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Factors affecting customer satisfaction with Internet services in Sulaimani Governorate, KRI

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ABSTRACT

The importance of customer satisfaction to commercial enterprises has increased in recent decades. Therefore, the customer satisfaction level is a performance benchmark and a potential criterion for excellence in any organization. This study aims to determine and analyze the factors contributing to customer satisfaction in Sulaimani City – Kurdistan Region Iraq (KRI) and identify the most significant factors customers consider when purchasing an Internet Service Provider. A survey methodology was used to collect primary data from 354 subscribers of Internet service providers. The significance of determinants of customer satisfaction has been evaluated, and their relationship with it has been analyzed using several approaches. In this study, descriptive analysis, Cronbach alpha coefficient, Pearson correlation analysis, Analysis of Variance (ANOVA), and multiple regression analysis were conducted. This research found that the multiple regression model was significant (F-test (5,345) = 104.16), (p-value < .001), (R Squared (R2) = .60). The most potent influences on consumer satisfaction were Internet Quality (IQ), Customer Loyalty (CL), Price Structure (PS), and Customer Support (CS), while Company Trust (CT) was the weakest. A Pearson correlation analysis was performed to analyze the relationship between dependent and independent variables. Finally, a linear correlation exists between the dependent variable (Customer satisfaction) and the independent variables (CS, IQ, CT, PS, and CL). There is the highest correlation between Internet Quality and Company Trust (0.74).

Keywords: Internet Service Provider (ISP), Customer Satisfaction and Loyalty, Internet Quality, Technical Support, Customer Service, Price, and Company Trust.

1. Introduction

Customer satisfaction assessment is one of the most pressing issues confronting businesses of all sizes and types today. It is fully justified by the client orientation philosophy and the fundamental principles of continuous development of today's businesses. In reality, one of the five essential roles of management science is the measurement, which allows for the study, analysis, and improvement of processes. For these reasons, customer satisfaction should be quantified and converted into various quantitative indicators.

Over the last decade, internet connectivity in the Kurdistan Region of Iraq (KRI) has gradually increased, improving competitiveness and supporting economic growth. Increases in availability and competition among ISPs have been observed in recent years[1]. Moreover, in a market economy, customer satisfaction is the most important factor of company profitability.

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Therefore, knowing what makes customers loyal to a specific service provider is essential. Customer satisfaction is heavily influenced by the quality of the Internet connection, which is the most important predictor of perceived service value and can improve satisfaction from the customer's perspective. The study's practical approach includes an examination of customer perceptions in this industry and strategic recommendations for ISPs[2].

The Kurdistan region of Iraq has experienced a dramatic rise in Internet usage. The number of ISPs and users has grown so fast that it has become a part of everyday life[3]. The Internet is a worldwide computer network that links millions of people and organizations. Furthermore, it is the largest Wide Area Network in the world, allowing users in different geographical locations to share information and collaborate. Information technologies are becoming a common asset of modern socio-economic life as globalization spreads. These technologies are opening up new avenues for all[4]. Iraqi Kurdistan has experienced rapid growth and development in broadband Internet access over the last 20 years. Kurdistan's government has implemented a strategic plan in the field of internet industry development. Many Internet

Service Providers are operating in the Kurdistan region today. As a result of the intense competition among ISPs and the growing demand for customers, ISPs have had to invest in numerous services to develop their Internet networks. The increased demand for internet use and better internet service has led to further improvements in making cheaper, faster internet connections for users. Thus, assessing customer satisfaction is critical for Internet firms to service their customer's needs, deliver more pleasure, and maintain corporate sustainability, which is vital to the nation's economic growth[5].

Customer satisfaction levels must be evaluated and measured for ISPs to improve service quality and sustain customer loyalty, especially in the Kurdistan Region of Iraq, where internet usage has increased dramatically, and many ISPs operate. Customer satisfaction can be measured using various techniques like surveys, interviews, and focus groups. These can provide insights into customers' perceptions of internet services, such as network quality, reliability, and customer support. Quantitative measures such as NPS, CSAT, and CES can assist ISPs in tracking changes in customer satisfaction, benchmarking against competitors, and identifying areas for improvement. ISPs can apply strategic recommendations based on customer satisfaction assessments to improve service quality and promote customer loyalty. These suggestions include enhancing network quality and dependability, emphasizing customer support, providing value-added services, and regularly analyzing and measuring customer satisfaction.

Businesses must prioritize the satisfaction of their customers. The delighted consumer becomes an agent for the company and recommends others to buy their products or use their services from them. Customer happiness and loyalty should be combined to focus on many consumers and the business's success. However, dissatisfied customers harm businesses since they not only assume less income but also communicate their unpleasant experiences with others, and they do it more frequently than satisfied customers[5].

To fully comprehend how satisfied customers are with the internet service market in Iraq's Kurdistan Region, this paper will review existing literature on the topic, examining the significance of customer satisfaction in the service industry. The article will subsequently describe the research methodology, incorporating details on the sample selection and the data collection and analysis process. The study outcomes will be presented and analyzed for internet service providers in the region. Finally, the paper will end with a summary of the primary findings, a discussion of the limitations of the research, and suggestions for future research endeavours in this domain.

2. Literature Review

The concept of customer satisfaction is the most studied in marketing literature, which is the assessment of a product/service by the customer in terms of its compliance with their needs and expectations[6].

Specific product features and perceptions of quality must be considered to please clients. In addition to emotional responses, customers' perceptions of equity also affect satisfaction. The benefits of increased customer satisfaction can include increased loyalty, customer lifecycle extension, and positive word-of-mouth marketing. Customers who are satisfied with the product or service of a company are more likely to repeat purchases and recommend the product or service to others. Despite customers' needs, a business organization can only grow by ignoring them[7].

Loyalty is considered more profitable than gaining a new customer[8]. Acquiring a new customer is much more costly than retaining an existing customer. When you have loyal customers, you can encourage others to buy from a business, and they will think twice before changing their minds about buying other products or services. It is not by accident that customers become loyal; it is the result of the decisions made about sourcing and design. Customer-centred strategies that consider their preferences and interests must be employed to create client loyalty. A customer's loyalty is developed over a while and several transactions.

A brand's reputation is based on the satisfaction of customers[9]. The degree to which a customer is satisfied with a particular product after using it. In essence, customer satisfaction is a judgment that the product or service provides an enticing level of satisfaction. As a result, for service providers, understanding the level of customer insight is quite essential.

Another essential element influencing customer loyalty is pricing. Many providers offer more choices, opportunities, and prices for customers to meet their needs. Consumers will also benefit from companies comparing prices with their competitors. In the Internet service industry, companies are successful when customers are satisfied. Moreover, pricing is vital in influencing customers' decisions to use Internet service companies. Accordingly, the pricing will be taken into consideration by customers. In addition, it will increase the number of loyal customers for that particular provider[10].

Customer satisfaction is determined mainly by the quality of the network. Monitoring the internet strength and assessing the quality of the network should be done by internet service providers regularly. The speed of Internet connections is one of the quality factors that customers measure based on the maximal bandwidth suppliers commit in their contracts with customers. Additionally, they claim speed in their advertisements. For signal stability, investing in auto-configuration systems and allowing immediate reconfiguration when damage occurs would be practical. Improvements in the quality of service will increase customer satisfaction for internet service providers[11].

The service quality dimension includes customer service, which is the ability of the service provider to deliver the service or product as promised. A question like "how and what are the products/services provided to the users??? It measures how satisfied or dissatisfied the users are with the product/services. According to[12], service providers should interact with customers to provide comprehensive solutions. A customer representative's skills, including knowledge, courtesy, and excellent listening skills, should determine the quality of their service. They provide information booklets to customers, their utility, and guidance on the purchase process related to the interaction between users and service providers. Several telecommunications service providers are trying to shift from tariffs to service competition, as it is

closely associated with consumer satisfaction as reflects their customers' evaluations of the performance of service providers.

3. Methods and Materials

his section describes the data analysis procedure for testing our hypotheses. Our research methodology design includes the following components."

1. Statement of the problem and research importance: This section outlines the situation we are addressing and its significance in the field.

2. Exploring previous studies and selecting factors: We thoroughly reviewed relevant literature to identify previous studies and factors related to our research problem.

3. Identifying research hypotheses and questions: We established research hypotheses and questions based on our literature review to guide our study.

4. Target population: We identified our target based on Sulaimani City in the Kurdistan Region of Iraq, primarily consumers of the Internet, not corporations.

5. Survey design and data collection: We design a research survey based on the variables and describe our data collection and analysis methods, including our sampling strategy, data collection instruments, and data analysis techniques.

6. Results and discussion: We discuss the implications of our findings, compare them to previous research, and draw conclusions based on our study's results.

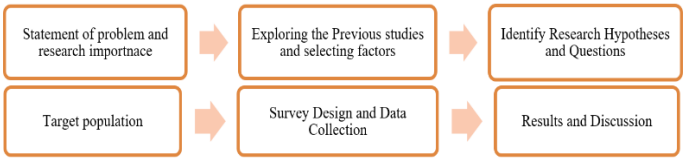

Figure 1: Research Methodology (Original from authors).

3.1 Statement of the problem and research importance

Firms need to comprehend fundamental ideas, such as customer satisfaction, to keep their attention on the business and grow it. Organizations must be able to evaluate these structures from their customers' points of view to understand better and address the demands of their customers. Service quality is critical since it increases customer loyalty, benefit, cost savings, client loyalty, and maintenance. According to[11], service quality is defined as "customers' overall evaluation of a service." As a result, the company considers the quality of service represented by consumers to be highly essential in determining the organization's capacity to supply such service and satisfy customers, resulting in their satisfaction. This research aims to identify the variables that contribute to or detract from customers' overall satisfaction with their Internet service providers.

3.2 Exploring the Previous studies and selecting factors

For the search queries, Google Scholar and Research Gate were used. Several databases were considered, including Springer Link Journal, Elsevier, IEEE, Digital Library, Science Direct, and ICM Library. According to the table below, previous studies have examined customer satisfaction and the variables and factors they used. The previous studies focused on customer satisfaction and loyalty; we have extracted the variables in Table 1.

Table 1: related work and selection of factors.

	Focus on study	Authors	Factors / Variables / Keywords / Indicators
1	Analyzing the Factors That Influence Thailand ISP Customers' Loyalty	[8]	Service Quality, Pricing, Switching Cost, Trust and Brand Image
2	Calculation of Quality of ISP Services in the Central Region of Iraq Using Statistics	[14]	Speed, Coverage, Reliability and Price
3	Satisfaction with Internet Service Providers and Related Factors (Exploratory Study of Internet Service Providers in Erbil - Kurdistan Region	[15]	Network Availability, Billing, Speed, Customer Care Service, Ability to get quick attendance, and Ability to provide a solution
4	Determinants Of Mobile Phone Customer Satisfaction In The Kurdistan Region	[16]	Brand, Price, Demography, Perceived enjoyment, Perceived usefulness, and Perceived ease of use
5	Customer Satisfaction with Internet Service Providers in Albania	[11]	Service Quality and Network Quality
6	Telecom Mobile Companies in Yemen: The Role That Various Dimensions of Service Quality Play In Creating Satisfied Customers	[17]	Service Quality and Network Quality
7	Customer Perceptions on Internet Services in the Kurdistan Region of Iraq	[1]	Network Quality, Customer Satisfaction, Information Quality, Security and Privacy, Customer Trust and Customer Value
8	Service Quality, Customer Satisfaction and Loyalty in an Internet Service Provider	[18]	Internet Service, Price, Employees, and Physical Evidence
9	Customer Loyalty Framework of Telecommunication Service Market	[19]	Customer Satisfaction, Customer Trust Switching Cost, and Customer Loyalty

10	Customer Satisfaction, Switching Costs and Customer Loyalty: An Empirical Study on the Mobile Telecommunication Service	[20]	Customer Satisfaction. Switching Costs, and Customer Loyalty
11	How to Assess and Improve Service Quality for Your Customers	[21]	Personnel, Products, Image, Service, Access
12	Determinants of User Satisfaction with Fixed Broadband Internet Services during the Covid-19 Pandemic	[10]	Network Quality, Customer Service, Responsiveness, Convenience, Value-added, Price Structure
13	Exploring the Moderating Role of Mobile Broadband Counter Service on the Connection Between Service Quality and Customer Satisfaction.	[22]	Security, Efficiency, Network, and Connectivity

3.3 Research Hypotheses and Questions

The research framework below illustrates the hypotheses of this research, which examines the impact of customer satisfaction on factors such as internet service quality, price structure, technical support and customer service, company trust, and customer loyalty. In addition, each determinant of customer satisfaction is presented with a hypothesis. According to the proposed study, the following research questions and theories will be answered:

1. How satisfied are a customer of the internet providers?
2. What are the essential factors in determining your level of satisfaction with ISPs
3. Is there a correlation between the variables that are strong enough to be considered statistically significant?
4. Do the Independent Variables significantly predict the Dependent Variable?

A hypothesis is denoted by the letter "H," and its positive or negative impact will determine the outcome.

H (1): Company Trust variable significantly predicts Customer Satisfaction.

H (2): Customer Loyalty significantly predicts the Customer Satisfaction

H (3): Internet Service Quality variable significantly predicts the Customer Satisfaction

H (4): Technical Support and Customer care significantly predict the Customer Satisfaction

H (5): Price Structure variable significantly predicts Customer Satisfaction.

3.4 Target population

As the target group in this study, we are looking at individuals in Sulaimani City in the Kurdistan Region of Iraq who are primarily consumers of the Internet, not corporations.

3.5 Survey Design and Data Collection

A questionnaire was developed and distributed online to properly analyze the significance of everything discussed here to gather information about consumers' views and expectations of internet service providers in Sulaimani city of the KRI. Based on previous studies, the research framework is built to match the ISP industry to measure satisfaction. The survey consisted of thirty questions and was performed online with an emphasis on the English-speaking majority; therefore, the bulk of our target audience was academic students and teachers of all ages in the KRI's Sulaymaniyah city. Our sample includes 354 people of both genders and a complete list of the vast majority of ISPs in the KRI. Participants were asked to complete a thirty-question survey on an online survey site (surveymonkey.com) to determine customer satisfaction and loyalty, as well as the factors that may influence it, such as: (Internet Connection Quality, Customer Satisfaction, Price and plan perceptions, Customer Loyalty, Technical Support and Customer Care Services, and Trust). The survey platform was open for ten days, beginning April 10th and ending April 20th, 2022. In some questions, responses were based on the following five scale answers: (1 is Strongly Disagree, 2 is Disagree, three is Natural, 4 is Agree, and five is Strongly Agree and Missing = Unknown. The first pilot questionnaire was pre-tested on four people working in the information and communications technology industry to ensure that the language used was correct. It was also pre-tested on random Internet users to ensure the questionnaire was user-friendly. The final questionnaire was constructed after the eliminations were made. The purpose of quantitative research is to present data using statistics. Data are collected from questionnaires, analyzed, and coded by researchers to describe the results. The raw data must also be interpreted into numerical data. We will collect and analyze the data using SPSS (Statistical Package for the Social Sciences Program).

4. Results and Discussions

Many techniques from different approaches can analyze data. This study will perform descriptive analysis, Univariate outliers, Cronbach alpha coefficient, Pearson correlation analysis, ANOVA and Multiple Regression Analysis.

4.1 Descriptive Statistics belong to the participants.

Frequencies and percentages were calculated for Age Group, Gender, Level of Education, and which describes you. N refers to the size of the population, while n describes the size of a sample. The age range between 18 and 27 was the one that was recorded the most frequently (n = 254, 71.75% of total observations). The male was the type of Gender that was seen the most often (n = 228, 64.41% of actual words). The Bachelor's Degree or Higher Education category was seen the most often (n = 250, 70.62%). The most frequently observed variety of which of these describes you was "You are a student or graduate of an IT or computer science field (n = 217, 61.30%)". Frequencies and percentages are presented in Table 2.

Table 2: Statistical analysis of respondents' characteristics (N=354).

Variable	*N*	%	Cumulative %
Age Group			
17 and below	1	0.28	0.28
18 and 27	254	71.75	72.03
28 and 37	73	20.62	92.66
38 and 47	20	5.65	98.31
48 and above	6	1.69	100.00
Missing	0	0.00	100.00
Gender			
Female	126	35.59	35.59
Male	228	64.41	100.00
Missing	0	0.00	100.00
Level Education			
Bachelor	250	70.62	70.62
Diploma	51	14.41	85.03
Doctoral	8	2.26	87.29
High School	14	3.95	91.24
Master	31	8.76	100.00
Missing	0	0.00	100.00
Which of these describes you			
I am only an internet and mobile user	66	18.64	18.64
I have experience in using computers and the Internet in general	70	19.77	38.42
None of the above	1	0.28	38.70
You are a student or graduate of an IT or computer science field	217	61.30	100.00
Missing	0	0.00	100.00
Overall respondents	354	100%	

Frequencies and percentages were calculated for "Which of the following factors is most important in determining your level of satisfaction with your ISP, including Internet Service Quality, Price and plan perceptions, Technical Support and Customer Care Services, Customer Loyalty, and Trust. The most frequently observed category of the main essential factors was Internet Service Quality (n = 232, 65.54%). Frequencies and percentages are presented in chart 1.

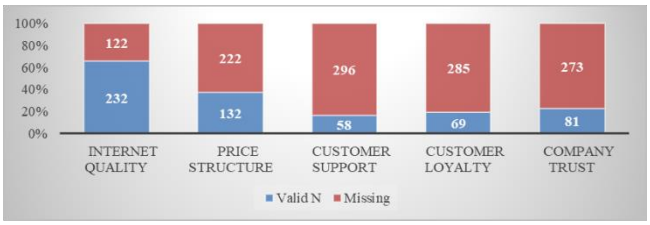

Chart 1: Which of the following factors is most important in determining your level of satisfaction.

Frequencies and percentages were calculated for Overall Customer Satisfaction. The most frequently observed category of Overall Customer Satisfaction was Agree (*n* = 139, 39.27%). Frequencies and percentages are presented in Chart 2.

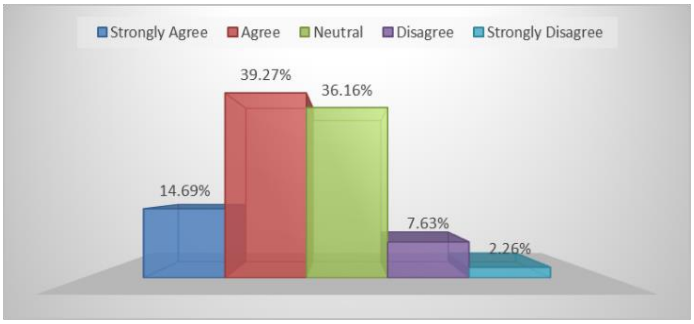

Chart 2: Overall Customer Satisfaction.

4.2 Customer Satisfaction dimensions

This research examines eight variables, namely Price Structure (PS), Company Trust (CT), Customer Loyalty (CL), Internet Quality (IQ), Customer Support (CS), and Overall Customer Satisfaction (CS). Additionally, 11 composite variables have been created by averaging 16 questions in section 3. Considering the mean score of questions 1 and 2 in section 3, we generated the composite variable 'Price Structure'.

We used statistical measurements such as the mean (M), variance (V), and standard deviation (SD) to compress and gain insight into our dataset, specifically to establish the average value of the data and the distribution of the data around this value. These measurements provided several benefits for our investigation, including a concise representation of the central tendencies and variation of the analyzed variables and the identification of outliers or anomalies that may have affected our results. The variance score enabled us to determine how individual data points varied from the mean and offered further information about the distribution.

This research generated a final composite variable, which can be found in Table 3.

Table 3: Questions related to each composite variable.

No	Variables	Questions
1	Price Structure (PS)	PriceQ1. How satisfied are you with your line's offers and plans? PriceQ2. How satisfied are you with your internet service and price?
2	Company Trust (CT)	TrustQ1. How well does your ISP meet your needs? TrustQ2. How much do you trust the staff of this company to run the internet service in the best way? TrustQ3: How satisfied are you with the company's compensation during an internet outage?
3	Customer Loyalty (CL)	LolyaltyQ1. To what extent would you recommend your mainline to your friends and others? LoyaltyQ2: Will you continue to use this company's Internet now and in the future?
4	Internet Quality (IQ)	IntenetQualityQ1: To what extent do you agree that your internet connection speed is the same as the plan you subscribed to and the company specified? IntenetQualityQ2: How satisfied are you with your internet speed from evening to late night? IntenetQualityQ3: How satisfied are you with your internet connection's download and upload speed? IntenetQualityQ4: How satisfied are you with your internet connection?
6	Customer Support (CS)	Customer SupportQ1: What is the level of technical support and subscriber service, for example, phone calls or office visits in case of problems, questions, or information on your line? Customer SupportQ2: How satisfied are you with the company's website or mobile app providing all the information, use, troubleshooting, monthly plan updates, packages and offers? Customer SupportQ3: How satisfied are you with the ISP's facility in payment and renewal of plans, for example, through e-wallet, telephone, markets, etc.? Customer SupportQ4: How satisfied are you with the information posted on the company's social media?
8	Overall Customer Satisfaction	Overall, how satisfied are you with your current ISP?

In Table 4, the descriptive statistics scores of each research variable are shown. This study's mean descriptive statistics scores ranged from 3.65 to 3.25. The standard deviation scores of each variable ranged from 1.01 to 0.78, while the variance scores of each composite variable were between 1.026 and 0.608.

Table 4: Statistical analysis of research variables.

Variable	M	SD	Variance	Min	Max
Customer Support	3.47	0.78	.608	1.00	5.00
Internet Quality	3.25	0.95	.910	1.00	5.00
Company Trust	3.30	0.87	.749	1.00	5.00
Price Structure	3.27	0.91	.826	1.00	5.00
Customer Loyalty	3.65	1.01	1.026	1.00	5.00

4.3 Scale reliability (Cronbach's Alpha)

The reliability of a measuring instrument is determined by the consistency of the results obtained when different attempts are made to measure the same thing. Using Cronbach's alpha, also called coefficient alpha, we calculated the average of all combinations of split-half coefficients resulting from the different splitting of the measurement instrument. A coefficient alpha ranges from 0 to 1, meaning no consistency to complete consistency (all items are consistent). There is a consensus that scales with a reliability coefficient between 0.80 and 0.95 are highly reliable. It is considered that scales with correlation coefficients of 0.70 to 0.80 have good reliability, while scales with correlation coefficients of 0.60 to 0.70 have fair reliability. Rankings with coefficients below 0.6 are unreliable (Zikmund William D arry J Babin and Jon C. Carr, 2010).

Cronbach's alpha for the Customer Satisfaction items was.933, indicating high levels of internal consistency. The examination of trustworthiness is summarized in Table 4.

Table 5: Cronbach's Alpha Cronbach's Alpha Based on Standardized Items N of Items

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.933	.933	16

Table 5 shows that all research questions in this dimension are highly coherent. The score's reliability would have decreased if any questions were omitted.

Table 6: Reliability Table for each research question.

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
PriceQ1	51.09	120.871	.724	.609	.928
PriceQ2	51.44	123.159	.584	.417	.931
TrustQ1	51.17	119.206	.733	.589	.927
TrustQ2	50.80	122.828	.652	.460	.929
TrustQ3	51.72	121.381	.573	.431	.931
LoyaltyQ1	50.79	118.505	.676	.548	.929
LoyaltyQ2	50.89	118.801	.708	.583	.928
InternetQualityQ1	51.53	117.081	.750	.600	.927
InternetQualityQ2	51.30	117.237	.734	.632	.927
InternetQualityQ3	51.16	116.382	.767	.661	.926
InternetQualityQ4	51.20	119.232	.734	.592	.927
SupportQ1	51.13	123.607	.534	.402	.932
SupportQ2	51.11	123.078	.557	.428	.932
SupportQ3	50.88	125.601	.501	.410	.933
SupportQ4	51.20	124.976	.538	.412	.932
Customer Satisfaction	50.98	120.513	.790	.651	.926

4.4 KMO and Bartlett's test of sphericity

Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Sphericity Test are presented in the table below. KMO determines the strength of the partial correlation (how the variables are related) between the variables. The more closely a KMO number approaches 1.0, the better; readings below 0.5 are typically deemed unacceptable. It is generally accepted that factor analysis should begin with a KMO of at least 0.80. The KMO value in our results was .879. A robust partial correlation between the variables indicates that the information among the variables overlaps considerably. Therefore, factor analysis can be conducted (Zikmund William D arry J Babin and Jon C. Carr, 2010).

Bartlett's test of sphericity is used to check for the identity of a correlation matrix. An identical correlation matrix indicates that your variables are unrelated and inappropriate for factor analysis. In this case, 959.021 is the test statistic with 10 degrees of freedom and a 5% significance level. This means our factor analysis is appropriate, as illustrated in Table 6.

Table 7: KMO and Bartlett's Test.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.879
Bartlett's Test of Sphericity	Approx. Chi-Square	959.021
	df	10
	Sig.	<.001

Communalities determine the amount of variance accounted for in each variable. In Table 7, each variable's extraction communality represents the variance accounted for by its components. Higher communalities (closer to 1) will allow more information to be extracted. A communality of at least 0.40 is a good indicator of factor analysis. As represented by the extracted components, the variables are well represented by the communities with high values in the table below. Internet quality has high communalities (0.782), followed by Trust (0.764), Loyalty (0.723), Price (0.68) and Customer Support (0.504).

Table 8: Extraction Method: Principal Component Analysis.

Communalities		
	Initial	Extraction
Customer Support	1.000	.504
Internet Quality	1.000	.782
Trust	1.000	.764
Price	1.000	.680
Loyalty	1.000	.723

The percentages of variation described by the original solution, the extracted components, and the rotated components are presented.

The first four principal components are the extracted solution since components with eigenvalues greater than one are advised to be removed. The extracted four components explain 69.091 % of the total variance, as shown in Table 8. We use this coefficient to extract an informative factor that summarizes the most crucial information, conforms to the needs of the data, and is amenable to further investigation.

Table 9: Total Variance Explained.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.455	69.091	69.091	3.455	69.091	69.091
2	.590	11.805	80.896			
3	.388	7.762	88.658			
4	.304	6.071	94.730			
5	.264	5.270	100.000			
Extraction Method: Principal Component Analysis.						

4.5 Pearson Correlation Analysis

A Pearson correlation analysis was conducted among all variables, as shown in Table 9. A coefficient of this type ranges from -1 to 1, and if it is more significant than 0.6, then the relationship is close. If smaller, the association is more vital; if closer to 1. An open relationship is indicated by 0.3.

Table 10: Pearson Correlation Results among variables.

Combination	*r*	95.00% CI	*p*
Customer Satisfaction – Customer Support	.53	[.45, .60]	< .001
Customer Satisfaction – Internet Quality	.72	[.67, .77]	< .001
Customer Satisfaction - Trust	.63	[.56, .69]	< .001
Customer Satisfaction - Price	.64	[.57, .70]	< .001
Customer Satisfaction - Loyalty	.66	[.59, .71]	< .001
Customer Support - Internet Quality	.55	[.47, .62]	< .001
Customer Support - Trust	.53	[.45, .60]	< .001
Customer Support - Price	.48	[.40, .56]	< .001
Customer Support - Loyalty	.47	[.38, .54]	< .001
Internet Quality - Trust	.73	[.68, .78]	< .001
Internet Quality - Price	.66	[.60, .71]	< .001
Internet Quality - Loyalty	.70	[.64, .75]	< .001
Trust - Price	.64	[.57, .69]	< .001
Trust - Loyalty	.70	[.64, .75]	< .001
Price - Loyalty	.64	[.57, .70]	< .001

In the correlation matrix above, Customer Satisfaction, dependent variables with independent variables (CS, IQ, CT, PS, and CL) are linearly correlated. Correlations between Internet Quality and Company Trust were the highest (0.74), followed by those between Internet Quality and Customer Satisfaction (0.72). Accordingly, Internet Quality and Company Trust are strongly correlated. A correlation of 0.47, the lowest, exists between Customer Support and Customer Loyalty. A multivariate linear regression approach is needed to ensure that the effect of other variables is considered when correlating two variables.

Commonalities represent the fraction of variance accounted for each independent variable. The extraction communalities are estimates of the proportion of variance in each variable that can be attributed to the extracted components. The more knowledge can be gleaned from a set, the closer the communality is to 1. A communality of 0.40 or above is a suitable benchmark for factor analysis. When the values of the communalities in this table are high, the extracted components accurately represent the variables.

4.6 Pearson Correlation Analysis

A multiple regression analysis was conducted to assess whether Customer Support, Internet Quality, Trust, Price, and Loyalty significantly predicted Customer Satisfaction.

Multicollinearity: Multicollinearity between predictors was tested by calculating Variance Inflation Factors (VIFs). High VIFs show enhanced model impacts due to multicollinearity. Concerns should be raised at VIFs larger than 5, and VIFs over ten should be regarded as the upper limit[23]. The VIFs of all predictors in the regression model are below 10. The VIF for all of the model predictors is listed in Table 10.

Table 11: Variance Inflation Factors for all dependent variables.

Variable	VIF
Customer Support	1.54
Internet Quality	2.86
Company Trust	2.72
Price Structure	2.10
Customer Loyalty	2.44

Autocorrelation: The level of autocorrelation among the residuals was evaluated with a Durbin-Watson test. Between 1.50 to 2.50 is considered adequate.

Results: The results of the linear regression model were significant, F(5,345) = 104.16, p < .001, R2 = .60, indicating that approximately 60.15% of the variance in Customer Satisfaction is explainable by Customer Support, Internet Quality, Trust, Price, and Loyalty provides evidence that the regression model works with the data set. Customer Support significantly predicted Customer Satisfaction, B = 0.15, t (345) = 3.03, p = .003. It indicates that, on average, a one-unit increase in Customer Support will increase the value of Customer Satisfaction by 0.15 units. Internet Quality significantly predicted Customer Satisfaction, B = 0.35, t(345) = 6.40, p < .001. This indicates that, on average, a one-unit increase in Internet Quality will increase the value of Customer Satisfaction by 0.35 units. Trust did not significantly predict Customer Satisfaction, B = 0.03, t(345) = 0.58, p = .560. Based on this sample, a one-unit increase in Trust does not significantly affect Customer Satisfaction. Price significantly predicted Customer Satisfaction, B = 0.19, t(345) = 3.83, p < .001. This indicates that, on average, a one-unit increase in Price will increase the value of Customer Satisfaction by 0.19 units. Loyalty significantly predicted Customer Satisfaction, B = 0.18, t(345) = 3.68, p < .001. This indicates that, on average, a one-unit increase in Loyalty will increase the value of Customer Satisfaction by 0.18 units. Table 11 summarizes the results of the regression model.

Table 12: Results for multiple Regression with Customer Support, Internet Quality, Trust, Price, and Loyalty predicting Customer Satisfaction.

Model Summary

Model	R	R Square	Adjusted R Square	Std. An error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.776[a]	.602	.596	.581	.602	104.159	5	345	<.001	2.084

a. Predictors: (Constant), Loyalty, Customer Support, Price, Trust, Internet Quality

b. Dependent Variable: Customer Satisfaction

Unstandardized Regression Equation: Customer Satisfaction = 0.53 + 0.15*Customer Support + 0.35*Internet Quality + 0.03*Trust + 0.19*Price + 0.18*Loyalty

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	175.751	5	35.150	104.159	<.001[b]
	Residual	116.426	345	.337		
	Total	292.177	350			

a. Dependent Variable: Customer Satisfaction

b. Predictors: (Constant), Loyalty, Customer Support, Price, Trust, Internet Quality

From Table 12: Based on the normalized regression coefficient Beta, the following order is indicated as the degree of impact of the independent variables on the dependent variable: Internet Quality Service (IQ) (0.368), Customer Loyalty (CL) (0.195), Price Structure (PS) (0.188), and Customer Support (0.128). The results showed that Internet Quality Services, Customer Loyalty, Price Structure, and Customer Support factors have the most decisive impact on consumer satisfaction, while Company Trust has the weakest effect. Therefore, the four elements were accepted based on the hypotheses (H2 to H5), and the hypothesis (H1) was rejected.

Table 13: Using the Enter technique, provide an estimate for the beta coefficient of the model.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.534	.155		3.437	<.001		
	Customer Support	.150	.049	.128	3.029	.003	.651	1.537
	Internet Quality	.351	.055	.368	6.398	<.001	.350	2.858
	Company Trust	.034	.059	.033	.583	.560	.368	2.716
	Price Structure	.189	.049	.188	3.827	<.001	.477	2.098
	Customer Loyalty	.176	.048	.195	3.678	<.001	.410	2.441

Conclusion

This study explored the factors influencing customer satisfaction with ISPs in Sulaimani City - KRI. An online survey was conducted to gather data, and 354 records were obtained; the collected dataset was analyzed using SPSS software. Firstly, Cronbach's Alpha coefficient was used to determine the reliability of the dataset, and the result was 0.933, which confirms the reliability. Our further tests showed that the overall customer

satisfaction was (Agree), and the subscribers identified internet quality as the most critical factor affecting their satisfaction level. Comparing the independent and dependent variables showed that the variable is significantly correlated; furthermore, the strongest correlation was between internet quality and company trust. Next, we analyzed the degree of impact of the independent variables on the dependent variable using the regression coefficient Beta. We found that the order of importance is Internet Service Quality, Customer loyalty, price structure and customer support. Finally, we explore machine learning algorithms to detect customer satisfaction levels for future work automatically.

Author contribution

Twana Shareef: Conceptualization, Methodology, Software, Formal analysis, Writing - original draft, Visualization.

Bilal Rashid: Data curation, Methodology, Validation, Writing - review & editing, Supervision, Software.

Azhi Faraj: Data curation, Validation, Validation, Supervision.

Conflict of interests

None

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