Establishing A Predictive Model On Internet Service Provider Preference Of Work-From-Home (WFH) Employees Based On Customer Satisfaction On The Leading Internet Service Providers

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Abstract

According to the Department of Information and Communications Technology, the internet in the Philippines needs continuous improvement. The Statista research department labeled the Philippines as one of the worst internet speeds with high costs in the Asia Pacific. The COVID-19 pandemic forced businesses to implement a work-from-home (WFH) setup where high-performance broadband services are required. Therefore, findings of this study will be beneficial to them since the aim of the study is to assess the satisfaction of WFH employees with their current Internet Service Provider (ISP) through the five factors - speed, cost, accessibility, reliability, and customer service. Multinomial Logistic Regression was used to predict which ISP (ISP X, ISP Y, and ISP Z) is most likely used by WFH employees based on the satisfaction of the respondents. The results of the study showed that speed and cost are the only significant factors. A WFH employee who uses an ISP with higher speed and cost is most likely to be a ISP Y user. These results imply that there is a high demand for fast and affordable internet in the Philippines. The researchers recommend using a wider sample of internet users and ISPs, and utilizing different statistical tools for future studies.

Keywords
Work-From-Home (WFH), Internet Service Provider (ISP), Multinomial Logistic Regression

1. Introduction
The Philippines has the highest average daily time spent using the internet in the Asia Pacific region. Internet Users in the country spend 10 hours and 27 minutes daily using the internet (Statista 2022). With the increase of employees working from home due to Covid-19, having a reliable and fast internet connection is a must. In 2016, 64.41% of the population of the country was using the internet compared to 2020 with 72.7%. Forecasts show that by 2026, it would increase to 77.44% of the population. According to a research released by Statista Research Department in 2021, the average Internet speed in the Philippines is one of the slowest among the Asia Pacific region. In addition, among ASEAN countries, the Philippines was considered as one of the most expensive monthly internet costs (Baclig & LUSTAN 2021). This shows that there is a need to increase the quality, speed, and performance of Internet services. There are numerous current actions initiated in the Philippines that serve as assistance to the researchers' potential resolution to the issue. Due to widespread complaints, the government has announced plans to bring free Wi-Fi into schools, parks, libraries, hospitals, and public transportation stations (Toh 2015). According to CNN Philippines (2021), technology experts urge lawmakers to implement a law that would help improve internet connectivity in the Philippines. Other actions done were to establish a strong regulatory system. The House Bill 8910, also known as the Open Access in Data Transmission Act, was approved by the House of Representatives on July 28, 2021 (Cervantes, 2021). The bill shall ensure fair competition in the data transmission industry by lowering barriers to entry for the telecommunications industry, in the process lowering the cost of such services (Legislators Tout Open Access Bill as Recovery Driver 2022).

The researchers made a standardized questionnaire regarding the respondent's satisfaction with their current internet provider to assess the experience of WFH employees in NCR. The sample size used was at least 10 respondents per independent variable. The survey was distributed via social media platforms (e.g. Facebook). According to CBS News (2021), The initial main factors that need to be considered are speed, price/cost, availability, and reliability. In addition, Loomba (1998) defined customer support as a set of activities that ensures product availability for trouble free use to consumers over its useful lifespan. Customer support is also referred to as product support, after sales service, technical support or simply service (Goffin and New 2001). The dependent variables are the 3 leading ISPs. The acquired data was then evaluated through Multinomial Logistic Regression. The researchers used the tools provided by SPSS Statistics and MS Excel.

The findings of the study shall provide helpful information to the following individuals: (1) Work-from-Home (WFH) employees, (2) Employers, (3) Internet Service Providers (ISP), (4) Internet Users and (5) Future Researchers. WFH employees, employers, and internet users in general will be guided in choosing the better internet provider to obtain optimum speed, price/cost, availability, and reliability. They will be aware and more knowledgeable on the factors considered in choosing internet providers that will match to their preferences. The findings of this study in one way or another would also assist ISPs to strengthen, improve or formulate new internet plans and services offered to WFH employees. Lastly, the findings of this study may also be useful to the future researchers for this may serve as a piece of literature.

1.1 Objectives

Given the information previously discussed, it can be observed that there is an urgent need to address this issue. The aim of this paper focuses on analyzing and interpreting quantitative data. The following are the initial objectives of the study: (1) To predict which ISP is being used by customers based on the satisfaction of the WFH employees who are also current users of the leading ISPs. (2) To provide data that may assist customers in choosing an ISP with the results of this study. (3) To provide ISPs with extensive customer feedback of their own and their competitors' services.

2. Literature Review

The current leading ISPs in the Philippines are PLDT, Globe Telecom, and Converge ICT Solutions. The subscribers of the mentioned ISPs have drastically increased due to the COVID-19 pandemic (Baclig 2021).The next leading ISP, Globe, gained over 4 million broadband subscribers in 2021. The company stated that the increase was 81% higher than the previous year's figure (Baclig 2021). Globe's revenue for 2021 reached a total of ₱151 billion. Converge stated that their subscribers doubled from 500,000 to 1 million (Baclig 2022). The total revenue of Converge also doubled from ₱3 million to ₱7 million. In comparison to other leading ISPs, Converge highly focuses on the carbon footprint of their company.

The increasing number of internet users in the Philippines pose a higher demand for high quality internet services in the country. There are various issues that remain unaddressed despite the continuous projects of leading ISPs in the Philippines. These problems have become more urgent since Filipinos, nowadays, highly depend on the internet for their daily activities.

According to Ookla's December 2020 report, the Philippines' internet average download speed for fixed broadband was 297.47 percent faster and 202.41 percent faster than in July 2016. The average fixed broadband download speed in the country has increased from 7.91Mbps in July 2016 to 31.44Mbps in December 2020, while the average mobile broadband download speed has increased from 7.44Mbps in July 2016 to 22.50Mbps in December 2020. In terms of Internet connection speed, the Philippines is among the countries in Asia Pacific Countries (APAC) with the slowest. In the 1st quarter of 2022, the average connection speed of South Korea had the fastest average 5G upload speed in the Asia-Pacific region, at 36.1 Mbps. In comparison, the Philippines had an average upload speed of 13.6 Mbps in the same period.

According to consumer website Cable.co.uk, the average Filipino household pays $53.71 (about Php 2,600) per month for a fixed broadband Internet service in 2021. As a result, the country is ranked 119th out of 211 countries in the globe, and 23rd out of 27 Asian countries. The Philippines has an average cost of $0.75 per megabit per month for broadband. Cable.co.uk calculated the average using a median estimate (Encarnacion 2021).

Considering that the Philippines is an archipelago and made up of more than 7,000 islands with a topography that is predominantly mountainous, it can be difficult for ISP to penetrate certain areas and try to carry the internet connection

to grow into the country's rural areas. Despite significant progress, the Philippines' telecommunications infrastructure remains underdeveloped in most places, with a significantly lower number of cell towers than in its neighboring countries (Estella & Löffelholz 2019).

According to the press release of Senator Win Gatchalian (2021), the social media pages of PLDT and Globe have been flooded with complaints in the past years over the slow response from network service personnel for the much-needed technical repairs. Many customers are voicing their dissatisfaction with the quality of service they receive, from slow internet speeds to bad customer support, on social media (Cambosa 2021). In a news article published by Mercurio in PhilStar Global (2021), from April to December 2020, the NTC was getting an average of 1,227 complaints from consumers in NCR, even reaching a high of 2,253 in July last year. Poor customer service of the telcos drew the ire of most people last 2020, with 10,962 of the complaints from NCR and 814 from the regions stemming from the said concern.

Physical reporting on work has been restricted or perhaps discontinued as a result of the COVID-19 pandemic. For individuals in the Business Processing Outsourcing (BPO) industry, WFH is not a new concept; it merely evolved owing to the COVID-19 epidemic (Bigtas 2022). As a result, several organizations have begun to implement WFH policies. Doing work at home has become the mainstream since 85% of Filipino office workers were forcefully shifted to a WFH setup since the start of the pandemic. (Muldong et al. 2021).

The COVID-19 pandemic has pushed companies and employers to institute a work setup that reduces the number of people in the workplace. As WFH employees depend on the internet, there is a need for high-performance broadband services for their home offices (Piad, 2022). According to the World Bank, Internet speeds should be fast and cheap or else it may hinder the revival of the Philippine economy. With the "new normal," Filipinos will rely more on digital platforms for work and day-to-day needs.

2.1 Theoretical Framework

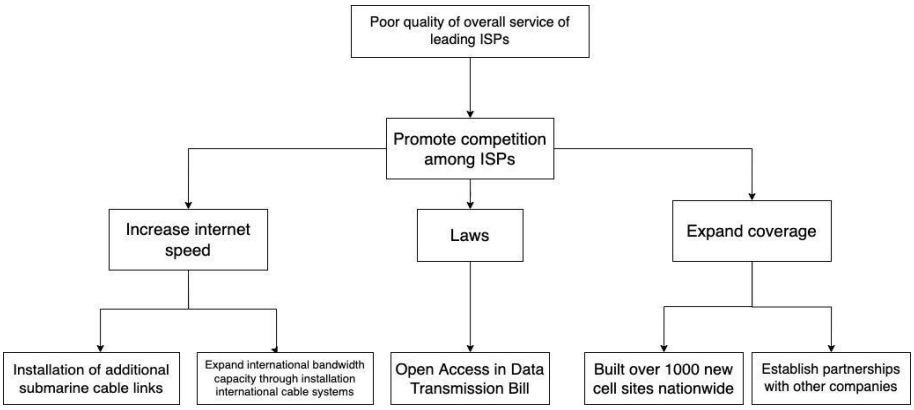

Figure 1. Theoretical Framework

Based on the present literature (Figure 1), poor quality of overall service of leading ISPs has been the main issue of internet connection in the Philippines. Various measures have been implemented to address this issue. Current improvements that have been proven to be effective are promoting competition among ISPs by improving speed, coverage, and implementing laws.

3. Methods

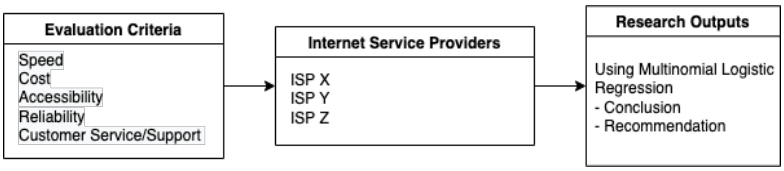

Figure 2. Conceptual Framework

As seen in Figure 2, the process began with the formulation of the survey questionnaire which involved the experience of the respondents with their current ISPs. The survey was then distributed to the target participants of this study. The collected data contains the respondent's satisfaction with the 3 leading ISPs. The results gathered were analyzed using Multinomial Logistic Regression per criteria. The researchers aimed to successfully predict the WFH employees' choice of ISP based on the overall satisfaction of the respondents with each factor.

The evaluation and comparative method of research were utilized in the study to assess WFH employees' satisfaction and establish a predictive model on which ISP is currently being used by the respondents based on their satisfaction on various factors. The researchers chose this research design to evaluate and compare the five factors to the current ISPs of WFH employees within NCR. In this study, the independent variables (IV) used were five factors - speed, cost, accessibility, reliability, and customer service/support. On the other hand, the dependent variable (DV) used were the leading ISPs which are ISP X, ISP Y, and ISP Z.

The researchers collected data on the satisfaction of WFH employees from the National Capital Region (NCR) The WFH employees were the subject of the study with regards to the daily and continuous internet usage. National Capital Region, being the country's capital city, and the center of trade and commerce, where diverse WFH employees are located. The respondents of this study were at least 50 WFH employees of working age (18-60 years old) who are working on National Capital Region (NCR) using the sample size guidelines appropriate for Multinomial logistic regression with an alpha level of 0.05. Sample size guidelines for multinomial logistic regression indicate a minimum of 10 respondents for each of the 5 independent variables (Starkweather & Moske 2011).

The instruments used for measurement for the dependent and independent variables are indicated in tables 1 and 2 respectively.

Table 1. Data Measurement and Instrumentation for Response Variables

Factor	Unit of Measurement	Instrument Used For Measurement	Remarks
Type of Internet Service Provider	1 - ISP X 2 - ISP Y 3 - ISP Z	Survey Questionnaire	

Table 2. Data Measurement and Instrumentation for Independent Variables

VARIABLE	UNIT OF MEASUREMENT	INSTRUMENT	REMARK
Satisfaction on Internet Speed	Mbps	Survey Questionnaire	Based on the respondent's internet speed from his/her current plan (Mbps) divided by the number of gadgets connected to the internet
Satisfaction on Internet Cost	PhP/Mbps	Survey Questionnaire	Based on the respondent's current internet cost (PhP) divided by the internet speed (Mbps)
Satisfaction on ISP Accessibility	Rating: 1 - Negatively affects 2 - No effect 3 - Positively affects	Survey Questionnaire	Based on the effect of the respondent's location to his/her internet connection
Satisfaction on ISP Reliability	Satisfaction on ISP Reliability Rating: 1 - Never lost internet connection 2 - Loses internet connection once or twice a month 3 - Loses internet connection 3-4 times a month 4 - Loses internet connection 5-6 times a month 5 - Loses internet	Survey Questionnaire	Based on the respondent's average no. of sudden loss of connectivity
Satisfaction on ISP Customer Service/ Support Based on Addressing Concerns	Rating: 1 - Very Unsatisfied 2 - Unsatisfied 3 - Neutral 4 - Satisfied 5 - Very satisfied	Survey Questionnaire	Respondents have the option to input the reason for their given rating

3.6 Mode of Data Analysis

The researchers used Multinomial Logistic Regression to predict the ISP being used by WFH employees based on customer satisfaction of the respondents on specific factors. According to the Multinomial Logistic Regression - Statistics Resources - LibGuides at Northcentral University (2022), these were several assumptions that were needed to be met to execute the statistical method:

1. **Independence** - The options of the dependent variable should be independent of one another. In this study, each respondent would only answer for one of the leading ISPs.
2. **Assumption of Linearity** - There should be a linear relationship between the continuous independent variables and the logit transformation of the dependent variable (Laerd Statistics, n.d.)
3. **Elimination of outliers**.
4. **Avoid Multicollinearity** - This means that none of the independent variables can be correlated to each other.

The researchers used SPSS Statistics and Google forms to compile and analyze the data being collected. The researchers used SPSS Statistics to test the dependent and independent variables using multinomial logistic regression. This tool predicted the ISP preferences of WFH employees using SPSS statistics. Also, Google forms was utilized to create the survey questionnaire and identify the respondents' satisfaction with their current ISP.

3.6.2 Cost-Benefit Analysis

Table 3 shows the cost and benefits that the respondents may consider upon interpreting the results of this study.

Table 3. Cost-Benefit Analysis

COST-BENEFIT ANALYSIS	
COST	**BENEFIT**
Cost of availing a ISP Y or ISP Z Internet Plan	Faster internet service
Cost of availing a ISP X or ISP Z Internet Plan	Lower internet costs
Exploring other competitors in the telecommunications sector	Better understanding which service or internet provider is most suited to their needs
Identify the most compatible ISPs based on the five factors; speed, cost, accessibility, reliability, and customer service/ support.	To fulfill the customer demands in order to improve their satisfaction internet connection

4. Results and Discussion

4.1 Survey Results

The survey's respondents are WFH employees in the National Capital Region. This survey focuses on those who use the ISPs ISP Z, ISP Y, and ISP X.

For a total of 75 respondents, the researchers divided 25 among the ISPs to ensure equality and prevent any disparities in the results. The sample size of 10 responses per factor or the independent variable was followed. The respondents were asked what their current internet plan's speed is and to understand the respondents' behavior in terms of usage the respondents were asked how many devices in their home are connected to the internet.

The Survey Respondents were also asked how much is their current plan and how their location affects their internet access, with 1 being the most reliable and 5 being the least stable. According to the survey results, 58.7% of WFH employees lose internet access once or twice each month, while 24% do not. are 3-4 times per month, 1.3% 5-6 times per month, and 16% 0 times per month. The data below show the average number of outages in their area every month, as well as how their location affects their internet access.

The respondents were also asked if they had ever sought assistance from their internet provider's customer service/support, and how they would rate their experience with such service/support. Based on the survey results, 90.7% of respondents have sought help from their respective ISP's customer support. Majority of the respondents answered 4 (Satisfied) followed by 5 (Very Satisfied) as the second-highest rating among the respondents.

The respondents were also asked if their location affected their internet connectivity and how satisfied they were with their access. Survey results showed that the majority of the respondent's internet access are positively affected by their location.

4.3 Assumptions

There are several assumptions that need to be met to execute the statistical method. Following the assumptions improves the accuracy of the test results. The first assumption states that the options of the dependent variable should be independent of one another. In this study, each respondent only answered for one of the leading ISPs.

The tool also requires elimination of outliers. Figures 3 and 4 show the outliers of the data in terms of speed and cost. No outliers were found for accessibility, reliability, and customer service.

Figure 3. Outliers (Speed)

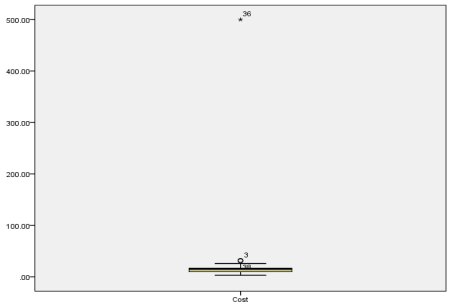

Figure 4. Outliers (Cost)

To satisfy this assumption, outliers of data were removed. Table 4 shows the data without the outliers.

Table 4. SPSS data (without outliers)

Speed	Cost	Accessibility	Reliability	CustomerSupport	ISP
19	12	3	3	4	1
29	10	2	4	2	1
25	15	2	4	5	1
29	10	3	4	5	1
17	17	3	4	5	1
50	7	3	4	5	1
29	10	2	4	4	1
25	17	3	4	4	1
25	17	2	5	5	1
25	17	3	3	4	1
13	17	2	4	4	1
10	17	2	4	3	1
13	13	3	3	3	1
25	17	3	4	5	1
13	12	3	4	4	1
30	17	3	5	4	1
13	13	3	5	3	1
13	17	3	5	4	1
17	17	3	4	5	1
25	17	3	5	4	1
17	17	3	5	4	1
17	17	3	5	5	1
38	12	3	5	5	1
43	7	2	4	4	2
25	11	3	3	2	2
30	11	3	3	4	2
50	11	3	4	5	2
38	11	3	4	3	2

17	26	2	5	5	2
17	26	3	4	5	2
17	26	3	4	5	2
8	26	3	3	3	2
17	26	3	5	5	2
13	11	2	3	2	2
13	11	1	4	3	2
8	13	2	4	3	3
17	6	2	4	2	3
30	15	2	3	3	3
13	15	3	3	2	3
18	15	3	4	2	3
83	15	2	4	4	3
13	15	2	2	4	3
20	15	2	4	4	3
33	15	3	3	4	3
33	15	3	4	3	3
25	15	3	3	2	3
45	5	3	3	4	3
80	4	3	3	3	3
50	5	3	4	2	3
25	15	3	4	5	3
71	5	3	4	4	3
71	5	3	4	4	3
63	5	3	4	4	3
80	4	3	5	5	3
25	15	3	4	5	3
14	16	2	3	4	3
17	15	3	5	5	3
63	5	3	4	4	3
50	13	3	4	5	3
17	15	3	4	2	3
25	15	3	4	4	3
17	15	3	4	4	3
25	15	3	4	5	3

The log odds of the dependent variable and continuous independent variables must also have a linear relationship in order to proceed with the tool (Laerd Statistics, n.d.). In this study, speed is the only factor considered as a continuous variable. The cost is not considered as continuous since there is a limited set of values to choose from based on the internet plans selected. To determine the linearity of the data, A test of linearity with the data without outliers was used in SPSS. The values of the dependent variable were first transformed by computing for its log transformation prior to testing its linearity with speed. As seen in Table 5, the significant value from the deviation from linearity is greater than the alpha, 0.05. This means that the speed and log odds of the dependent variable have a linear relationship.

Table 5. Deviation from Linearity

ANOVA Table							
			Sum of Squares	df	Mean Square	F	Sig.
Log10ISP*Speed	Between Groups	(Combined)	1.094	21	0.052	1.441	0.150
		Linearity	0.319	1	0.319	8.824	0.005
		Deviation from Linearity	0.775	20	0.039	1.072	0.408
	Within Groups		1.626	45	0.036		
	Total		2.720	66			

The last assumption states that multicollinearity must be avoided. This means that none of the independent variables can be correlated to each other. The data used to verify if this assumption is satisfied was the SPSS data without outliers (Table 4). Based on Table 6, the correlation between the independent variables is low. The average VIF is not substantially greater than 1. The ideal minimum value for the tolerance is 0.10 (Daoud, 2017). Based on the column for tolerance, all the values are greater than 0.10. Therefore, it satisfies the assumption of no multicollinearity.

Table 6. Test for Multicollinearity

Coefficients								
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	2.683	0.655		4.098	0.000		
	Speed	0.006	0.003	0.232	1.968	0.053	0.940	1.063
	Cost	0.001	0.002	0.042	0.351	0.727	0.922	1.084
	Accessibility	0.138	0.209	0.085	0.662	0.510	0.798	1.253
	Reliability	-0.243	0.162	-0.198	-1.497	0.139	0.747	1.339
	CustomerSupport	-0.087	0.111	-0.105	-0.781	0.438	0.727	1.376

The raw data from the survey was converted to their corresponding measures found in section 3.3, data measures, that were used for the computation. The regression coefficients coded for ISP's are 1 for ISP X, 2 for ISP Y, and 3 for ISP Z. Since the outliers were removed to satisfy the assumptions. The SPSS data without outliers can be found on Table 4. The number of responses per each ISP were reduced. From having 25 data each ISP, ISP X now has 23 responses, ISP Y has 20 responses, and ISP Z has 24 responses.

Table 7. Case Processing Summary

		N	Marginal Percentage
ISP	ISP X	23	34.3%
	ISP Y	20	29.9%
	ISP Z	24	35.8%
Valid		67	100%
Missing		0	
Total		67	
Subpopulation		60	

a. The dependent variable has only one value observed in 60 (100.0%) subpopulations

4.5 Analysis of Results

Using Multinomial Logistic Regression, this section shows the results for different models used such as Model Fitting, Goodness-of-Fit, Likelihood Estimates, and Parameter Estimates. The process was run twice to modify the reference category used. The reference category used for the succeeding tables is ISP X. However, another table for the Parameter Estimates was also included to change the reference category to ISP Z.

The Model Fitting Information shows the comparison of the full model against a null. In Table 8, since the significance value is less than 0.05, the model is a significant fit over a null model. This indicates that the model is able to successfully predict the dependent variable. (Laerd Statistics n.d.)

Table 8. Model Fitting Information

	Model Fitting Criteria			Likelihood Ratio Tests		
Model	AIC	BIC	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	150. 820	155.230	146.820			
Final	130.611	157.067	106.611	40.209	10	0.000

Goodness-of-Fit shows whether a model exhibits a good fit to the data. According to Laerd Statistics, Pearson chi-square statistic will indicate that the model is poor fit if it shows a statistically significant result (i.e., $p < .05$). Based on Table 9, Pearson's test shows a value of 0.317 which is greater than 0.05. Therefore indicating that the model fits the data well.

Table 9. Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	114.456	108	0.317
Deviance	106.611	108	0.520

Table 10 shows the overall contribution of each independent variable to the model. This table also determines the conclusion to the hypotheses of this study and the significance of each predictor variable (*Multinomial Logistic Regression - Statistics Resources - LibGuides at Northcentral University*, 2022). The researchers reject the null hypothesis for the factors, speed and cost, since their significance levels are less than the alpha, 0.05. On the other hand, the researchers fail to reject the null hypothesis for the factors, accessibility, reliability, and customer service (H_3, H_4, and H_5), since their significance levels are greater than the alpha, 0.05. Thus, it can be concluded that only speed and cost were the significant predictor in the model.

Table 10. Likelihood Ratio Tests

	Model Fitting Criteria			Likelihood Ratio Tests		
Effect	AIC of Reduced Model	BIC of Reduced Model	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	127.794	149.841	107.794	1.183	2	0.553
Speed	147.703	169.750	127.703	21.092	2	0.000
Cost	149.978	172.025	129.978	23.367	2	0.000
Accessibility	126.974	149.021	106.974	0.363	2	0.834
Reliability	130.355	152.402	110.355	3.744	2	0.154
Customer Support	130.925	152.972	110.925	4.314	2	0.116

Table 11. Parameter Estimates (ISP X as the reference category)

Parameter Estimates									
								95% Confidence Interval for Exp (B)	
ISP[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	Lower Bound	Upper Bound
ISP Y	Intercept	-2.732	2.940	0.864	1	0.353			
	Speed	0.170	0.047	12.999	1	0.000	1.186	1.081	1.301
	Cost	0.467	0.127	13.447	1	0.000	1.595	1.243	2.046
	Accessibility	-0.263	0.825	0.102	1	0.750	0.769	0.153	3.874
	Reliability	-1.177	0.698	2.844	1	0.092	0.308	0.079	1.210
	CustomerSupport	-0.962	0.491	3.838	1	0.500	0.382	0.146	1.000
ISP Z	Intercept	-0.249	2.782	0.008	1	0.929			
	Speed	0.117	0.045	6.839	1	0.009	1.124	1.030	1.227
	Cost	0.174	0.126	1.894	1	0.169	1.190	0.929	1.525
	Accessibility	0.184	0.756	0.059	1	0.808	1.202	0.273	5.290
	Reliability	-0.928	0.602	2.371	1	0.124	0.396	0.121	1.288
	CustomerSupport	-0.559	0.430	1.687	1	0.194	0.572	0.246	1.329

a. The reference category is: ISP X

Table 12 shows the Parameter Estimates using ISP Z as the reference category.

Table 12. Parameter Estimates (ISP Z as the reference category)

Parameter Estimates									
								95% Confidence Interval for Exp (B)	
ISP[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	Lower Bound	Upper Bound
ISP X	Intercept	0.249	2.872	0.008	1	0.929			
	Speed	-0.117	0.045	6.839	1	0.009	0.890	0.815	0.971
	Cost	-0.174	0.126	1.894	1	0.169	0.840	0.656	1.077
	Accessibility	-0.184	0.756	0.059	1	0.808	0.832	0.189	3.661
	Reliability	0.928	0.602	2.371	1	0.124	2.528	0.776	8.233
	CustomerSupport	0.559	0.430	1.687	1	0.194	1.748	0.753	4.061
ISP Y	Intercept	-2.483	2.736	0.824	1	0.364			
	Speed	0.053	0.028	3.537	1	0.060	1.055	0.998	1.115
	Cost	0.293	0.104	7.989	1	0.005	1.340	1.094	1.641
	Accessibility	-0.447	0.743	0.362	1	0.547	0.640	0.149	2.742
	Reliability	-0.249	0.631	0.126	1	0.693	0.780	0.226	2.686
	CustomerSupport	-0.403	0.424	0.905	1	0.341	0.668	0.291	1.533

a. The reference category is: ISP Z

The parameter estimates allow the researchers to have an in-depth understanding of the results. The data in this table shows the contribution of each independent variable. Column "Exp(B)" indicates the increase or decrease of a probability of an event occurring. (*Multinomial Logistic Regression - Statistics Resources - LibGuides at Northcentral University*, 2022). In Table 11, the upper part shows the comparison between ISP X and ISP Y. Based on the significance levels, only speed and cost are the significant predictors in the model. Since the coefficient on column B for ISP Y is positive 0.17, the researchers can conclude that the higher the internet speed of the WFH employee, the more likely that he/she uses ISP Y. It can also be concluded that for every one unit increase in speed, the odds of being a ISP Y customer increase by 1.186. A similar conclusion can also be derived from the comparison of the cost for ISP X and ISP Y. Since the coefficient of column B for the cost of ISP Y is positive 0.467, the researchers can conclude that the higher the internet cost of the WFH employee, the more likely that he/she uses ISP Y. It can also be concluded that for every one unit increase in cost, the odds of being a ISP Y customer increase by 1.595 times.

The lower part of Table 12 shows the comparison between ISP Y and ISP Z. Based on the significance levels, the speed and cost are also the only significant predictors in the model. Since the coefficient on column B for the speed of ISP Y is positive 0.053, the researchers can conclude that the higher the internet speed of the WFH employee, the more likely that he/she uses ISP Y. It can also be concluded that for every one unit increase in speed, the odds of being a ISP Y customer increase by 1.055 times. For the cost, since the coefficient of column B for the cost of ISP Y is positive 0.293, the researchers can conclude that the higher the internet cost of the WFH employee, the more likely that he/she uses ISP Y. It can also be concluded that for every one unit increase in cost, the odds of being a ISP Y customer increase by 1.34 times. As seen on Tables 11 and 12, speed is the only factor that is considered as statistically significant to compare ISP X and ISP Z using the model. In Table 11, the coefficient on column B for ISP Z is positive 0.117. The researchers can conclude that the higher the internet speed of the WFH employee, the more likely that he/she uses ISP Y. It can also be concluded that for every one unit increase in speed, the odds of being a ISP Z customer increase by 1.124 times.

The classification statistics indicate the percentage of responses that the model was able to predict correctly. 69.6% or 16 out of 25 ISP X respondents were predicted by the model. ISP Y and ISP Z users were predicted by the model 50% of the time. As seen in Table 13, the overall percentage of 56.7% means that the model is able to correctly predict the ISP of the respondent more than half of the time.

Table 13. Classification

Classification				
		Predicted		
Observed	ISP X	ISP Y	ISP Z	Percent Correct
ISP X	16	3	4	69.6%
ISP Y	1	10	9	50.0%
ISP Z	9	3	12	50.0%
Overall Percentage	38.8%	23.9%	37.3%	56.7%

4.6 Cost-Benefit Analysis

According to our findings, ISP Y and ISP Z have the fastest internet connection among the three ISPs, while ISP Z and ISP X have the lowest prices. Respondents who currently use ISP Y and ISP Z may be internet users who highly consider speed in choosing an ISP. On the other hand, respondents who are currently using ISP Z or ISP X may be internet users who prioritize availing an internet plan with a low cost. Internet users who wish to change their current ISPs may use this data to evaluate their decision. Every ISP has distinct undertakings and operations to meet the needs of its customers. As a result, companies manage their costs, provide funding for improved connection, and anticipate other operational adjustments.

5. Conclusions and Recommendations

In summary, there is a high demand for a fast and affordable internet in the Philippines. Businesses, school, workforce, and every sector now relies on the internet for their operations. As more users depend on it, the higher quality ISPs should provide their services. Therefore, identifying the user experience and their satisfaction is a must to improve their products and services. In addition, it can also help the respondents and users in evaluating their current ISPs. As a result of the study, the researchers recommend the following: (1) Increase the speed of megabits per second in all ISP plans, and align the provided plan MBPS with the intended internet speed. When it comes to internet speed in the NCR, choose ISP Y or ISP Z as your ISP, (2) Provide additional price selections when selecting a plan in all ISPs and lower costs to be more affordable. When it comes to pricing, choose ISP X or ISP Z as your ISP.

In the light of the limitations identified and the findings of the study, the following are recommended as future research subjects: (1) The researchers can use alternative modes of data analysis for understanding the relationships among the five factors considered in the study; future researchers may explore and consider using Kruskal-Wallis H Test, and Structural Equation Modeling. (2) The researchers can include additional ISPs to further evaluate the factors and the overall satisfaction of WFH employees. (3) The researchers may consider adding another sector of the society that uses the internet in their daily lives; their study may include individuals in educational institutions like students, teachers, and researchers. (4) The researchers can increase the sample size of this study. The Greater Manila Area can also be included in the sample size of the study since there are also a lot of WFH employees in these areas.

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