

ANALYZING THE MOBILE PHONE BUYING BEHAVIOR USING SPSS

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Abstract

Mobiles of different brands and configuration are available in the market. Generally consumers face the problem to select the suitable one according to his requirement. Here this paper uses the SPSS as data analysis tool/package for analyzing consumer behavior towards purchasing mobile phones based on certain parameters. Dataset is created using SPSS on data collected based on questionnaire from employees around Navi Mumbai.

This study uses the correlation method to ascertain the impact of parameters on customer's mobile purchasing behavior.

Keywords— *Data Analysis, SPSS, parameters, purchasing decision*

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. SPSS Statistics is a software package used for statistical analysis. The software was originally named the Statistical Package for the Social Sciences (SPSS). In this research study the authors intend to find out efficacy of text based survey questioning and the corresponding analysis based questions for specific parameters in mobile buying decision process. The purpose of the research is to identify the kind of similarities or differences in responses when questions related to mobile buying is asked in a textual form. It also aims to identify the strength of responses from end users based on questionnaire.

Research Methodology

A structured questionnaire was sent to 75 respondents, but 50 responded it. The study included different age groups, different occupations. There were 50 valid participants who responded 15 questions of the structured questionnaire. Here for collecting data survey method supported by questionnaire is used. And data is collected from 50 respondents in Navi Mumbai Kharghar

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Raigad 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.

Q.No	Variable No.	Information	Responses	Code
2	1	Gender	Male	1
			Female	2
3	2	Age	20-30years	1
			30-40years	2
			40-50years	3
			Above 50years	4
4	3	Occupation	Employee	1
			Businessman	2
			Others	3
5	4	EducationQualification	Primary and Secondary	1
			Inter	2
			Degree	3
			P.G & Above	4
6	5	Brand	Samsung	1
			Apple	2
			Nokia	3
			RedMi	4
			Intex	5
			Lenovo	6
			VIVO	7
			Others	8
7	6	Type	New	1
			Secondary	2
8	7	Price	Below 5000	1
			5000-15000	2

			15000-25000	3
			25000 Above	4
9	8	ModeOfAwareness	Through friends relatives	1
			Advertisement on TV	2
			Internet	3
			Others	4
10	9	Cosideration	Coverage	1
			Price	2
			Performance	3
			Value Added Service	4
			Others	5
11	10	InfluenceFactor	Camera	1
			Music	2
			Storage(RAM)	3
			Others	4
12	11	Accessories	Head set	1
			USB	2
			Bluetooth	3
			Wi-Fi	4
			Others	5
13	12	OperatingSystem	IOS	1
			Android	2
			Microsoft	3
			Others	4
14	13	PerformanceSatisfaction	Yes	1
			No	2
15	14	Change of Brand	Yes	1
			No	2

Table I: Mobile Brand Usage Survey

Table I gives information about different variables used in SPSS for storing information collected from 50 respondents. This table is called as dataset .Here each questions response is represented in numeric format. E.g. for Brand variable eight responses (Samsung, Apple, Nokia, Redmi, Intex, Lenovo, VIVO, Others) are coded using numbers 1,2,3,4 and 5,6,7,8 respectively. Similarly remaining variables are coded. After using coding scheme, and entering data of 50 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	Role
1	ID	Numeric	8	0	ID	None	None	8	Right	Scale	Input
2	Gender	Numeric	8	0	Gender	{1, Male}...	None	8	Right	Nominal	Input
3	Age	Numeric	8	0	Age	{1, 20-30ye...	None	8	Right	Scale	Input
4	Occupation	Numeric	8	0	Occupation	{1, Employe...	None	8	Right	Nominal	Input
5	EducationQualif...	Numeric	8	0	EducationQualif...	{1, Primary ...	None	8	Right	Nominal	Input
6	Brand	Numeric	8	0	Brand	{1, Samsun...	None	8	Right	Nominal	Input
7	Type	Numeric	8	0	Type	{1, New}...	None	8	Right	Nominal	Input
8	Price	Numeric	8	0	Price	{1, Below 5...	None	8	Right	Scale	Input
9	ModeOfAwarene...	Numeric	8	0	ModeOfAwarene...	{1, Through ...	None	8	Right	Nominal	Input
10	Cosideration	Numeric	8	0	Cosideration	{1, Coverag...	None	8	Right	Nominal	Input
11	InfluenceFactor	Numeric	8	0	InfluenceFactor	{1, Camera}...	None	8	Right	Nominal	Input
12	Accessories	Numeric	8	0	Accessories	{1, Head set...	None	8	Right	Nominal	Input
13	OperatingSystem	Numeric	8	0	OperatingSystem	{1, IOS}...	None	8	Right	Nominal	Input
14	PerformanceSati...	Numeric	8	0	PerformanceSa...	{1, Yes}...	None	8	Right	Nominal	Input
15	ChangeOfBrand	Numeric	8	0	ChangeOfBrand	{1, Yes}...	None	8	Right	Scale	Input

Fig.1 Variable View of Dataset

	ID	Gender	Age	Occupation	EducationQ ualification	Brand	Type	Price	ModeOfAwar eness	Cosideration	Influence Factor	Accessories	Operating System	Performance Satisfaction	ChangeOfBra nd
1	1	1	2	1	4	3	1	2	1	4	3	1	2	1	1
2	2	2	3	1	2	4	1	2	1	3	3	1	2	1	2
3	3	2	2	1	4	3	1	2	3	1	1	1	3	1	2
4	4	1	2	1	2	1	1	1	3	3	1	3	4	1	1
5	5	1	2	1	4	6	1	2	1	3	1	1	2	1	2
6	6	1	2	1	4	2	1	4	3	3	4	2	1	1	2
7	7	2	1	1	4	1	1	2	1	3	1	3	2	1	2
8	8	2	1	1	4	4	1	3	2	3	1	4	2	1	1
9	9	2	2	1	4	4	1	3	2	3	1	4	2	1	1
10	10	1	3	1	4	1	1	2	3	4	3	4	2	1	2
11	11	2	2	1	4	4	1	2	1	2	1	1	1	1	2
12	12	2	3	1	4	4	1	2	3	2	3	3	2	1	2
13	13	2	1	1	4	1	1	3	2	3	1	1	2	1	2
14	14	1	2	4	4	1	1	2	3	3	3	1	2	1	2
15	15	2	3	1	3	6	1	2	1	3	1	1	2	1	2
16	16	1	2	1	1	8	1	2	2	3	1	1	2	1	2
17	17	1	1	1	3	4	1	2	2	3	3	1	2	1	1
18	18	1	1	1	3	8	1	2	2	3	1	1	4	2	1
19	19	2	3	1	4	1	1	4	2	2	2	1	2	1	2
20	20	1	2	1	4	4	1	2	2	3	3	1	2	1	1
21	21	2	1	1	4	4	1	2	3	1	1	1	2	1	2
22	22	1	3	1	4	1	1	3	4	2	1	2	2	1	2

Fig.2 Data View of Dataset

Here after creating dataset the result of descriptive statistics of brand and its purpose of buying is computed using SPSS and is displayed in Table II.

→ **Frequencies**

[DataSet1] C:\Documents and Settings\komal\My Documents\mobile.sav

Statistics

	Brand	Cosideration
N Valid	50	50
Missing	0	0
Mean	3.34	2.76
Median	3.00	3.00
Mode	1	3
Std. Deviation	2.353	.797
Variance	5.535	.635

Table II: Mobile Brand Statistics Result

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 Mobile brand and consideration.

Frequency Table

Brand

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Samsung	16	32.0	32.0	32.0
Apple	7	14.0	14.0	46.0
Nokia	4	8.0	8.0	54.0
RedMi	13	26.0	26.0	80.0
Lenovo	3	6.0	6.0	86.0
VIVO	1	2.0	2.0	88.0
Others	6	12.0	12.0	100.0
Total	50	100.0	100.0	

Cosideration

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Coverage	3	6.0	6.0	6.0
Price	13	26.0	26.0	32.0
Performance	28	56.0	56.0	88.0
Value Added Service	5	10.0	10.0	98.0
Others	1	2.0	2.0	100.0
Total	50	100.0	100.0	

Table III: Frequency Distribution Table of Mobile Brand and Consideration

Here for studying data analysis we set one hypothesis as

H0: Brand of Mobile and Consideration (ie. purpose of buying Mobile) are independent.

H1: Brand of Mobile and Consideration (ie. purpose of buying Mobile) are dependent.

Test applied are:

- chi-square test

➤ cross table of brand of laptop and Consideration

Result:

Calculated value of chi-square is 37.714. and the degree of freedom is 24. are rejecting null hypothesis and accepting alternative hypothesis, i.e. brand of mobile and Consideration (ie. purpose of buying Mobile) are dependent is true.

Crosstabs						
[DataSet1] C:\Documents and Settings\komal\My Documents\mobile.sav						
Case Processing Summary						
	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Brand * Consideration	50	100.0%	0	.0%	50	100.0%

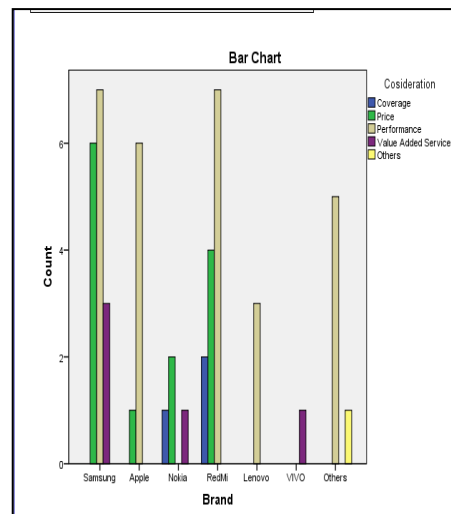
Table IV: Cross Tabulation of Brand of Mobile and Purchasing Consideration

Brand * Consideration Crosstabulation								
		Consideration					Total	
		Coverage	Price	Performance	Value Added Service	Others		
Brand	Samsung	Count	0	6	7	3	0	16
	Expected Count	1.0	4.2	9.0	1.6	.3	16.0	
Apple	Count	0	1	6	0	0	7	
	Expected Count	.4	1.8	3.9	.7	.1	7.0	
Nokia	Count	1	2	0	1	0	4	
	Expected Count	.2	1.0	2.2	.4	.1	4.0	
RedMi	Count	2	4	7	0	0	13	
	Expected Count	.8	3.4	7.3	1.3	.3	13.0	
Lenovo	Count	0	0	3	0	0	3	
	Expected Count	.2	.8	1.7	.3	.1	3.0	
VIVO	Count	0	0	0	1	0	1	
	Expected Count	.1	.3	.6	.1	.0	1.0	
Others	Count	0	0	5	0	1	6	
	Expected Count	.4	1.6	3.4	.6	.1	6.0	
Total	Count	3	13	28	5	1	50	
	Expected Count	3.0	13.0	28.0	5.0	1.0	50.0	

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	37.717 ^a	24	.037
Likelihood Ratio	36.788	24	.046
Linear-by-Linear Association	1.694	1	.193
N of Valid Cases	50		

a. 33 cells (94.3%) have expected count less than 5. The minimum expected count is .02.

Table V: Result of Chi Square Test



We are now setting another Hypothesis 2:

H0: Price of Mobile Phone and Consideration (ie. purpose of buying Mobile) are independent.

H1: Price of Mobile Phone and Consideration (ie. purpose of buying Mobile) are dependent.

Test applied are:

- chi-square test
- cross table of brand of laptop and Consideration

Result:

Calculated value of chi-square is 13.11 and the degree of freedom is 12. Are accepting null hypothesis and rejecting alternative hypothesis, i.e. Price of Mobile Phone and Consideration (ie. purpose of buying Mobile) are independent is true.

Crosstabs								
[DataSet1] C:\Documents and Settings\komal\My Documents\mobile.sav								
Case Processing Summary								
		Cases						
		Valid		Missing		Total		
		N	Percent	N	Percent	N	Percent	
Price * Cosideration		50	100.0%	0	.0%	50	100.0%	

Price * Cosideration Crosstabulation								
			Cosideration					Total
			Coverage	Price	Performance	Value Added Service	Others	
Price	Below 5000	Count	0	3	2	0	0	5
		Expected Count	.3	1.3	2.8	.5	.1	5.0
	5000-15000	Count	3	6	12	3	0	24
		Expected Count	1.4	6.2	13.4	2.4	.5	24.0
	15000-25000	Count	0	2	7	2	0	11
		Expected Count	.7	2.9	6.2	1.1	.2	11.0
	25000 Above	Count	0	2	7	0	1	10
		Expected Count	.6	2.6	5.6	1.0	.2	10.0
Total		Count	3	13	28	5	1	50
		Expected Count	3.0	13.0	28.0	5.0	1.0	50.0

Table VI: Cross Tabulation of Price of Mobile and Purchasing Consideration

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.113 ^a	12	.361
Likelihood Ratio	14.267	12	.284
Linear-by-Linear Association	3.165	1	.075
N of Valid Cases	50		

a. 16 cells (80.0%) have expected count less than 5. The minimum expected count is .10.

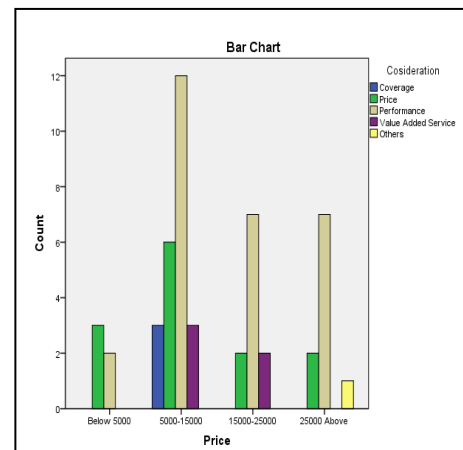


Table VII: Result of Chi Square Test **Methodology: Correlation**

Method

A point-biserial correlation was run to determine the relationship between Age of Mobile Purchase User and Price of Mobile phone. There was a negative correlation between Age and Price, which was statistically significant (rpb = -.024, n = 40, p = .867).

→ **Correlations**

[DataSet1] C:\Documents and Settings\komal\My Documents\mobile.sav

		Age	Price
Age	Pearson Correlation	1	-.024
	Sig. (2-tailed)		.867
	N	50	50
Price	Pearson Correlation	-.024	1
	Sig. (2-tailed)	.867	
	N	50	50

Result:

Calculated value of point-biserial correlation is -0.24 ie. Negative correlation. As Age group of Mobile Purchasing User are less they prefer high price range of Mobile and vice-versa.

Correlation	OutPut Value	Result
Age and Price	-0.24	As Age group of Mobile Purchasing User are less they prefer high price range of Mobile and vice-versa.
Age and Influence Factor	.391	As Age group of Mobile Purchasing User More they give more importance to Influence factor vice-versa.
Brand and Consideration	.186	User purchase mobile as per there purpose.
Brand and Occupation	-.149	User Purchase Mobile not depend on there occupation.

Conclusion

Brand of mobile and Consideration (ie. purpose of buying Mobile) are dependent is true. Price of Mobile Phone and Consideration (ie. purpose of buying Mobile) are independent is true. Consumer’s purchases branded Mobile according to their purpose. Age & Price are negatively correlated while age & influence factor are positively correlated.

Further Recommendation:

Further research can be carried out to create predictive model using neural network to find out mobile buying behavior of the consumer.

References

1. <http://www.uvm.edu/~dhowell/fundamentals7/SPSSManual/SPSSLongerManual>
2. <http://en.wikipedia.org/wiki/SPSS>