' internet bandwidth requirements, among other thing. They may consider expanding their markets to include modern and emerging services such as internet protocol television (IPTV).

ISPs must have the abilities to create infrastructure, guidelines, and technology that foster collaboration and decision making within the ISP sector, which may ultimately influence their effectiveness.

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REFERENCE

1. J. Spohrer, P. P. Maglio, J. Bailey and D. Gruhl, "Steps toward a science of service systems," Computer, vol. 40, no. 1, pp. 71-77, 2007.
2. Central Intelligence Agency, The World Factbook, CIA, 2017.
3. O. Awad, "Press Report Of Economic Forecasting For 2016," 2016. [Online]. Available: http://www.pcbs.gov.ps/site/512/default.aspx?tabID=512&lang=en&ItemID=1565&mid=3171&wversion=Staging.
4. S. M. Amin, U. N. U. Ahmad and L. S. Hui, "Factors contributing to customer loyalty towards telecommunication service providers," Procedia-Social and Behavioral Sciences, vol. 40, pp. 282-286, 2012.
5. A. Wilson, V. Zeithaml, M. J. Bitner and D. Gremler, Services marketing: Integrating customer focus across the firm, 3rd Edition ed., UK, 2016.
6. A. Parasuraman, V. A. Zeithaml and L. L. Berry, "A conceptual model of service quality and its implications for future research," Journal of marketing, vol. 49, no. 4, pp. 41-50, 1985.
7. S. Siswanto, Creating the superior Islamic Banking through improving quality of human resources, Kementerian Agama Republik Indonesia, 2012.
8. N. Hossain and Y. Hossain, "Mobile banking and customer satisfaction: The case of Dhaka city," World review of business research, vol. 5, no. 3, pp. 108-120, 2015.
9. Al-Zoubi and M. Radi, "Service quality effects on customer loyalty among the Jordanian telecom sector," International Journal of Business and Management, vol. 8, no. 7, pp. 35-45, 2013.
10. S. K. Jain and G. Gupta, "Measuring service quality: SERVQUAL vs. SERVPERF scales," Vikalpa, vol. 29, no. 2, pp. 25-38, 2004.
11. Federal Communications Commission, "Types of broadband connections," 29 2 2020. [Online]. Available: https://www.fcc.gov/general/types-broadband-connections.
12. J. Van Iwaarden, T. Van der Wiele, L. Ball and R. Millen, "Applying SERVQUAL to websites: An exploratory study," International Journal of Quality & Reliability Management, vol. 20, no. 8, pp. 919-935, 2003.
13. A. Shahin and M. Samea, "Developing the models of service quality gaps: a critical discussion," Business Management and Strategy, vol. 1, no. 1, pp. 1-11, 2010.
14. P. Thaichon, A. Lobo and A. Mitsis, "Achieving customer loyalty through service excellence in internet industry," International Journal of Quality and Service Sciences, vol. 6, no. 4, pp. 274-289, 2014.
15. R. Ladhari, N. Souiden and I. Ladhari, "Determinants of loyalty and recommendation: The role of perceived service quality, emotional satisfaction and image," Journal of Financial Services Marketing, vol. 16, no. 2, pp. 111-124, 2011.
16. J. Ganesh, M. J. Arnold and K. E. Reynolds, "Understanding the customer base of service providers: an examination of the differences between switchers and stayers," Journal of marketing, vol. 64, no. 3, pp. 65-87, 2000.
17. E. D. Argaez, "What you should know about internet broadband access," 21 8 2017. [Online]. Available: https://www.internetworldstats.com/articles/art096.htm. [Accessed 29 2 2020].
18. R. M. a. H. H. W. Potluri, "Assessment of after-sales service behaviors of Ethiopia Telecom customers," African Journal of Economic and Management Studies, 2010.
19. C. Robson, Real world research: A resource for social scientists and practitioner-researchers, vol. 2, Blackwell Oxford, 2002.
20. A. Dmaidi, "The role of quality in bit stream access internet service providers on customer's loyalty in Palestine," An-Najah National University Graduate Study's Portal, Nablus, West Bank, Palestine, 2017.
21. P. V. Marsden and J. D. Wright, Handbook of survey research, Emerald Group Publishing, 2010.

22. O. Kitapci, I. T. Dortyol, Z. Yaman and M. Gulmez, "The paths from service quality dimensions to customer loyalty," Management Research Review, 2013.

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