



Data Analysis of Consumer Behaviour Using SPSS

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Abstract—In Data analysis statistical terms are important for analysis and interpretation of the data. These statistical terms are useful to analyse data and find out relationship between different variable and its impact. This analysis is useful while taking further decisions regarding improving business functions. Here this paper uses the SPSS as data analysis tool/package for analysing consumer behaviour towards laptop. Here data is collected using questionnaire method from 75 consumers in Sangli district, and dataset is created using some coding scheme in SPSS. For analysis of data SPSS is used. It is found that SPSS is very useful package for data analysis. Here in this paper using SPSS it is found that consumers purchases laptop according to their purpose. Consumers recommend the brand when they get after sales service. The correlation between brand of laptop and price is insignificant. The correlation between after sales service and recommendation is significant. Consumer's purchases branded laptop according to their purpose.

Keywords— Data Analysis, SPSS,

I. INTRODUCTION

SPSS is a Windows based program that can be used to perform data entry and analysis and to create tables and graphs SPSS is commonly used in the Social Sciences and in the business world. [1]

SPSS Statistics is a software package used for statistical analysis. The software was originally named the Statistical Package for the Social Sciences (SPSS). Later the expansion of the acronym was changed to Statistical Product and Service Solutions to reflect the growing diversity of the user base. The software was released in its first version in 1968 as the Statistical Package for the Social Sciences (SPSS) after being developed by Norman H. Nie, Dale H. Bent, and C. Hadlai Hull. [2]

II. RESEARCH METHODOLOGY

Here for collecting data survey method supported by questionnaire is used. And data is collected from 75 respondents in Sangli district. After collecting data it is processed and data is coded by assigning numbers to each response of the question. The purpose of coding is to translate raw data into numerical data, which may be tabulated and counted.

TABLE I DATA SET

Q. No.	Variable No.	Information Sought	Responses	Code
1	1	Brand	Samsung HP Dell Sony Other	1 2 3 4 5
2	2	Purpose	Professional Use Education /Studies Other	1 2 3
3	3	Price	Rs. Less than 30000 Rs. 30000-55000 More than Rs. 55000	1 2 3
4	4	Consideration	Price Performance Better Dealer Service Other	1 2 3 4
5	5	Accessories	Internet Dongle USB Mouse	1 2 3

			Bag	4
			Anti-virus	5
			Head set	6
			Any other	7
6	6	Condition	New	1
			Pre- Owned	2
7	7	Existing PC	Yes	1
			No	2
8	8	Mode of awareness	Advertisement	1
			Friends/ Relatives	2
			Dealer	3
			Other	4
9	9	Performance Satisfaction	Yes	1
			No	2
10	10	After Sales Service	Yes	1
			No	2
11	11	Recommend Brand	Yes	1
			No	2
12	12	Change of Brand	Yes	1
			No	2

Table I gives information about different variables used in SPSS for storing information collected from 75 respondents. This table is called as dataset and we can save this in SPSS using any name with .sav extension. Here each questions response is represented in numeric format. E.g. for Brand variable five responses (Samsung, HP, Dell, Sony and other) are coded using numbers 1,2,3,4 and 5 respectively. Similarly remaining variables are coded. After using coding scheme, and entering data of 75 respondents, the variable view and data view of this information is represented in dataset, which look likes as shown in fig.1 and fig.2 respectively.

Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure
1 Brand	Numeric	2	0	Brand of Lapto	{1, Samsung}..	None	4	Right	Nominal
2 purpose	Numeric	2	0		{1, Professiona	None	4	Right	Scale
3 price	Numeric	2	0		{1, less than 3	None	4	Right	Scale
4 considerati	Numeric	2	0	Consideration f	{1, Price}..	None	4	Right	Nominal
5 accessorie	Numeric	2	0		{1, Internet Do	None	9	Right	Scale
6 condition	Numeric	2	0	Laptop Condi	{1, New}..	None	8	Right	Scale
7 pc	Numeric	2	0	Desktop	{1, Yes}..	None	8	Right	Scale
8 mode	Numeric	2	0	Mode of inform	{1, Advertisem	None	8	Right	Scale
9 performanc	Numeric	2	0		{1, Yes}..	None	8	Right	Scale
10 service	Numeric	2	0	After Sales Se	{1, Yes}..	None	8	Right	Scale
11 recommend	Numeric	2	0		{1, Yes}..	None	8	Right	Scale
12 change	Numeric	2	0		{1, Yes}..	None	8	Right	Scale
13 suggestion	Numeric	8	2		None	None	8	Right	Scale

Fig. 1 Variable View of data

	Brand	purpose	price	consi derati on	accessories	condition	pc	mode	performanc e	service	recommend	change
1	Samsun	Profes	30000-	Perfo	Bag	New	Yes	Mode of information	No	No	No	Yes
2	HP	Eduatio	More t	Perfo	Anti-Virus	Pre-Owned	No	Other	Yes	Yes	Yes	No
3	Samsun	Professi	30000-	Price	Bag	New	Yes	Friends/Rel	Yes	Yes	Yes	Yes
4	Dell	Eduatio	less th	Perfo	Anti-Virus	Pre-Owned	Yes	Dealers	No	No	No	No
5	Dell	Professi	More t	Perfo	Bag	New	Yes	Friends/Rel	Yes	Yes	Yes	Yes
6	Sony	Eduatio	30000-	Perfo	Anti-Virus	Pre-Owned	Yes	Friends/Rel	Yes	Yes	Yes	No
7	Sony	Professi	less th	Price	Bag	New	No	Dealers	No	No	No	Yes
8	Other	Eduatio	30000-	Perfo	Head Set	New	Yes	Advertisem	Yes	Yes	Yes	No
9	Other	Professi	30000-	Perfo	Anti-Virus	New	No	Other	Yes	Yes	No	No
10	Samsun	Eduatio	less th	Perfo	Head Set	Pre-Owned	Yes	Advertisem	No	No	No	Yes
11	Samsun	Professi	30000-	Price	Anti-Virus	New	No	Friends/Rel	Yes	Yes	Yes	No
12	HP	Eduatio	More t	Perfo	Anti-Virus	New	Yes	Dealers	Yes	Yes	No	No
13	Samsun	Professi	30000-	Perfo	Bag	New	No	Friends/Rel	No	No	No	No
14	HP	Eduatio	30000-	Price	Head Set	Pre-Owned	No	Advertisem	Yes	Yes	No	No
15	Samsun	Professi	30000-	Perfo	Anti-Virus	New	No	Other	Yes	Yes	Yes	Yes
16	HP	Eduatio	More t	Perfo	Bag	New	No	Friends/Rel	No	No	Yes	No
17	Samsun	Professi	30000-	Price	Bag	New	No	Friends/Rel	Yes	No	No	No
18	HP	Eduatio	30000-	Perfo	Anti-Virus	New	Yes	Dealers	Yes	No	No	No
19	HP	Professi	30000-	Bette	Head Set	New	No	Friends/Rel	No	Yes	Yes	Yes
20	Samsun	Eduatio	less th	Perfo	Anti-Virus	New	No	Advertisem	Yes	Yes	Yes	No
21	Samsun	Professi	30000-	Price	Bag	New	No	Dealers	Yes	No	No	No
22	Dell	Other	30000-	Perfo	Anti-Virus	New	Yes	Friends/Rel	No	Yes	No	No
23	Samsun	Professi	30000-	Perfo	Bag	New	No	Advertisem	Yes	No	Yes	Yes
24	Dell	Eduatio	30000-	Bette	Head Set	New	No	Dealers	Yes	No	Yes	No

Fig. 2 Data View of data

Here after creating dataset the result of descriptive statistics of brand and its performance is computed using SPSS and is displayed in Table II. It means without doing any calculation we get all statistical analysis using SPSS, which we can use for further analysis.

TABLE III STATISTICS RESULT

		Brand of Laptop	Performance
N	Valid	75	75
	Missing	0	0
Mean		2.73	1.13
Median		3.00	1.00
Mode		2	1
Std. Deviation		1.256	.342
Variance		1.577	.117
Skewness		.230	2.202
Std. Error of Skewness		.277	.277
Kurtosis		-1.010	2.924
Std. Error of Kurtosis		.548	.548
Range		4	1
Percentiles	5	1.00	1.00
	25	2.00	1.00
	50	3.00	1.00
	75	4.00	1.00

Manually for data analysis we have to count all respondents responses and then we get the frequency distribution of each table/ questions. But using SPSS after creating dataset using questionnaire responses we get frequency distribution table of any variable. Table III gives frequency distribution of brand of laptop variable.

TABLE IIIII FREQUENCY DISTRIBUTION TABLE OF BRAND OF LAPTOP

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Samsung	14	18.7	18.7	18.7
HP	22	29.3	29.3	48.0
Dell	16	21.3	21.3	69.3
Sony	16	21.3	21.3	90.7
Other	7	9.3	9.3	100.0
Total	75	100.0	100.0	

Here for studying data analysis we set one hypothesis as

H0: Brand of laptop and purpose of buying laptop are independent.

H1: Brand of laptop and purpose of buying laptop are dependent.

For testing this hypothesis using chi-square test we used SPSS tool and using this tool the cross table of brand of laptop and purpose is created. From this table we get all observed and expected values, as shown in table IV.

Here using SPSS we get calculated value of chi-square is 17.884, and the degree of freedom is 8. The table value of chi square with 8 degree of freedom at 5% level of significance is 15.507. If we compare calculated value of chi square with table value of chi then it is seen that calculated value is greater than table value of chi square. Hence we are rejecting null hypothesis and accepting alternative hypothesis, i.e. brand of laptop and purpose of buying laptop are dependent is true.

TABLE IVV CROSS TABULATION OF BRAND OF LAPTOP AND BUYING PURPOSE

			purpose			Total
			Professional Use	Education / Studies	Other	Professional Use
Brand of Laptop	Samsung	Count	11	3	0	14
		Expected Count	5.6	7.1	1.3	14.0
HP	Count	8	14	0	22	
	Expected Count	8.8	11.1	2.1	22.0	
Dell	Count	6	7	3	16	

	Expected Count	6.4	8.1	1.5	16.0
Sony	Count	4	9	3	16
	Expected Count	6.4	8.1	1.5	16.0
Other	Count	1	5	1	7
	Expected Count	2.8	3.5	.7	7.0
Total	Count	30	38	7	75
	Expected Count	30.0	38.0	7.0	75.0

TABLE V RESULT OF CHI SQUARE TEST

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.884(a)	8	.022
Likelihood Ratio	20.436	8	.009
Linear-by-Linear Association	11.075	1	.001
N of Valid Cases	75		

7 cells (46.7%) have expected count less than 5. The minimum expected count is .65.

We are now setting another hypothesis as

H0: Price of laptop and purpose of buying laptop are independent.

H1: Price of laptop and purpose of buying laptop are dependent.

For testing this hypothesis using chi-square test we used SPSS tool and using this tool the cross table of brand of laptop and purpose is created. From this table we get all observed and expected values, as shown in table VII.

Here using SPSS we get calculated value of chi-square is 6.360 and the degree of freedom is 4. The table value of chi square with 8 degree of freedom at 5% level of significance is 9.488. If we compare calculated value of chi square with table value of chi then it is seen that calculated value is less than table value of chi square. Hence are accepting null hypothesis and rejecting alternative hypothesis, i.e. brand of laptop and purpose of buying laptop are in dependent is true.

TABLE VI RESULT OF CHI SQUARE TEST

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.360(a)	4	.174
Likelihood Ratio	7.211	4	.125
Linear-by-Linear Association	1.390	1	.238
N of Valid Cases	75		

5 cells (55.6%) have expected count less than 5. The minimum expected count is .65.

TABLE VII CROSS TABULATION OF PRICE AND BUYING PURPOSE

			purpose			Total
			Professional Use	Education / Studies	Other	Professional Use
price less than 30000	Count		4	13	2	19
	Expected Count		7.6	9.6	1.8	19.0
30000-55000	Count		24	20	5	49
	Expected Count		19.6	24.8	4.6	49.0
More than 55000	Count		2	5	0	7
	Expected Count		2.8	3.5	.7	7.0
Total	Count		30	38	7	75
	Expected Count		30.0	38.0	7.0	75.0

Table VIII gives information about relationship between after sales service and recommendation. It means from table VIII it is seen that there is positive relation between after sales service and recommendation. Here the value of correlation coefficient is 0.476 & correlation is significant at 0.01 level at 2-tailed. Means consumers recommend the brand when they get after sales service.

TABLE VIII RESULT OF CORRELATION

		After Sales Service	recommend
After Sales Service	Pearson Correlation	1	.476(**)
	Sig. (2-tailed)		.000
	N	75	75
recommend	Pearson Correlation	.476(**)	1
	Sig. (2-tailed)	.000	
	N	75	75

** Correlation is significant at the 0.01 level (2-tailed).

Fig.1 shows scatter plot of after sales service and brand recommendation.

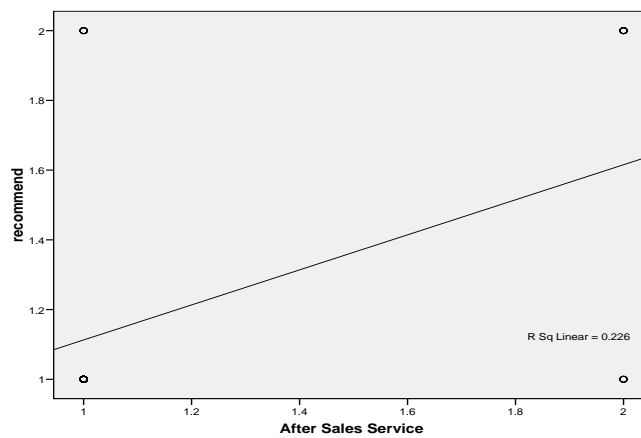


Fig. 1 After sales service and brand recommendation

Table IX gives information about relationship brand of laptop and price. It means from table IX it is seen that there is negative relation between brand of laptop and price. Here the value of correlation coefficient is -0.174 & correlation is insignificant at 0.01 level.

TABLE IX RESULT OF CORRELATION

		Brand of Laptop	price
Brand of Laptop	Pearson Correlation	1	-.174
	Sig. (2-tailed)		.136
	N	75	75
price	Pearson Correlation	-.174	1
	Sig. (2-tailed)	.136	
	N	75	75

Fig.2 shows scatter plot of brand of laptop and price.

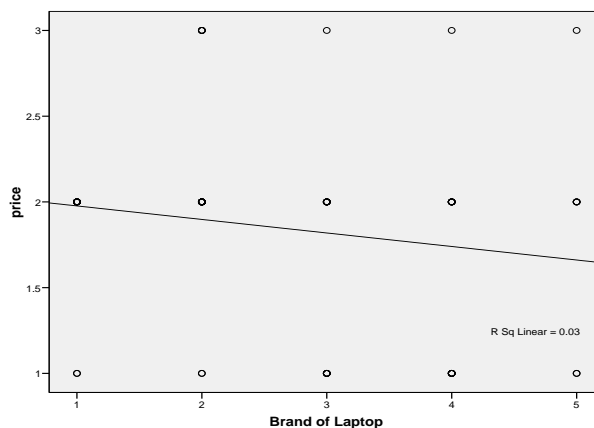


Fig. 2 Scatter Diagram of Brand of Laptop and Price

Table X gives information about relationship between brand of laptop and purpose. It means from table X it is seen that there is positive relation between brand of laptop and purpose of purchasing laptop. Here the value of correlation coefficient is 0.387 & correlation is significant at 0.01 level at 2-tailed. Means consumers purchases branded laptop according to their purpose.

TABLE X Result of Correlation between brand and purpose

		Brand of Laptop	purpose
Brand of Laptop	Pearson Correlation	1	.387(**)
	Sig. (2-tailed)		.001
	N	75	75
purpose	Pearson Correlation	.387(**)	1
	Sig. (2-tailed)	.001	
	N	75	75

** Correlation is significant at the 0.01 level (2-tailed).

Fig.3 shows scatter plot of brand of laptop and purpose of buying laptop.

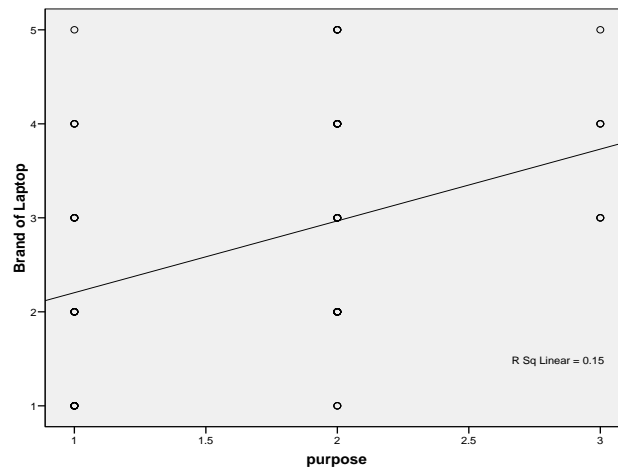


Fig. 3 Scatter Diagram of Brand of Laptop and buying purpose

III. CONCLUSION

From above analysis regarding consumer behavior it is observed that brand of laptop and purpose of buying laptop are dependent. Brand of laptop and price of laptop are independent. Consumers recommend the brand when they get after sales service. The correlation between brand of laptop and price is insignificant at 0.01 level. The correlation between after sales service and recommendation is significant at 0.01 level at 2-tailed. Consumer's purchases branded laptop according to their purpose.

REFERENCES

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