

Chapter Five

Hypotheses Testing

- As discussed in the earlier chapter, the final data collected with the help of questionnaire from respondents. The computer package widely used for statistical analysis in social science by many market researchers, 'SPSS V.16', was used to validate hypotheses.
- The SERVQUAL Gaps Model developed by Parsuraman, Zeithmal and Berry was used to analyze the gaps between the broadband services delivered by the BSP's and the services expected by the broadband customers to analyze the customer satisfaction in this study, based on the data collected from broadband users.
- The statistical method 'Paired Sample t-test' and 'Karl Pearson's correlation coefficient' was used to test the hypotheses. Observed and inferred results from the statistical analysis were used to further triangulate conclusions in the next chapter.

Hypotheses

- The researcher was completely aware about the importance of the hypotheses in research. The researcher was always guided in his activity, right from defining variables, data collection, and data analysis towards validating the hypotheses that the researcher had formulated.
- The first hypothesis formulated was based on the marketing practices, which were thought to be customer focused and its effect towards the customer satisfaction. It was observed that, customers' have different needs and expectations related to broadband, and these are changing continuously with time and technology.

- On the other hand there are 162 Internet Service providers in the Indian market and all are planning strategies to offer quality broadband services with available infrastructure and network to provide services as per the expectations of the customers. The researcher intended to find out whether the marketing efforts made by the Broadband Service Providers in services provisioning satisfy customer needs and meet their expectations related to broadband services.
- The second hypothesis relates with the ‘Overall customer satisfaction gap’ in case of broadband services. Researcher developed a model for this study based on the SERVQUAL five Gaps model developed by the Parshuraman, Zeithmal and Berry (1985).
- Thirteen important broadband service parameters when compared for ‘customer expectations’ against the ‘actual services delivered by BSP’s’ on the 10 point rating scale for the scores given by the broadband users. Researcher observed following three gaps related to broadband services as per the model developed for this study. (Model for this study discussed in chapter ‘Findings and Discussions’).
 - 1) BB Gap 2: Gap between the Customers’ expectations and Processes involved in delivery of broadband services. (Broadband Processes Gap)
 - 2) BB Gap 3: Gap between the Customers’ expectations and the Performance of the BSP staff involved in the delivery of broadband services. (Broadband Performance Gap)
 - 3) BB Gap 4: Gap between the customers’ expectations and BSP’s communication to customers. (BSP’s Communication Gap)
- Researcher interested in finding out which gap out of these three gaps observed in case of broadband services have stronger correlation with the ‘Overall customer satisfaction gap’.
- The last hypothesis has insight towards the satisfaction of the broadband customers related to wireless and wire line broadband services. Due to

technological innovations in the wireless technology most of the broadband operators providing services on the wireless technology whereas very few operators are in wire line broadband technology.

- Each BSP having his own network in addition to it some of the BSP's are sharing network of others and trying to provide quality broadband services. The past research and the related literature from various service industries proved that the quality, reliability and the support given by the service providers irrespective of the technology (wireless or wire line) plays important role in satisfaction of the customers.
- In this regard researcher's focus was to see that whether the customer satisfaction varies with services availed with wire line and wireless type of broadband in this study.

A. Testing of Hypotheses:

5.1. Hypothesis I: 'The Broadband service providers provide services as demanded by the customers'.

- Tests used: 'Paired Samples t-test'.
- The researcher believed that the service providers provide services which are demanded by the customers, which itself measures out to be customer satisfaction. Question no's 1 to 13 from section III of questionnaire were identified to validate this hypothesis.
- As these variables were measured on 10-point rating scale, and researcher intended to find whether there was any difference between the 'mean of expected (μ_1)' and 'mean of actual services delivered (μ_2)'. 'Paired sample t-test for difference in mean' was thought to be most appropriate statistical test to validate this hypothesis. The null hypothesis was stated as:

- H0= There is no difference in the ‘mean score of expected services’ and the ‘mean score of actual services delivered’ by BSP’s.
i.e. $\mu_1 = \mu_2$.
- H1: There is significant difference between the ‘mean score of expected services’ and the ‘mean score of actual services delivered’ by BSP’s.
i.e. $\mu_1 \neq \mu_2$.
- Paired sample t-test: ‘Difference of mean’ for ‘Hypothesis 01’. Overall quality of broadband. Expected - Overall quality of broadband. Actual

Table 5.1

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Overall quality of broadband. Expected - Overall quality of broadband. Actual	.951	2.066	.065	.824	1.078	14.697	1019	.000

- Observations:

$t=14.697$, $df=1019$, $p=0.0001$

- Inference:

Since $p < 0.05$; and there is significant difference between the ‘mean score of expected services’ and the ‘mean score of actual services delivered’ by BSP’s, therefore ‘H0= Rejected’ and H1=Accepted’.

- Conclusion:

Since the difference between ‘mean score of expectations’ and the ‘mean score actual services delivered’ is significant; it indicates that the services provided are not as per the expectations of the customers. There is a need to make efforts understand the customer needs and expectations in better way and coupled with innovative pricing, technology, policies so that the gap can be reduced.

Thus the hypothesis was tested and validated.

5.2.Hypothesis II: ‘Communication Gap’ rather than ‘Processes Gap’ has stronger correlation with ‘Overall quality Gap of broadband’.

- Tests used: Karl Pearson’s correlation coefficient.
- ‘Broadband Processes Gap’ is the gap between the ‘customers expectations’ and ‘Processes involved in delivery of broadband services’, which is due to overall effect of broadband parameters (sr. no.1,5,6,9) from section III of questionnaire.
- Whereas ‘BSP’s Communication Gap’ is the gap between the ‘expectations of the customers’ and ‘BSP’s communications to customers’, which is due to overall effect of broadband parameters (sr. no. 3, 7,8,10).
- Researcher wanted to know which gap affects most to the overall service quality of the broadband. By using Karl Pearson’s correlation coefficient, the gaps between the ‘Overall quality gap of the broadband & Broadband Processes Gap’ (r1) and “Overall quality gap of the Broadband & BSP’s Communication Gap’ (r2) can be compared to come to the conclusion that whether (r1) and (r2) are same or not. The null hypothesis was:
- H0= Karl Pearson’s correlation coefficient ‘r’ between ‘Overall quality Gap of broadband & Broadband Communication Gap’ (r2) and ‘Overall quality Gap of broadband & Broadband Processes gap’ (r1) is same.

i.e. $r_1 = r_2$.

- H1= 'r1' is not equal to 'r2'.
i.e. r1 not = r2

Table 5.2

Correlations					
		gap_13	diff_gap_3	diff_gap_2	diff_gap_4
gap_13	Pearson Correlation	1	.793(**)	.786(**)	.874(**)
	Sig. (2-tailed)		.000	.000	.000
	N	1020	1020	1020	1020
diff_gap_3	Pearson Correlation	.793(**)	1	.851(**)	.887(**)
	Sig. (2-tailed)	.000		.000	.000
	N	1020	1020	1020	1020
diff_gap_2	Pearson Correlation	.786(**)	.851(**)	1	.890(**)
	Sig. (2-tailed)	.000	.000		.000
	N	1020	1020	1020	1020
diff_gap_4	Pearson Correlation	.874(**)	.887(**)	.890(**)	1
	Sig. (2-tailed)	.000	.000	.000	
	N	1020	1020	1020	1020
** Correlation is significant at the 0.01 level (2-tailed).					

- Observations:
Karl Pearson's correlation coefficient (r) for the 'Overall quality Gap of broadband & Broadband Communication Gap' (r2) is 0.874 and Karl Pearson's co-relation coefficient for 'Overall quality Gap of broadband & Broadband Processes gap' (r1) is 0.786.

- Inference:

Since 'r2' (0.874) is greater than 'r1' (0.786); shows that 'r1' and 'r2' are not same; therefore we reject 'H0' and accept 'H1'.

- Conclusions:

It is observed that there is difference in the Karl Pearson's correlation coefficients 'r1' and 'r2'. It shows that 'Broadband Communication Gap' has stronger correlation with 'Overall quality Gap of broadband' as compared to 'Broadband Processes Gap'. There is a need to reduce 'Broadband Communication Gap' by BSP's and look into the broadband parameters which are part of this gap to improve customer satisfaction.

5.3.Hypothesis III: 'Customer satisfaction of broadband users varies with the services provided through wire line and through wirelesses.

- Tests used: 'Paired Samples t-test'.
- Researcher was interested in measuring the customer satisfaction related to broadband services provided by the respective BSP's in case of wireless and wire line type of the broadband.
- Rating given by the 1020 respondents on 10- point scale against the broadband service variables (sr. no. 1 to 13) from section III of the questionnaire were considered for customer satisfaction measurement in case of wire line and wireless type of broadband.
- 'Paired sample t-test for difference in mean' was thought to be most appropriate statistical test to validate this hypothesis. The null hypothesis was treated as:
- H0= The 'mean score of satisfaction of services provided by BSP's through wire line' is same as the 'mean score of satisfaction of services provided by BSP's through wireless'.

- H1= There is variation in the ‘mean score of satisfaction of services’ provided by BSP’s through ‘wire line’ and ‘wireless’.
- Paired sample t-test: ‘Difference of mean’ for ‘Hypothesis 03’. Customer satisfaction of broadband users through wire line and through wirelesses.

Table 5.3

Paired Samples Test										
Type of broadband			Paired Differences					t	df	Sig. (2-tailed)
			Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
						Lower	Upper			
Wireless Broadband	Pair 1	Overall quality of broadband. Expected - Overall quality of broadband. Actual	1.315	1.934	.079	1.160	1.470	16.696	602	.000
Wired Broadband	Pair 1	Overall quality of broadband. Expected - Overall quality of broadband. Actual	.424	2.139	.105	.219	.630	4.052	416	.000

- Observations:

- Wireless Broadband

$$t=16.696, \quad df=1019, \quad p=0.0001$$

- Wire line Broadband

$$t=4.052, \quad df=1019, \quad p=0.0001$$

- Inference:

Since $p < 0.05$ and there is significant difference between the ‘mean score of satisfaction of the services’ provided by BSP’s through ‘wire line’ and ‘wireless’, therefore ‘H1=Accepted’ and ‘H0=Rejected’.

- Conclusion:
- Since the ‘mean score of satisfaction of the services’ provided by BSP’s through ‘wireless’ is more as compared to the ‘mean score of satisfaction of the services’ provided by BSP’s through ‘wire line’, it is an indication that more service gap is there in ‘wireless’ than ‘wire line’ services.
- The services delivered by the BSP’s were much below the expectations in case of ‘wireless’ broadband than ‘wire line’ broadband, hence there is variation in the customer satisfaction in both these cases.
- There is a need to reduce the gap in both the cases by improving the quality, reliability and performance of the broadband services. The suggestions were discussed under ‘Recommendations’.

In the next chapter, some suggestions based on outcome of the data analysis and the observations of the researcher are presented.

Referances

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