

EXPLORATORY FACTOR ANALYSIS ON FACTORS THAT INFLUENCE THE SHOPPERS PURCHASE DECISION THROUGH E-COMMERCE

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ABSTRACT

E-commerce is buzzing word in today's generation where a rigorous study required last one decade there is an exponential growth in e-commerce industry, so the aim of the present study is to analyze the various factors that influence the shoppers to prefer online shopping. Study was undertaken at two tier cities in Andhra Pradesh i.e. Rajahmundry, Vijayawada & Tirupati cities. Exploratory Factor analysis is used as a statistical tool for the study. The data is collected primarily from a sample of 1200 from the shoppers. The findings show that there are 4 major factors with Eigen value greater than 1.0. The factors with highest scores are Economic, product, convenience and credibility that influence more on shoppers.

Keywords: E-commerce Factors, Eigen values and online shopping.

INTRODUCTION

Internet and *e-commerce* had followed, inevitably, a similar road since these concepts cannot be mutually excluded one from the other one. Innovations in the field of Internet technologies have had instant repercussions in the online business world. From a simple usage having a regional origin located in the United States of America, the phenomenon of electronic commerce has seen a rapid spread globally, according to the innovations related to Internet technologies. The projection of electronic commerce is in perfect accord with the development stage of the real economy.

REVIEW OF LITERATURE

Definition of e-commerce

According to IBM, which has defined this concept in 1997, "*e-business can be the key in transforming business processes using Internet technologies.*" Analyzed from a general perspective, e-business may gather under its umbrella three major components:

- The human dimension that includes processes and activities related to research, development, marketing, manufacturing, logistics, management, etc.
- The technological-only component, akin to information-related technologies.
- Commercial or e-commerce component, taken as a whole and perceived primarily as a phenomenon – having a different meaning that the term known e-commerce, basically the purchase of goods and services through Internet technologies.

Electronic commerce (e-commerce) is the buying and selling, marketing of products and services, and providing information via computer networks (O'Brien & maracas, 2006). Many companies are now engaged in or sponsor three basic categories of e-commerce applications, i.e., e-commerce business-to-consumer, business-to-business, and consumer-to-consumer (O'Brien, 2005). Lee et al. (2011) conducted a study in Malaysia in 2010; the instrument used was questionnaire survey using seven Likert scale. Data collection method used was a snowball effect for 102 respondents. Through regression and correlation analysis, it was found that perceived value, perceived ease of use, perceived usefulness, firm's reputation, privacy, trust, reliability and functionality have a significant linear relationship to online repurchase intentions. Delafrooz et al. (2011) who conducted a study in Malaysia with 370 respondents obtained from a private university in Selangor by using path analysis found that the trust and consumer attitudes have the strongest direct effect on buying online intention. While the utilitarian orientation, convenience, price, broader product selection, and earnings have also strong indirect effect on online shopping intentions through

attitudes toward online shopping as mediation. Kwek et al. (2010) conducted a study of 242 respondents in Malaysia by using multiple regression analysis and found that impulse buying intentions, consumer orientation to quality, customer orientation to brands, online trust and online purchasing experience is positively related to prior purchase intention of online customers. Shergill & Chen (2005) collected data by conducting surveys via e-mail randomly to 102 respondents in New Zealand. Then, using exploratory factor analysis and ANOVA found that the site design, site reliability, customer service sites, and site safety are the four dominant factors that influence consumer perceptions of online purchases.

Objectives of the study

1. To study the various factors that influences the shoppers to opt for online shopping.
2. To examine the relationship among the variables those are within the factors by using exploratory factor analysis.

RESEARCH METHODOLOGY

Sample size

The researcher selected online shoppers in the cities of Rajahmundry, Vijayawada and Tirupati as a sample for the study.

Table No 1.

Sample distribution

Name of the city	No. of frequent buyers through online	Sample size
Rajahmundry	6366	318
Vijayawada	9329	466
Tirupathi	8327	416
	Total:	1200

Source: compiled from websites (2014)

Frequently buying people are taken as respondents. Convenient sampling method has been adopted for data collection.

DATA COLLECTION

Both primary and secondary data has been collected for the purpose of the study. The survey method has been used to gather primary information for the study. The required data has been collected from the sample respondents with the structured questionnaire designed for the purpose. The secondary data has been collected through books, journals, magazines, internet, articles related for the study.

Questionnaire:

Based on the objective of the study, close ended questionnaire is prepared. Likert Scale method has been used, respondents have been asked to state their level of agreement or disagreement on 5 point scale where 5= strongly agree; 4= agree; 3= neutral; 2= disagree; 1= strongly disagree.

Hypothesis

H₀: There is no significant relationship among variables in factors

H₁: There is a significant relationship among variables in factors

Data Analysis

Exploratory factor analysis is used with the help of SPSS-22

RESULTS AND DISCUSSION

The researcher has applied the exploratory factor analysis to study the various observed variables that influence the shoppers to opt for online shopping. There are 16 variables are considered for the study and 4 major factors was extracted from the study. The following figure-4.1 shows the 4 factors of the study.

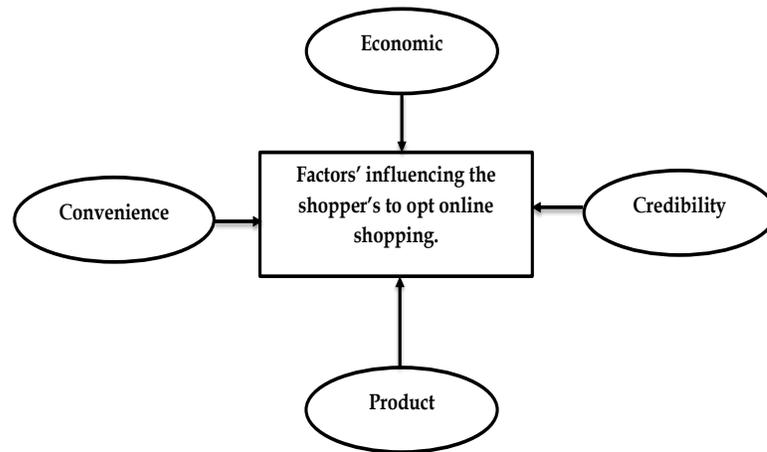


Figure 1.
 Factors shoppers to opt for online shopping

Table No 2 Reliability Analysis

Reliability Statistics	
Cronbach's Alpha	N of Items
.837	16

The first step in exploratory factor analysis is to check the reliability of the observed variables, the reliability of the data will be checked by using Cronbachs alpha. Table 1 shows the value of 0.837 as Cronbachs alpha for 16 variables. The cutoff point of cronbach alpha is 0.7, where 0.837 is very much greater than cut off rate, therefore all the sixteen variables are reliable to carry out with exploratory factor analysis.

Table No 3. Testing of hypothesis

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.825
Bartlett's Test of Sphericity	Approx. Chi-Square	30842.350
	df	120
	Sig.	.000

RESULTS

KMO and Bartlett’s Test is established in order to know the strength of the factor analysis solution and to test the hypothesis. The above table 3 gives the results that KMO measure of sampling adequacy is .825 which is greater than cut off rate 0.7, indicating that factor analysis could be used for the given set of data. Further, Bartlett’s test of sphericity used to test the hypothesis, where the *p* value is 0.000, which is less than significant value 0.05, where there is no proper evidence to accept the null hypothesis; therefore there is a significant relationship among variables in factors.

Table No 4 *Factor loadings*

Sl. No	Dimensions	Variables	Factors Loadings
1.	Economic	• I shop online because of the cheaper price.	0.955
		• I can compare price in online shopping.	0.974
		• Discounts are high in online shopping.	0.962
		• Free delivery influences me to go for online shopping.	0.981
		• Competitive price availability compare to solid shops.	0.985
2.	Product	• To buy limited edition products I prefer online shopping.	0.915
		• I prefer online shopping due to wide products availability.	0.906
		• I prefer online shopping due to non-	

		availability of	0.819
		products in solid	0.869
		shops.	
		• I prefer online	
		shopping for sensitive	
		products.	
		• I prefer online	
		shopping as I can do	
		even during office	0.860
		time.	
3	Convenience	• 24/7 convenience	
		make me to prefer	0.883
		online shopping.	0.855
		• Easy return policy	
		makes me to prefer	0.804
		online shopping.	
		• I can sell or buy	
		second hand goods	
		through online.	
		• While shopping online	0.944
		I can see the ratings	
		and prefer products.	
		• Online feedback from	0.939
		the existing users	
		increases my trust to	
		prefer online	
		shopping.	
4	Credibility	• Online rating is pre	0.851
		authentication to the	
		quality assurance.	

Inference

Table 4 presents factor matrix (component matrix). The result includes the correlation coefficient between the relevant factor score with the original standardized variables. The correlation coefficient between the factor score and the variables included in the study is called factor loadings which are presented in the above table. The factor loadings are used to compute Eigen values for each factor.

Factor 1: Economic factor

The variables like, I shop online because of the cheaper price, I can compare price in online shopping, Discounts are high in online shopping, Free delivery influences me to go for online shopping, Competitive price availability compare to solid shops analysis, is having the higher factor loadings and grouped under one component. Hence all the observed variables are related to monetary benefits, the researcher named this factor as economic factor and it is observed that it is the major factor that influence the shoppers to opt online shopping.

Factor 2: Product

The variables like, To buy limited edition products I prefer online shopping, I prefer online shopping due to wide products availability, I prefer online shopping due to non-availability of products in solid shops, I prefer online shopping for sensitive products, all the above variables are related to tangible product based where grouped under one component, therefore researcher named the component as product factor. It is observed another major factor that influences the shoppers.

Factor 3: Convenience

The variables like, I prefer online shopping as I can do even during office time, 24/7 convenience make me to prefer online shopping, Easy return policy makes me to prefer online shopping, I can sell or buy second hand goods through online. All the said variables are grouped under one component where they are highly correlated and all the variables are related to convenient of shoppers; therefore it

was labeled as convenience factor. This is also a major factor that influences the shopper preference for online shopping.

Factor 4: Credibility

Variables like, while shopping online I can see the ratings and prefer products, online feedback from the existing users increases my trust to prefer online shopping, online rating is pre authentication to the quality assurance, all the variables are grouped under one component where all the said variables are related to trust worthiness of the shoppers, therefore researcher labeled as a credibility factor, it is found that credibility also place an important role that influence the shoppers to opt for online shopping.

Table No 5. Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.319	39.49	39.491	6.31	39.49	39.491	5.053	31.58	31.583
2	3.725	23.28	62.773	3.72	23.28	62.773	3.387	21.17	52.755
3	2.890	18.06	80.834	2.89	18.06	80.834	3.304	20.64	73.404
4	1.567	9.794	90.628	1.56	9.794	90.628	2.756	17.22	90.628
5	.343	2.147	92.775						
6	.277	1.729	94.503						
7	.213	1.330	95.834						
8	.186	1.163	96.997						
9	.136	.848	97.845						
10	.116	.724	98.569						
11	.074	.463	99.032						
12	.058	.359	99.391						
13	.043	.272	99.663						
14	.026	.161	99.824						
15	.016	.098	99.922						
16	.013	.078	100.000						

Extraction Method: Principal Component Analysis.

Table 5 gives the output of total variance. The table explains the total variance contributed by each component. We can see that the percentage of total variance contributed by first component is 39.491,

second component is 23.282, third component is 18.061 and fourth component is 9.784. From the above table it is also clear that there are total 4 distinct components for the given set of 16 observed variables.

Scree Plot

The scree plot gives the number of components against the Eigen values and helps to determine the optimal number of components. The components having steep slope indicates that good percentage of total variance is explained by that component, hence the component is justified. The following scree plot, the first 4 components have steep slope that is they are greater than one and later the slope is shallow that is less than one. This indicates the ideal number of components is 4.

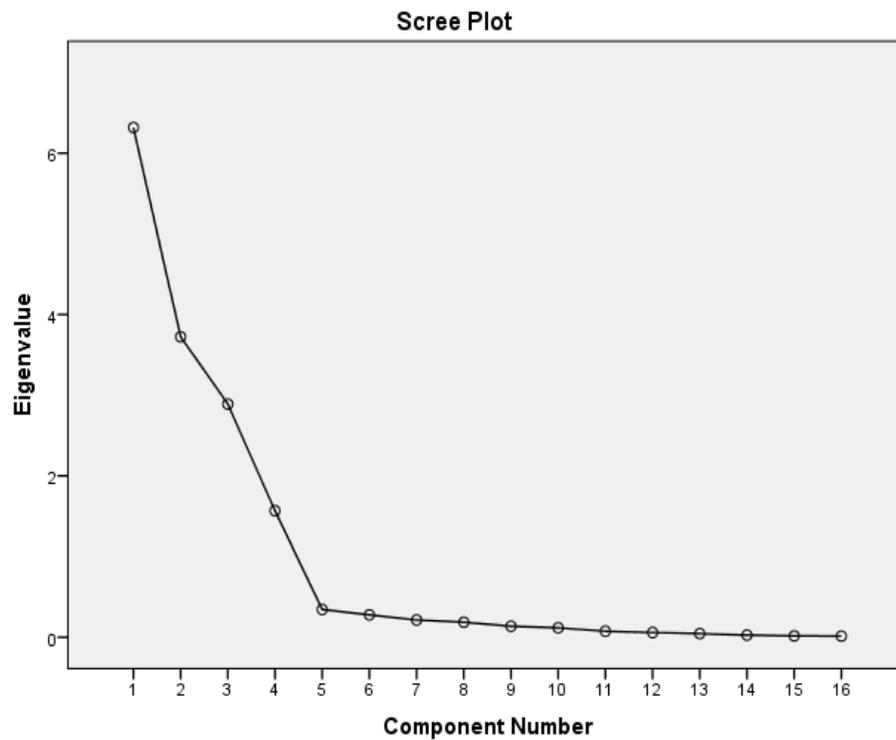


Figure 2.
Optimal number of components

Table No 6. *Summary of results of factor analysis*

	Factors			
	Price	Product	Convenience	Credibility
• I shop online because of the cheaper price.	.944			
• I can compare price in online shopping.	.955			
• I prefer online shopping as I can do even during office time.			.873	
• To buy limited edition products I prefer online shopping.		.921		
• I prefer online shopping due to wide products availability.		.940		
• I prefer online shopping due to non-availability of products in solid shops.		.858		
• Discounts are high in online shopping.	.948			
• While shopping online I can see the ratings and prefer products.				.932
• Online feedback from the existing users increases my trust to prefer online shopping.				.934
• Free delivery influences me to go for online shopping.	.954			
• 24/7 convenience make me to prefer online shopping.			.934	
• Competitive price availability in compare to solid shops.	.962			
• I prefer online shopping for sensitive products.		.880		
• Easy return policy makes me to prefer online shopping.			.896	

- Online rating is pre authentication to the quality assurance. .883
- I can sell or buy secondhand goods through online. .893

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

The above table 6 gives the summary of the results of the factor analysis. The items deleted indicate that they do not come under any of the component factors.

CONCLUSION

From the above discussion it can be inferred that major four factors have huge impact on shoppers online purchase decision, it clearly observed that five variables are observed by economic factor, four variables are observed by product related factors, four other variables are observed by convenience factor and three variables are observed by credibility factor.

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