



# Exploratory Factor Analysis Pertaining To The Perceived Value Of Internet Marketing By E-Consumers

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## ARTICLE INFO

## ABSTRACT

**Purpose:**In the last couple of years, the growth of E-Commerce industry in India has been phenomenal as more shoppers have started discovering the benefits of using this platform. There is enough scope for internet marketing businesses in the future if the marketers understand the Indian e-consumer psyche and cater to their needs. **Objective:**The primary objective of this research paper to extract the factors from the e-consumer perceived value indicators over internet marketing. **Sample:**The study adapt a Purposive sampling method of non-probabilistic method to determine the sample members from well-defined criteria based on researcher's expertise and knowledge, convenience sampling chooses its sample members based on proximity to the researcher. **Research Instrument:**The questionnaire consists of two parts. Part one related to measure the demographic details of respondents and part two related to the measure the e-consumers perceived value over the internet marketing. **Data analysis:**The collected primary data finally entered for analysis using statistical software SPSS 20. The exploratory factor analysis has done to know the emerging factors with in the twenty two e-consumer perceived value indicators. **Findings:**there are four components are extracted from the twenty two indicators entered in to model. The highest factor score of 0.792 happened on V1 "Internet marketing increase the buying efficiency". The lowest factor score of 0.470 happened on V8 "Internet marketing enhances the confidence among e-consumers"

**Key words:** Internet marketing – e-consumer – perceived value – EFA -

## Introduction

The Internet is an open worldwide communication network, linking countless number of computer networks throughout the world, through an intensive network of telephone lines. The increased availability of Internet is influencing the growth of Internet users around the world. The popularity of e-shopping has been increased tremendously in last 10 years. Companies are investing heavily in promotion of their products & services via internet based marketing. E-Shopping or online shopping is a form of electronic commerce which allows consumers to directly buy goods or services from a seller over the Internet using a web browser.

## Importance of the study

The internet marketing is growing at a rapid pace and changing the dynamics of the retail industry. This growth is bound to continue provided ecommerce companies focus on innovating, building strong technology infrastructure and delivering the best customer experience. In the present market scenario, the internet market place is flooded with several e-commerce options for shoppers to choose from. A variety of innovative products and services are being offered mess up customers for choice. In the last couple of years, the growth of E-Commerce industry in India has been phenomenal as more shoppers have started discovering the benefits of using this platform. There is enough scope for internet marketing businesses in the future if the marketers understand the Indian e-consumer psyche and cater to their needs.

## Literature review

The increased attention to sustainable development across industries has led to the continuous refinement and maturation of the e-commerce sector (Li & Huang, 2019)<sup>1</sup>. Eirini Koronaki, Aspasia Vlachvei, AnastasiosPanopoulos (2023)<sup>2</sup> in their research study on managing the online customer experience optioned that the rise of the “post-pandemic new digital consumer” who cherishes personalization, demands trust and expects immersive online experiences has led brands to reexamine their online presence. Jackie Gilbert Bette Ann Stead (2001)<sup>3</sup> reviewed the incredible growth of electronic commerce (e-commerce)and presented ethical issues that have emerged.

J. F. Rayport and B. J. Jaworski(2004)<sup>4</sup> explain the current digital landscape of online marketing and retailing is characterized by the emergence of two primary mediums or channels for conducting online shopping and related activities: e-commerce and m-commerce. e-commerce refers to the use of traditional computer-based websites to engage in online shopping activities.Gabriel Almeida Lucas, GuilhermeLerchLunardi, DécioBittencourtDolci(2023)<sup>5</sup>, Considering the diversity of platforms and devices, it is important to understand what influences the intention to continue using e-commerce access platforms. We explore different factors predicting the user’s experience with the accessed platform through a free-simulation experiment.Farooq Ahmed (2001)<sup>6</sup> reported that the enormous flexibility of the internet has made possible what is popularly called e-commerce which has made inroads in the traditional methods of business management.

Elizabeth Goldsmith and others (2000)<sup>7</sup> reported that the general category of e-commerce can be broken down into two parts such as, E-merchandise: and E-finance. Nir B. Kshetri (2001)<sup>8</sup> reported that the twin forces of globalization and the Internet have the potential to offer several benefits to individuals and organizations in developing as well as developed countries. Apart from economic benefits such as more choices and the convenience of shopping at home. Mauricio S. Featherman, Joseph S. Valacich& John D. Wells (2006)<sup>9</sup> examined whether consumer perceptions of artificiality increase perceptions of e-service risk, which has been shown to hamper consumer acceptance in a variety of online settings.

## Objective

The primary objective of this research paper to extract the factors from the e-consumer perceived value indicators over internet marketing. Based on this the following objectives were constructed.

1. To know the e-consumer perceived value indicators over internet marketing.
2. To extract the components from the e-consumer perceived value indicators
3. To analyze each component by predicting high and low scored e-consumer perceived value indicators

## Methodology

The present study is exploratory in nature in the way of exposing the various factors involved in the perceived value of internet marketing by e-consumer. **Data Collection:**The researcher has used both primary and secondary data. Primary data such as, Questionnaires should be employed to know the e-consumers perceived value over internet marketing. **Sampling Method:**The researcher has intended to adapt a Non-probabilistic sampling namely purposive sample would be used to select the sample from the infinity population of the study.Purposive sampling selects sample members from well-defined criteria based on researcher’s expertise and knowledge, convenience sampling chooses its sample members based on proximity to the researcher (OBILOR, Ezezi Isaac 2023)<sup>10</sup>.**Sample size:**In order to get deep analyses the research objectives and better estimation accuracy the researcher has likely to adapt a large sample for this study. This study admit 584 sample respondents from various background such as, Age, Education, Gender, Monthly income and Occupation. In order to achieve the Research objective of this study the primary data would be employed. The e-consumers perceived value over the internet marketing would be measured with help of questionnaire. **Structure of the questionnaire:**Structured questionnaire are those which are definite concrete and predetermined questions relating to the aspect and favor to the researcher collects data. The structured questionnaires that would frame and designed consist of close ended, open ended, multiple chose and five point likert scale rating questions. The questionnaire consists of two parts. Part one related to measure the demographic details of respondents and part two related to the measure the e-consumers perceived value over the internet marketing. There are five demographic questions such as Age, Gender, Education, Occupation and Income measured with nominal, interval and ratio scale. There are twenty two e-consumers perceived value indicators measured with five point likert’s scale (1 as strongly disagree and 5 as Strongly agree). **Data analysis:** The collected primary data finally entered for analysis using statistical software SPSS 20. The frequency distribution table used to know the position of respondents participated in the study. The exploratory factor analysis has done to know the emerging factors with in the twenty two e-consumer perceived value indicators.

## Demographic factors.

The study has conducted in among the E-Consumer at the Urban area of NamakkalDisrict in order to know the e-consumer perceived value over the internet marketing. There are 584 e-consumers are respondent of

this study. They are classified according to their Age, Gender, Income, Education and Occupation. This personal Demographic classification is necessary to understand what level of respondents has participated in the study for carryout further analysis.

**Table Distribution of sample respondent on the basis of personal and demographic profile**

Demographic Factor	Levels	Frequency	Percent	Cumulative Percent
Age	25-30	99	17.0	17.0
	30-35	224	38.4	55.3
	35-40	61	10.4	65.8
	40-45	60	10.3	76.0
	45-50	140	24.0	100.0
	Total	584	100.0	
Gender	Male	360	61.6	61.6
	Female	224	38.4	100.0
	Total	584	100.0	
Education	Less than Bachelor's Degree	41	7.0	7.0
	Bachelor's Degree	294	50.3	57.4
	PG/Professional Degree	209	35.8	93.2
	Technical	40	6.8	100.0
	Total	584	100.0	
Income	Less than 20 000	77	13.2	13.2
	20 000 - 30 000	157	26.9	40.1
	30 000 - 40 000	94	16.1	56.2
	40 000 - 50 000	87	14.9	71.1
	More than 50 000	169	28.9	100.0
	Total	584	100.0	
Occupation	PVT Company Employee	120	20.5	20.5
	GOVT Employee	208	35.6	56.2
	Owner of Business	169	28.9	85.1
	Others	87	14.9	100.0
	Total	584	100.0	

The respondent age were classified into five levels. Among the five level classification of respondent age, 38.4 percent were in between 30 – 35 age group and 24 percentage of respondent were in the age group between 45 – 50. It is clear that 55.3 percent of respondent were youth and largely participated in the study. Out of 584 sample respondent, 61.6 percent of respondent were male and remaining 38.4 percent were female participated in the study. The respondent education were classified into four levels. 50.3 percent of respondent were have Bachelors degree and 35.8 percent of respondents were acquired PG/Professional degree. it is clear than majority of graduate people were participated in the study. The monthly income of the respondent were classified into five levels starts with Less than 20 000 and maximum of more than 50 000 per month. 26.9 percent of respondents income were in between 20 000 – 30 000 and 28.9 percent of respondent income were above 50 000 per month.

### Exploratory factor analysis

EFA is helpful in investigating the underlying structures based on correlation between different factors (Brace, Kemp, & Snelgar, 2012)<sup>11</sup>. There are twenty two indicators which are reflect the E-Consumer perceived value over the effect of internet marketing has been summarized below. It is important to reduce the parameters so that there is a limited set of parameters that represent the total consideration set. Factor Analysis has been done in three stages. KMO and Bartlett's Test conducted in order to find out the validity and reliability of the whole set of data. In the second stage, the eigen value for twenty two indicators along with chi-square value are summarized. in the final stage the factor analysis with principal component analysis using varimax rotation was done. The main aim of the exploratory factor analysis was to reduce the twenty two indicators into dimensions.

**Table 1 Descriptive statistics of measurement itemes and communalities extraction value**

Variable Name	Variable Label	Mean	Std. Deviation	Communalities	
				Initial	Extraction
V1	Increase efficiency	1.99	1.028	1.000	.649
V2	Reduce cost	1.99	1.003	1.000	.606
V3	Customer satisfaction	2.08	1.080	1.000	.619
V4	Customer relationship	1.97	1.079	1.000	.597

V5	To get feed back	2.08	1.151	1.000	.694
V6	Create awareness among customers	2.10	1.058	1.000	.510
V7	To customize products	2.26	1.025	1.000	.462
V8	Enhance confidence among consumers	2.17	1.067	1.000	.365
V9	Help to maintain records of bills, purchase, etc	1.63	.971	1.000	.629
V10	Facilitate consumer in decision making	1.74	.830	1.000	.473
V11	Information about the product on the internet is sufficient	1.96	1.111	1.000	.634
V12	Easy to make comparison among products	1.89	1.133	1.000	.512
V13	Encourage the consumers to purchase new products	1.94	.983	1.000	.468
V14	Discounts are offered to attract consumers	2.33	1.001	1.000	.528
V15	Comparatively prices are less	2.14	1.023	1.000	.570
V16	Save cost of transportation to go to market	2.16	1.080	1.000	.415
V17	Order to purchase can be booked easily	2.20	1.013	1.000	.615
V18	Purchased product are delivered well in time to consumers	2.05	1.017	1.000	.577
V19	Reduce the length of distribution channel	2.20	.957	1.000	.310
V20	Making payment easy	2.67	1.150	1.000	.460
V21	Good planning	2.42	1.256	1.000	.667
V22	Technology savvy customers	2.34	1.218	1.000	.696

The above table shows the mean and standard deviation for twenty items which are reflect the E-Consumer perceived value over the effect of internet marketing. the five poinglikert scale was used (1 for Totally Unacceptable and 5 for Perfectly acceptable) to measure the e-consumers response. Among the twenty two indicators, the indiators namely "Making payment easy" has highest mean score of 2.67. The another indicators namely "Help to maintain records of bills, purchase, etc" has scored very low mean score of 1.63. It is observed that mostly all the indicators mean value are lies in between 1.63 to 2.67. the standard value for each items are indicated next to the mean value columne to know the deviation of the customer response for each items. The communalities value indicated that the common variance shared by factors with given variables.in other words it shows that the extent to which an item correlates with all other items. The higher the communalities are better. Higher communality value indicated that larger amount of the variance in the variable has been extracted by the factor solution. For better measurement of factor analysis communalities should be 0.4 or greater. it is found that out of twenty two items, two items were score less than 0.4.

### Test Adequacy of Sample:

Kaiser-Meyer-Olking Measure of Sampling Adequacy (MSA) for individual variables is studied from the diagonal of partial correlation matrix (table 3). It is found to be sufficiently high for all variables. The measure can be interpreted with the following guidelines: 0.90 or above, marvelous; 0.080 or above, meritorious; 0.70 or above, middling, 0.60 or above, mediocre; 0.50 or above miserable, and below 0.50, unacceptable. Test hypothesis regarding interrelationship between the variables.

**Null Hypothesis  $H_0$**  : There is no statistically significant interrelationship between variables relating to effectiveness of internet marketing.

**Alternate Hypothesis  $H_1$**  : There may be a statistically significant interrelationship between variables relating to effectiveness of internet marketing.

Test	DF	ChiSquare	Prob>ChiSq
$H_0$ : no common factors.	231.000	5135.546	<.0001*
$H_A$ : at least one common factor.			

**Table No. KMO test of Adequacy**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.883
Approx. Chi-Square	5135.546
Bartlett's Test of Sphericity	df
	231
	Sig.
	.000

To test the sampling adequacy, Kaiser-Meyer-Olking Measure of Sampling Adequacy (MSA) is computed, which is found to be 0.883 it is indicated that the sample is good enough for sampling. The overall significance of correlation matrix is tested with the Bartlett test of Sphericity for grouping factors of commitment of medical tourist, (approx.. chi-square = 5135.546, which is significant at 0.000) as well as support for the validity of the factor analysis of the data set.

**Table No. Eigen values of customer perceived value items over the effectiveness of internet marketing**

Variable Name	Eigenvalue	Percent	Percent	Cum Percent	ChiSquare	DF	Prob>ChiSq
1	7.0066	31.848		31.848	5144.48	225.300	<.0001*
2	2.1894	9.952		41.800	2188.90	216.536	<.0001*
3	1.5719	7.145		48.945	1576.99	199.345	<.0001*
4	1.2885	5.857		54.802	1221.77	181.625	<.0001*
5	0.9818	4.463		59.264	967.666	164.347	<.0001*
6	0.9693	4.406		63.670	840.306	147.486	<.0001*
7	0.8909	4.049		67.720	694.961	131.348	<.0001*
8	0.8435	3.834		71.554	565.027	116.157	<.0001*
9	0.7914	3.597		75.151	434.975	101.870	<.0001*
10	0.6898	3.135		78.287	307.384	88.371	<.0001*
11	0.5789	2.632		80.918	214.164	75.796	<.0001*
12	0.5333	2.424		83.342	163.065	64.027	<.0001*
13	0.5068	2.304		85.646	122.614	53.214	<.0001*
14	0.4595	2.089		87.735	84.385	43.328	0.0002*
15	0.4276	1.943		89.679	58.190	34.492	0.0070*
16	0.3834	1.743		91.421	37.899	26.554	0.0712
17	0.3754	1.706		93.128	27.917	19.558	0.0992
18	0.3449	1.568		94.695	16.351	13.632	0.2690
19	0.3290	1.496		96.191	9.794	8.685	0.3392
20	0.3020	1.373		97.564	3.969	4.766	0.5214
21	0.2806	1.276		98.839	1.252	1.822	0.4901
22	0.2554	1.161		100.000	0.000	.	.

Extraction Method: Principal Component Analysis.

The above table clearly indicates that out of the twenty two e-consumer perceived value over the effect of internet marketing attributes, fifteen variables are significant and remaining seven variables are insignificant. However based on the Eigen value all the above e-consumer perceived value over effect of internet marketing attributes are acceptable to enter into factor analysis. The eigen value more than 1 are taken into account for further analysis. the above table clearly indicate that there are four variableseigen value was more than 1. More over the above table also indicate that the eigen value more than 1 was occurred for first factor alone by scored 7.007 percent with a variability of 31.84 percent. The second component eigen value 2.189 with a 9.952 percent variance. The Third component eigen value 1.572 with a 7.145 percent of variance. the final component eigen value 1.288 with 5.857 percent variance. . Finally there are four components are emerged by 54.802 percent with a variability of 39.58 percent of the variance in the relationship between variable.

**Table No. Total variance Explained**

Component	Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.007	31.848	31.848	4.271	19.412	19.412
2	2.189	9.952	41.800	2.955	13.432	32.843
3	1.572	7.145	48.945	2.828	12.853	45.696
4	1.288	5.857	54.802	2.003	9.106	54.802

Extraction Method: Principal Component Analysis.

The above table shows the Extraction sums of squared and Rotation sums of squared loadings for the four factor percent of variance. It is found that four factor together they account for 54.802% of the variability in the original data. Loading on factor can be positive or negative. A negative loading indicates that this variable has an inverse relationship with the rest of the functions. However, comrey suggested that anything above 0.30 could be considered salient, with increased loading becoming more vital determining the factor. All the loading in the research are positive.

**Table No. Value of Component Matrix for the indicators of effectiveness of internet marketing**

Indicators	Component			
	1	2	3	4
V5To get feed back	.729			
V2Reduce cost	.654	-.412		
V11Facilitate consumer in decision making	.651			
V18Purchased product are delivered well in time to consumers	.648			
V1Increase efficiency	.631	-.495		
V6Create awareness among customers	.630			
V3Customer satisfaction	.629	-.440		
V15Comparatively prices are less	.607			
V4Customer relationship	.602	-.475		



V13Encourage the consumers to purchase new products	.595			
V7To customize products	.595			
V12Easy to make comparison among products	.594			
V17Order to purchase can be booked easily	.571			
V22Technology savvy customers	.559			
V19Reduce the length of distribution channel	.522			
V21Good planning	.505	.429		
V10Information about the product on the internet is sufficient	.470			
V16Save cost of transportation to go to market	.466			
V8Enhance confidence among consumers	.455			
V20Making payment easy			.526	
V9Help to maintain records of bills, purchase, etc	.445		-.498	
V14Discounts are offered to attract consumers	.456			-.469

Extraction Method: Principal Component Analysis.a

The above table shows the four component value for twenty two items of customer perceived value over the internet marketing. Each column in the above table contains component loadings, which are the correlations between the variable and the component. Because these are correlations, possible values range from -1 to +1. The rotated component matrix helps to determine what the components represent. The above table highlighted the component value which is most highly correlated with other components. The first component is most highly correlated with increase efficiency. Increase the efficiency in the internet marketing is a better representative, however, because it is less correlated with the other three components. The second component is most highly correlated with Order to purchase can be booked easily. The third component is most highly correlated with Help to maintain records of bills, purchase, etc. The fourth component is most highly correlated with Good planning. This suggests that further it can focus on Increase the efficiency, Order to purchase can be booked easily, Help to maintain records of bills, purchase, etc, and Good planning.

Diagram No.

SUMMARY PLOT SHOWS THE EIGEN VALUE AND COMPONENT

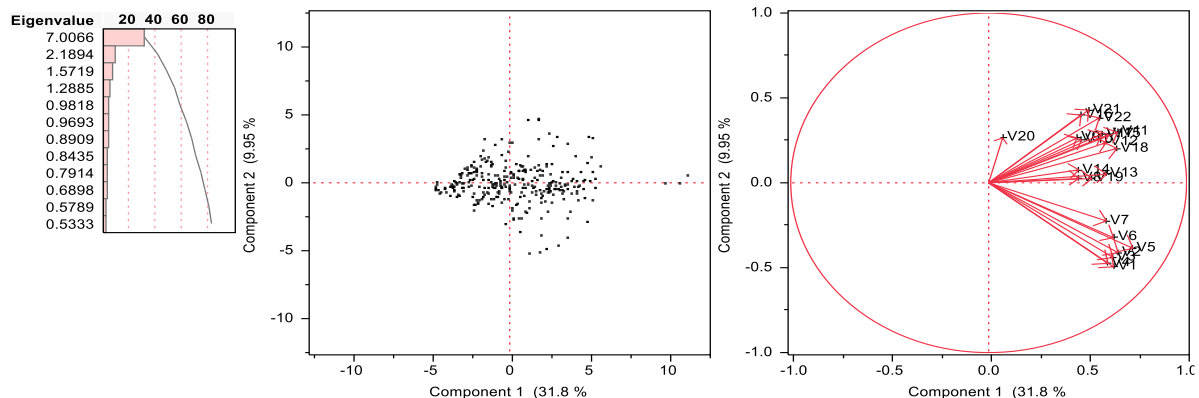
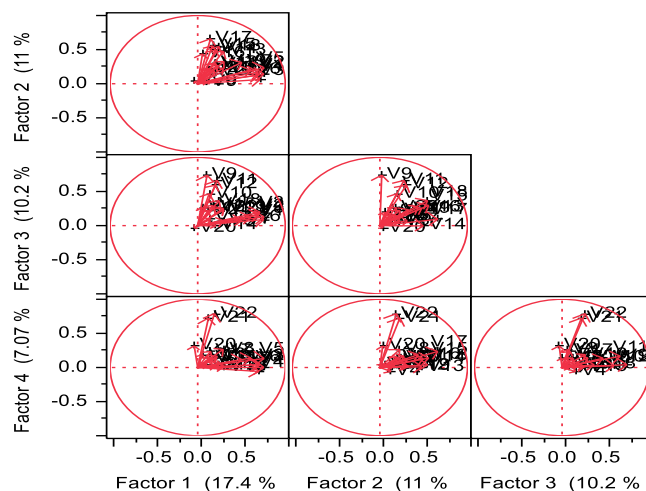


Diagram No

FACTOR LOADING PLOT



**Table No. Emerging component of customer perceived value of internet marketing**

Name	Variable label	Rotated high score	Factor name and Cronbach's value
V1	Increase efficiency	.792	Factor 1 Core factor Cronbach's Alph .877
V5	To get feed back	.780	
V3	Customer satisfaction	.760	
V4	Customer relationship	.752	
V2	Reduce cost	.743	
V6	Create awareness among customers	.666	
V7	To customize products	.562	
V17	Order to purchase can be booked easily	.723	Factor 2 Responsiveness factor Cronbach's Alph .775
V15	Comparatively prices are less	.671	
V14	Discounts are offered to attract consumers	.666	
V18	Purchased product are delivered well in time to consumers	.571	
V16	Save cost of transportation to go to market	.534	
V13	Encourage the consumers to purchase new products	.507	Factor 3 Reliable factor Cronbach's Alph .761
V9	Help to maintain records of bills, purchase, etc	.786	
V11	Facilitate consumer in decision making	.696	
V10	Information about the product on the internet is sufficient	.663	
V12	Easy to make comparison among products	.623	Factor 4 Expedient factor Cronbach's Alph .663
V21	Good planning	.729	
V22	Technology savvy customers	.727	
V20	Making payment easy	.667	
V8	Enhance confidence among consumers	.470	

### Results and Discussion

There are twenty two e-consumer perceived value indicators regarding internet marketing entered in the exploratory study. It is found that there are four components are extracted from the entered indicators. The factor score of co-variance at above 0.450 taken into consideration. Based on the above, the e-consumer perceived value indicator V19 "Reduce the length of distribution channel" has attained a factor score below 0.450. It is automatically removed from the analysis and the remaining twenty one e-consumer perceived value indicators entered in the rotated component matrix. The output has showed the attained factor score for each indicators entered in the analysis.

There are four component are extracted from twenty e-consumer perceived value indicators over internet marketing. The first component emerged with seven indicators factors scored in between 0.562 – 0.792. Six indicators emerged in the second component named as responsiveness factor. The factor score in between 0.507 – 0.723. The four e-consumer perceived value indicators emerged under third component named as Reliable factor. The attained factor score in between 0.623 – 0.786. The fourth component named as Expedient factor emerged with four indicators attained a factor score in between 0.470 – 0.623. The highest factor score of 0.792 happened on V1 "Internet marketing increase the buying efficiency". The lowest factor score of 0.470 happened on V8 "Internet marketing enhances the confidence among e-consumers".

### Findings

1. The present study is exploratory in nature in the way of exposing the various factors involved in the perceived value of internet marketing by e-consumer inducing twenty two perceived value indicators.
2. In order to get deep analyses the research objectives and better estimation accuracy the researcher has likely to adapt a large sample for this study. This study admits 584 sample respondents from various demographic backgrounds.
3. Out of 584 sample respondent, 61.6 percent of respondent were male and remaining 38.4 percent were female participated in the study. It is found that 55.3 percent of respondent were youth and largely participated in the study. Regarding respondent education level, 50.3 percent of respondent were have Bachelors degree and 35.8 percent of respondents were acquired PG/Professional degree.
4. Among the twenty two indicators, the perceived value indicator namely "Making payment easy" has achieved highest mean score of 2.67. The indicator "Help to maintain records of bills, purchase, etc" has scored low mean score of 1.63.
5. To test the sampling adequacy, KMO is computed, which is found to be 0.883 it is indicated that the sample is good enough for sampling. The overall significance of correlation matrix is tested with the

Bartlett test of Sphericity for grouping factors of commitment of medical tourist, (approx.. chi-square = 5135.546, which is significant at 0.000) as well as support for the validity of the factor analysis of the data set.

6. It is found that there are four components are extracted from the twenty two indicators entered in to model. It is revealed that four factor together they account for 54.802% of the variability in the original data.
7. The highest factor score of 0.792 happened on V1 "Internet marketing increase the buying efficiency". The lowest factor score of 0.470 happened on V8 "Internet marketing enhances the confidence among e-consumers"

### Conclusion

The worldwide game has changed as a result of developments that have occurred in the Indian e-commerce sector over time. With the advancement of computer technology, the World Wide Web has taken on the role of the networked world's primary communication tool. Through the Internet, computers from geographically separated locations can communicate with one another. There are advantages and disadvantages to using and adopting new technology, as with every new innovation. The retail industry is evolving as a result of the internet shopping sector's rapid growth. Digital commerce is anticipated to make up roughly 8–10% of India's overall retail market in the upcoming years. If e-commerce businesses continue to prioritise innovation, a solid technological foundation, and providing the best possible customer service, this rise will undoubtedly continue. An internet-based marketplace can act as an information agent by giving buyers and sellers details on products and other market players. E-commerce not only expands business chances, but also scholarly and educational opportunities. It seems like there is a lot of promise for e-business education.

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