Factor Analysis of the Variables Responsible for Shoppers Decisions

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Abstract – The purpose of the study was to find out the prominent variables contributing to shoppers decision for making a purchase. The subjects were 120 costumers, who had purchased different items from Archies shops located in Danik Bhasker Mall, Race Course Road, Gwalior, M. P.

Twelve shopper's decision making variables were selected for this study. They included (1) Emotions related to purchasing an item, (2) Cognition before making a purchase (3) Effect of service quality of sales team on purchase. The Factor Analysis (Principal Component Analysis) was done to find out the prominent shoppers decision making factors comprising of any one or all of the selected variables among costumers. The unloaded factors obtained were then rotated by Varimax method to find out the final solution. Item with loading greater than or equal to 0.70 of Varimax solution was selected for discussing each factor. Eight prominent factors extracted after factor analysis were cost, appearance, color, utility, good past memory, quality and friendly and knowledgeable sales teams in the respective shop.

Key Words – Factor Analysis, Shoppers Decision, Emotion, Cognition, Service Quality.

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INTRODUCTION

The success in business mainly depends on understanding role of positive emotions, cognitive abilities and quality of service provided to customers. The customers must be satisfied and should be happy with the external as well as internal environment at shopping place. The business houses which take care of positive emotions of the customers are able to achieve their set financial targets in each financial year. The needs and choices of customers should be on top priority to achieve success in business.

It has been a subject of research to find out liking and disliking of customers and expected responses of staff responsible for providing services in the shopping malls. It is very important to identify those cognitive abilities and emotions of the customers which will help to improve the quality of products and quality of service.

Happiness is the emotion most people want to experience because it is positive and bring happy feelings like joy, surprise, fun, laughter, relaxation and serene or happiness. Emotions deliver positive feelings counteracting stress and allow for greater flexibility as well as ability to navigate conflict with others. It promotes more creativity and better ability to solve problems by using intellectual abilities.

Surprise is the briefest emotion in length and considered to be neutral and not necessarily pleasant or unpleasant. Fear is an unpleasant feeling that can be the most traumatic and toxic of all emotions. Emotions are considered to be a biological state closely associated with nervous system which results in bringing physiological and psychological changes in the body and mind and can be noticed in the feelings and thought process of an individual. Mood, Temperament and Disposition are generally thought to be interrelated with emotions.

METHODOLOGY:

The data was collected from the customers who had purchased different items from Archies shops located in Danik Bhasker Mall, Race Course Road, Gwalior, M, P. The area for collecting sampling was Archies shop located in Danik Bhasker Mall, Race Course Road, Gwalior, M.P. The sampling was based on convenience sampling, because selected customers were those who consented to give their responses on the questionnaire. The data was collected by means of non-probability sampling. The sample size for the study was 120 customers being selected for the study who agreed to fill up the questionnaire from the total of 500 customers

who visited and had made purchase in the month of January-February 2019.

Reliability of questionnaire is a way of assessing the quality of the measurement procedure used to collect data. This self-structured questionnaire internal consistency was very high (Cronbach's alpha = 0.906). The self-structured questionnaire test-retest reliability indicates a good temporal concordance (Spearman rho = 0.868, p < 0.001). Factor analysis was applied to investigate the dominant factors of making shopping decisions, for doing so the Principal Component Analysis method has been used and the final solution was obtained by varimax Rotation method. Eleven purchase making variables were selected for this study namely happiness, sadness, Courtesy of staff, Staff knowledge about product, Quality of service, Past experience (memory), Color combination, Appearance of Equipment, Quality, Utility, Cost

FINDINGS:

The Analysis and interpretation of data Representing KMO and Bartlett's Test is presented in table no 1.

Table 1

**KMO and Bartlett's Test to measure sampling adequacy and to test the null hypothesis**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.511
Bartlett's Test of Sphericity	Approx. Chi-Square	500.328
	df	66
	Sig.	.000

Table 1 represents the KMO (Kaiser-Meyer-Olkin) which is a measure to test sampling adequacy. BTS (Bartlett's Test of Sphericity) is a measure to test the null hypothesis that the obtained matrix is an identity matrix. Value of KMO range from 0 to 1. Zero indicates that the sum of partial correlation indicating diffusion in the pattern of correlation in this condition it may be concluded that factor analysis is appropriate. Value near to 1 indicates that pattern of correlation are relating compact, in this condition factor analysis is good. In this study KMO values was found .511, which is closer to 1 in comparison of 0. This shows that the developed factors are reliable. Already norms are available in case of KMO.

Value of KMO	Level of Sample Adequacy
Between 0.5 and 0.7	Mediocre
Between 0.7 and 0.8	Good
Between 0.8 and 0.9	Great
Above 0.9	Superb

As per the norms, in the present study, sample adequacy was found mediocre. In the present study

BTS (Bartlett's test of Sphericity) was found significant (p = .000). This shows that correlation matrix is not an identity matrix. This means there are relationship between the variables. Therefore factor analysis is appropriate.
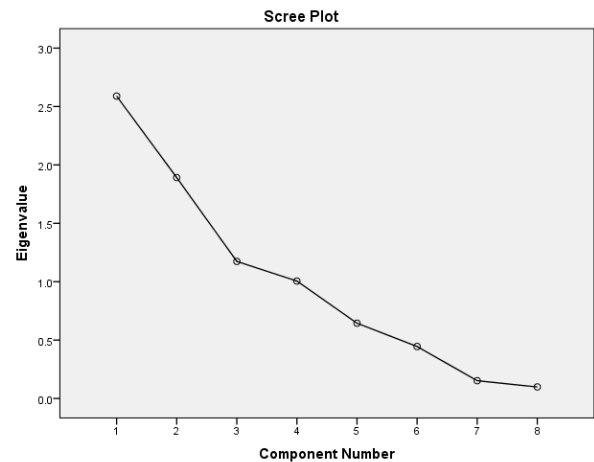
FIG 1- Scree Plot

Figure 1 shows the scree plot which is obtained by plotting the factors (along X axis) against their eigenvalue (along Y axis). This plot shows that only four factors have eigenvalues above elbow bent; hence only four factor have been retained in this study.

Further varimax rotation with Kaiser Normalization have been used and the analysis of data is presented in table no.2.

TABLE 2

Rotated Component Matrixa

	Component				
	1	2	3	4	5
COURTESY OF STAFF	107	-.246	567	-.205	288
STAFF KNOWLEDGE ABOUT PRODUCT	-.139	142	692	245	-.255
QUALITY OF SERVICE	-.039	029	-.857	145	-.155
Past Experience (memory)	670	186	-.185	-.180	-.466
COLOR COMBINATION	942	-.068	041	059	003
Which of the following emotion you generally experience most while not making a purchase	040	-.069	-.046	643	119
APPEREANCE OF EQUIPMENT	931	-.086	047	121	-.025
QUALITY	091	834	039	387	-.010
UTILITY	-.003	882	-.074	-.259	-.004
Rate the reasons of your purchase in the Archiesshuop in the mall. COST	700	248	-.057	-.408	-.005
Rate your state of happines as per your feeling in the mall	-.122	451	-.067	609	-.021
Which of the following emotion you generally experience most while making a purchase	-.005	061	042	087	879

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 7 iterations.

Table 2 represents the results of varimax rotation. It is evident from above table that first factors beaning impact on shoppers decision have been found to be past experience, colors combination, appearance of items, and cost of items as the loading value obtained is more than 0.7 or equal to 0.6. The second factors beaning impact on shoppers decision have been found to be quality and utility of items, as the loading value obtained is more than 0.7. The third factors beaning impact on shoppers decision have been found to be quality of service, as the loading value obtained is more than

0.7. or equal to 0.6. The fifth factors beaning impact on shoppers decision have been found to be emotions, as the loading value obtained is more than 0.7. The factor extracted and the variance explained by these factors are presented in table 3.

TABLE 3

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.616	21.800	21.800	2.616	21.800	21.800	2.523	21.021	21.021
2	2.105	17.541	39.342	2.105	17.541	39.342	1.875	15.621	36.642
3	1.578	13.147	52.489	1.578	13.147	52.489	1.591	13.257	49.899
4	1.207	10.056	62.545	1.207	10.056	62.545	1.349	11.241	61.140
5	1.009	8.408	70.953	1.009	8.408	70.953	1.178	9.813	70.953
6	.920	7.666	78.619						
7	.858	7.154	85.773						
8	.627	5.227	91.000						
9	.467	3.891	94.891						
10	.375	3.124	98.015						
11	.143	1.190	99.205						
12	.095	.795	100.000						

Extraction Method: Principal Component Analysis.

It can be seen from the above table that after rotation, is having percentage variance i.e. 21.02 for first factor, 15.62 for second factor, 13.25 for third factor, 11.24 for fourth factor and 9.813% for fifth factor respectively of the total variance. Thus, all these factors together explain 70.9% of the total variance.

In order to develop a test battery to measure the variables responsible for decision making of shoppers, the eigenvalues for each factor is shown in table 3 for only those factors are retained whose eigenvalues are 1 or more than 1. Hence eigenvalue for the first four factors have been retained for analysis. The factor 1 derived through the analysis of data for developing test battery is presented in table no. 4.

Table 4

Factor 1 derived from analysis for developing test battery

VARIABLES CONTRIBUTING TO ATTRACTION TOWARDS A SHOP LOADINGS	
COST	0.700
APPEREANCE OF EQUIPMENT	0.931
COLOR COMBINATION	0.942
PAST MEMORY EXPERIENCE	0.670

The analysis of data of factor 1 explains why a person is attracted towards a shop in the mall. The loading values in the table are above or close 0.7 hence they are retained for the battery development. The Cost, Appearance of the equipment, Color combination and Past memory play an important role to buy items from retail shop. The cost is the variable which initiates the emotions of sadness or happiness as a person largely wants to buy things according to his or her budget. The appearance and color

combination also have impact on emotions. As the different varities of color options and handy small equipment's may surprise costumers and may have effect on shopping decision. The past experience related to a particular shop also affects a person to visit the shop again and again or choose from other options. Good past memories related to last shopping also decides the shopping decision. The factor 2 derived through the analysis of data for developing test battery is presented in table no. 5.

Table 5

Factor 2 derived from analysis for developing test battery

VARIABLES OF COGINITION IN DECISION MAKING PROCESS LOADING	
UTILITY OF PRODUCT	0.834
QUALITY OF PRODUCT	0.882

The analysis of data of factor 2 explains explains the actual reasons of spending money on purchase. The loading values in the table are above or close 0.7 hence they are retained for the factor battery development. The Subjects responded largely that they make decisions of shopping which ultimately depends on the utility and quality of products. The emotions obtained by factor 2 are examined by the reality of shopping decision. A person visiting the shop evaluates the cost, appearance of equipment, color combination and get feeling of happiness and surprise and on the other hand if the quality is poor and utility is less a person may get emotion of Sadness or disgust and finally affect his decision. The factor 3 derived through the analysis of data for developing test battery is presented in table no. 6.

Table 6

Factor 3 derived from analysis for developing test battery

EFFICENCY OF SALES TEAM LOADING	
QUALITY OF SERVICES	0.857
STAFF KNOWLEDGE	0.692

The analysis of data of factor 3 explains the actual impact of quality of services and staff knowledge on purchase. The loading values in the table are above or close to 0.7; hence they are retained for the factor development. The factor 3 is really important for the shop owners to understand how to influence the shopping decision of shoppers with help of working staff. The sales team with better knowledge about the product is able to convince costumers to buy more than expected. The best explanation regarding the warranty, return policy always leaves significant mark on the shopper's decision. If they don't like the product, the sales team will replace it in minimum possible time. The way a sales team deals with their customers have

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an impact on shopper's emotions and decision. The factor 4 derived through the analysis of data for developing test battery is presented in table no. 7.

Table 7

Factor 4 derived from analysis for developing test battery

(PERCIVED EMOTION WHILE SHOPPING)	LOADING
HAPPINESS	0.879

The analysis of data of factor 4 explains the actual impact of happiness on shoppers decision. The loading values in the table are above 0.7, hence it is retained for the factor development. Factor 4 is the emotion of happiness which costumer experience while making a purchase. Buying the best quality with suitable price would make a state of happiness for making a decision to buy items.

It is further to state that Factor 1,2 and 3 have jointly contributed to the factor 4 as the decisions starts operating right from entering the shop and experiencing the emotions of buying within him/herself or not buying. Happiness in terms of shopping can be assessed on the basis of the cost, appearance, color, utility, good past memory, quality and friendly staff and knowledgeable sales teams in the respective shop. The total combination of factors having impact on shopper's decision is presented in table no. 8.

Table 8

Total combination of factors influencing shopper's decision

FACTORS THAT MAKES SHOPPING DECISIONS	LOADING
COST	0.700
APPEREANCE OF EQUIPMENT	0.931
COLOR COMBINATION	0.942
PAST MEMORY EXPERIENCE	0.670
UTILITY	0.834
QUALITY	0.882
QUALITY OF SERVICES	0.857
STAFF KNOWLEGE	0.692
HAPPINESS	0.879

The above table reveals that the cost, appearances, color combination, past experience, utility, quality product, quality of services, staff knowledge and happiness contributes to shoppers decision.

DISCUSSION OF FINDINGS:

A costumer is attracted towards a shop on these specific variables that are Cost, Appearance of the equipment, Color combination and Past memory. Costumer cognition in decision making process finds its root in product quality and utility. The sales team with better knowledge about the product convinces costumers to buy things. The best explanation

regarding the warranty, return policy always leaves significant mark on the shopper's decision as they are influence the costumers that if they don't like the product the sales team will replace it in minimum possible time. The way a sales team deals with their customers have an impact on shopper's decision. The last emotion felt on purchasing the items is Happiness as the other pre-request factors are completed.

CONCLUSIONS:

The following conclusions may be drown:

1. It may be concluded that emotion of happiness and surprise have positive impacts, whereas emotion of sadness and fear have negative impact on Shoppers decision in purchasing.

2. It may further be concluded that cognitive qualities contribute to evaluate the cost, quality and appearance of items and hence finally have impact on shopper decision.

3. It may further be concluded that knowledge about products and quality of services of working staff have significant impact on shopper decision.

4. It may further be concluded that most significant factors contributing to the decision making of customers are colors combination, quality of product, happiness and service quality.

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Journal of Marketing Research, 10(1), pp. 1-9.

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