# Favourable and Un-favourable Factors for E-Commerce Usage - A study of Metro Cities of Uttar Pradesh 

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#### Abstract

E-Commerce is gaining popularity day by day. In India also, people have started buying and selling on net. Expansion of internet services to small cities and also to rural areas has provided much needed impetus to the growth of e-commerce. On one hand we have certain factors which are contributing to the growth of E-commerce in the country whereas on the other hand some factors are hindering its usage. This research work has been undertaken with the aim of finding out the favouarble and unfavourable factors for e-commerce usage. The study has been conducted in three metro cities of Uttar Pradesh namely Lucknow, Kanpur and Varanasi. Factor analysis has been performed to find out the favourable and un-favourable factors for e-commerce. An effort has been made to categories e-commerce users into fearing, convenience seeking, and trusted customers.


## Introduction

The development of Internet has open new vistas for modern day businessmen and executives. Internet has given us E-commerce, a new way to conduct business through the portals, which is gaining more and more popularity. In India also, E-commerce is growing at a faster pace. More and more people are buying and selling on net. Not only big cities but small towns and even villages in India are now linked through internet and people from all walks of life are buying and selling at the stroke of few keys.

Electronic commerce (or e-commerce) encompasses all businesses conducted by means of computer networks. Advances in telecommunications and computer technologies in recent years have made computer networks an integral part of the economic infrastructure. More and more companies are facilitating transactions over web. There has been tremendous competition to target each and every computer owner who is connected to the Web. Although business-to-business transactions play an important part in e-commerce market, a large share of e-commerce revenues in developed countries is generated from business to consumer transactions also.
E-commerce provides multiple benefits to the consumers in form of availability of goods at lower cost, wider choice and saving of time. People can buy goods with a click of mouse button without moving out of their houses or offices. Similarly online services such as banking, ticketing (including
airlines, bus, railways), bill payments, hotel booking etc. have been of tremendous benefit to customers. Most experts believe that overall e-commerce will increase exponentially in coming years. Business to business transactions no doubt will garner larger revenues but online retailing will also enjoy dramatic growth as online businesses like financial services, travel, entertainment, and groceries are all likely to grow.
Amongst the Asian nations, the growth of e-commerce between 1997 and 2003 was highest in India. According to McKinsey-Nasscom report, by the year 2008, e-commerce transactions in India were expected to reach $\$ 100$ billion. Actually, Indian middle class of 288 million people is equal to the entire U.S. consumer base. This makes India a real attractive market for e-commerce. In India now-a-days many sites are selling a diverse range of products and services from flowers, greeting cards, and movie tickets to groceries, electronic gadgets, and computers. With stock exchanges going online further impetus has been provided to the growth of e-commerce.
Despite its rapid growth, there are limitations that hinder the expansion of e-commerce. Actually, some of the problems associated with e-commerce were rarely considered to be important before but now these problems are getting attentions of everybody. The primary concern for most people about online shopping is security of monetary transactions. Due to the open nature of the Internet, personal financial details necessary for online shopping can be stolen
if sufficient security mechanism is not put in place. The relatively small credit card population and lack of uniform credit agencies create a variety of payment challenges unknown in the United States and Western Europe. Delivery of goods to consumer by couriers and postal services is also not very reliable in smaller cities, towns and rural areas.

An effort has been made in this research paper to understand the intricacies of buying on net especially in business to customer scenario. What makes people buy on net and what hinders them from buying? What factors motivate them to buy and what increases their apprehension and stop them from buying over net? These questions are of paramount importance not only for managers and executives but also for policy makers and researchers. India's most populated state, Uttar Pradesh, has been chosen to understand these intricacies in this research effort.

## Review of Literature

There is no dearth of literature on Internet usage and also on E-commerce. Researchers from all parts of the world have tried to analyze the internet, e-commerce, their significance, usage, applications, limitations, challenges etc. from different angles.
According to Elise Porter and Naveen Donthu (2006), 'Despite the fact that most Americans use the Internet, those who are older, less educated, minority and lower income have lower usage rates than younger, highly educated, white and wealthier individuals.' They developed and tested an extended version of the technology acceptance model (TAM) to explain these differences. They found that age, education, income and race are associated differentially with beliefs about the Internet, and that these beliefs influence a consumer's attitude towards the use of the Internet. Further, they found that although access barriers have a significant effect in the model, perceptions regarding ease of use and usefulness have a stronger effect.
According to Guan and Yang (1999), 'The primary concern for most people when talking about online shopping is security. Due to the open nature of the Internet, personal financial details necessary for online shopping can be stolen if sufficient security mechanism is not put in place. How to provide the necessary assurance of security to consumer remains
a question mark despite various past efforts. Another concern is the lack of intelligence. The Internet is an ocean of information depository. It is rich in content but lacks the necessary intelligent tools to help one locate the correct piece of information. Intelligent agent, a piece of software that can act on behalf of its owner intelligently, is designed to fill this gap. However, no matter how intelligent an agent is, if it remains on its owner's machine and does not have any roaming capability, its functionality is limited. With the roaming capability, more security concerns arise. In response to these concerns, SAFE, secure roaming agent for e-commerce, is designed to provide secure roaming capability to intelligent agents.
Much has been discussed about the presence of a digital divided in India and around the globe. (Dewan and Riggins, 2005) have studied the global digital divide, between developed and developing countries, in accessing information technology. This digital divide, has also been studied along racial lines (Hoffman et al.2000; Stanley, 2003), along economic lines (Lane, 1999; Preiger, 2003) and along geographic lines (Gabe and Able, 2002; Hoffman et al., 2003). Recent census figure indicates that more than $40 \%$ of the citizens of United States do not have access to the internet from their homes (National Telecommunication and Information Administration, 2000). Thus many people need access to the internet from other physical locations if they are going to be able to use the economic and information goods available online.
The use of the Internet for transactions has been quite extensively studied within the context of B2C e-commerce transactions (Gefen et al., 2003; Gefen and Straub, 2000; Heijden et al., 2001; Jarvenpaa and Tractinsky, 1999; Jarvenpaa et al., 2000). The theory of planned behaviour (TPB) (Ajzen, 1991) has been successfully used as a reference theory to investigate technology use in many settings and also in e-commerce adoption (Mathieson, 1991; Morris and Venkatesh, 2000; Taylor and Todd, 1995a and1995b; Venkatesh et al., 2000). The theory has been used to study the impact of attitude and risk on online shopping behaviour (Jarvenpaa et al., 2000), that attitudes toward Internet purchasing are a determinant of the intent to purchase, and that both the intent to purchase and the overall Internet experience lead to Internet purchasing(George,
2002). A second and related model, the technology adoption model (TAM) (Davis, 1989), has been another widely-applied model of technology adoption behaviour that incorporates perceived ease of use and usefulness in forming attitudes toward technology adoption.
According to J.F. George (2004), "Several opinion polls have found that many consumers resist making purchases via the Internet because of their concerns about the privacy of the personal information they provide to Internet merchants. Using the theory of planned behavior as its basis, this study investigated the relationships among beliefs about Internet privacy and trustworthiness, along with beliefs about perceived behavioral control and the expectations of important others, and online purchasing behavior. Data were collected from 193 college students. Analysis of the data indicates that beliefs about trustworthiness positively affect attitudes toward buying online, which in turn positively affect purchasing behavior.
The Internet is a technology that has migrated across business boundaries into many areas of modern life and has become a necessary information technology for businesses and other organizations to contact and interact with potential and existing consumers. The Internet has become so pervasive that many people routinely engage in transaction-based e-commerce activities, such as making Internet-based online banking transactions instead of going to the physical bank, purchasing goods from virtual e-commerce stores rather than going shopping, and engaging in information transactions such as submitting job applications online rather than filling out a paper form and sending it to the organization. The pervasiveness of the technology allows many people to do all of this from their homes or other non-business locations (Venkatesh, 1996; Venkatesh and Brown, 2001).

## Research Methodology

This research study has been undertaken with the aim of identifying favourable and un-favourable factors for E-commerce usage. Both primary and secondary data have been used in the study. Primary data have been collected from three metro cities of Uttar Pradesh namely Lucknow, Kanpur and Varanasi using well structured questionnaire.

650 customers were selected from these cities for the purpose of data collection using judgment sampling. 15 pre selected statements having 5 points Likert scale were used to find out motivating and de-motivating factors. Factor analysis using SPSS software has been applied to determine the significant factors.

## Respondents' Profile

The profiles of respondents are as follows: Gender: male $-71.4 \%$ and female- $28.6 \%$, Age: 20-25 year$63.9 \%$, $25-30$ year- $10.9 \%$, $30-35$ year- $19.2 \%$, 35 and above- $6 \%$, Education: graduates- $19.9 \%$, post graduates-11.7\%,professionals-68.4\%, Income: Less than Rs.15,000 p.m.- 17.3\%, Rs. 15,000-25,000 p.m.$41.4 \%$, Rs. $25,000-35,000$ p.m.- $32.3 \%$, Rs. 35,000 \& Above- 9\%.

## Analysis and Discussions

To get an idea of motivating and de-motivating factors for E-commerce usage, following 15 predecided statements have been used:

Table - 1: Statements on E-commerce Usage Code Statements
1 Customers buy good quality products through E-commerce
2 Shopping through internet is easier
3 Products displayed on the internet are attractive
4 Online payment systems are safe
5 E-Commerce provides better customised products
6 Shopping of products is faster through internet
$7 \quad$ E-Commerce transactions are cheaper
8 Products shown on Website and product received are same
9 Customers receive good after sales service
10 Security of money is a big problem
11 Fear of disclosure of personal information hinders buying the products
12 Fear of no After sales service of the product

| 13 | Complicated procedure hinders buying <br> the products |
| :--- | :--- |
| 14 | High cost of products de-motivate <br> E-commerce usage |
| 15 | Problem of unable to actually see and <br> touch the product at internet |

The above mentioned statements having five point Likert scales were subjected to factor analysis. Before the application of factor analysis the following five techniques were also used for the analysis of data:
(i) Correlation matrix- Correlation matrix was constructed using gathered data which has been presented in table 2 below. The correlation matrix revealed that there is a strong positive correlation between the statements no. 10, $11 \& 12$. These statements were considered appropriate for factor analysis procedure.
(ii) Anti-Image Correlation Matrix- After correlation matrix, anti correlation matrix was also constructed and presented as table 3. This matrix shows that partial correlations among the statements are low for example anti- image correlation of statement 1 with respect to statements 1 to 15 are .650, -.140, -9.722E-02, -.125, -8.152E-03, -1.344E-02, -7.326E-02, $1.445 \mathrm{E}-03,7.039 \mathrm{E}-03,-.184, .528,-.356,9.979 \mathrm{E}-02$, $-9.284 \mathrm{E}-02$ and .348 respectively. Similarly most of the off diagonal elements are small indicating that real factors exist in the data which is necessary for factor analysis.
(iii) Kaiser- Meyer-Olkin Measure of Sampling Adequacy (MSA) - Kaiser Meyer Olkin measure of sampling adequacy focuses on the diagonal elements of partial correlation matrix. From the table 3 it is clear that all of the diagonal elements of partial correlation matrix were sufficiently high for factor analysis. The values of diagonal elements of partial correlation matrix from statements 1 to 15 are as follows: .650, .547, .507, .699, .745, .771, .557, .433, $.463, .573, .721, .734, .643, .440$ and .588 respectively.
(iv) Test the Sampling Adequacy- Test of sampling adequacy was then performed. Sum of the values of diagonal elements of partial correlation matrix from statement no. 1 to $15(.650+.547+.507+.699+.745+$ $.771+.557+.433+.463+.573+.721+.734+.643+.440$ $+.588) / 15$ was 0.604 . This shows that statements are good enough for sampling.
(v) Bartlett's Test of Sphericity- Bartlett's Test of

Sphericity was also conducted to check the overall significance of the correlation matrices. The test value of Bartlett's Test of Sphericity was significant and it is indicating that correlation matrix is not an identity matrix.

## Table-4: Principal Component Analysis/ Unrotated Factor Matrix

| State- <br> ments | Factor-1 | Factor-2 | Factor-3 | Commu- <br> nalities |
| :--- | :--- | :--- | :--- | :--- |
| 1 | .557 | .147 | $-5.024 \mathrm{E}-02$ | .334 |
| 2 | .574 | .334 | .499 | .691 |
| 3 | .374 | .713 | -.160 | .673 |
| 4 | .566 | .232 | -.530 | .656 |
| 5 | .403 | .589 | .185 | .543 |
| 6 | .683 | -.143 | .431 | .673 |
| 7 | .525 | .261 | .385 | .492 |
| 8 | .466 | .392 | $3.327 \mathrm{E}-02$ | .372 |
| 9 | $4.258 \mathrm{E}-02$ | .431 | -.617 | .569 |
| 10 | -.548 | .382 | .448 | .646 |
| 11 | -.701 | .238 | .437 | .739 |
| 12 | -.777 | .161 | .153 | .654 |
| 13 | -.692 | .355 | -.213 | .650 |
| 14 | -.471 | .565 | $-4.404 \mathrm{E}-02$ | .544 |
| 15 | -.613 | .222 | $-7.059 \mathrm{E}-02$ | .429 |

It was clear from the above performed five techniques that data was suitable for factor analysis.

Principal Component Analysis: Unrotated Factor Matrix
Principal Component analysis was performed to extract the factors with unrotated factor matrix. 3 factors came out of 15 statements related to favourable and un-favourable components. . 557 is a factor loading and it indicates correlation between statement 1 and factor-1. Similarly .147 and $-5.024 \mathrm{E}-02$ are the value of correlations between statement no. 1 and factor-2 and factor-3 respectively. Communalities were also determined using sum of square of factor loading of statement no. 1 i.e. . 557 $x .557+.147 x .147+.0502 x .0502=.334$. Same procedure was applied to get the communalities for statement no. 2 to 15.
From table no. 4, statement no.11, 12 and 13 were found highly correlated for factor-1. Similarly,
Table-z: Correlation Matrix

| Correlatiom | $\mathbf{1}$ | $\mathbf{2}$ | $\mathbf{3}$ | $\mathbf{4}$ | $\mathbf{5}$ | $\mathbf{6}$ | $\mathbf{7}$ | 8 | $\mathbf{9}$ | $\mathbf{1 0}$ | $\mathbf{1 1}$ | $\mathbf{1 2}$ | $\mathbf{1 3}$ | $\mathbf{1 4}$ |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $\mathbf{1}$ | 1.000 | .265 | .275 | .370 | .187 | .392 | .197 | .243 | .000 | -.196 | -.461 | -.161 | -.296 | .049 | -.484 |
| $\mathbf{2}$ | .265 | 1.000 | .301 | .153 | .509 | .492 | .517 | .329 | -.110 | -.083 | -.141 | -.352 | -.407 | -.073 | -.131 |
| $\mathbf{3}$ | .275 | .301 | 1.000 | .359 | .355 | .020 | .466 | .335 | .308 | -.017 | -.191 | -.293 | .009 | .250 | -.055 |
| $\mathbf{4}$ | .370 | .153 | .359 | 1.000 | .237 | .270 | .163 | .192 | .373 | -.441 | -.487 | -.416 | -.216 | .033 | -.254 |
| $\mathbf{5}$ | .187 | .509 | .355 | .237 | 1.000 | .228 | .248 | .502 | .157 | -.018 | -.048 | -.163 | -.056 | -.013 | -.134 |
| $\mathbf{6}$ | .392 | .492 | .020 | .270 | .228 | 1.000 | .415 | .209 | -.235 | -.251 | -.262 | -.340 | -.607 | -.245 | -.564 |
| $\mathbf{7}$ | .197 | .517 | .466 | .163 | .248 | .415 | 1.000 | .147 | -.086 | -.018 | -.186 | -.415 | -.316 | -.220 | -.060 |
| $\mathbf{8}$ | .243 | .329 | .335 | .192 | .502 | .209 | .147 | 1.000 | .164 | -.042 | -.213 | -.269 | -.041 | -.240 | -.348 |
| $\mathbf{9}$ | .000 | -.110 | .308 | .373 | .157 | -.235 | -.086 | .164 | 1.000 | -.030 | -.060 | -.090 | .040 | .133 | .128 |
| $\mathbf{1 0}$ | -.196 | -.083 | -.017 | -.441 | -.018 | -.251 | -.018 | -.042 | -.030 | 1.000 | .636 | .457 | .287 | .410 | .342 |
| $\mathbf{1 1}$ | -.461 | -.141 | -.191 | -.487 | -.048 | -.262 | -.186 | -.213 | -.060 | .636 | 1.000 | .644 | .380 | .433 | .318 |
| $\mathbf{1 2}$ | -.161 | -.352 | -.293 | -.416 | -.163 | -.340 | -.415 | -.269 | -.090 | .457 | .644 | 1.000 | .599 | .578 | .329 |
| $\mathbf{1 3}$ | -.296 | -.407 | .009 | -.216 | -.056 | -.607 | -.316 | -.041 | .040 | .287 | .380 | .599 | 1.000 | .468 | .506 |
| $\mathbf{1 4}$ | .049 | -.073 | .250 | .033 | -.013 | -.245 | -.220 | -.240 | .133 | .410 | .433 | .578 | .468 | 1.000 | .236 |
| $\mathbf{1 5}$ | -.484 | -.131 | -.055 | -.254 | -.134 | -.564 | -.060 | -.348 | .128 | .342 | .318 | .329 | .506 | .236 | 1.000 |

Table－3：Anti－Image Correlation Matrix

| $\stackrel{1}{2}$ | $\stackrel{\infty}{\text { ¢ }}$ | $\stackrel{7}{7}$ | 寝 | $$ |  | $\stackrel{\text { ¢े }}{ }$ | $\stackrel{\rightharpoonup}{7}$ | － | $\stackrel{\sim}{\uparrow}$ | － | ते | $\stackrel{8}{9}$ | $\stackrel{\text { ¢ }}{\substack{\text { a }}}$ | $\stackrel{\circ}{\text { ¢ }}$ | $\stackrel{\infty}{\infty}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\pm$ | $\begin{array}{\|l\|} \hline 1 \\ \stackrel{1}{+} \\ \underset{y}{2} \\ \underset{i}{2} \end{array}$ | $\underset{\substack{\circ \\ \underset{\sim}{2} \\ \hline}}{ }$ |  | \|ボ | $\underset{\sim}{7}$ | $\stackrel{\rightharpoonup}{7}$ | $\stackrel{\rightharpoonup}{9}$ | $\stackrel{7}{\text { ®® }}$ |  | $\stackrel{\text { ® }}{\substack{\text { ch }}}$ |  | $\underset{i}{\text { O}}$ | $\begin{aligned} & \stackrel{9}{4} \\ & \text { O} \end{aligned}$ | f | $\stackrel{\text { ® }}{ }$ |
| $\cdots$ |  |  |  |  | $\stackrel{\stackrel{\circ}{7}}{7}$ | $\stackrel{m}{m}$ | $\underset{7}{7}$ | $\underset{~+~}{~+}$ | ৷o | パٌ | $\begin{aligned} & \hline \frac{1}{4} \\ & \stackrel{1}{d} \\ & \underset{\sim}{i} \\ & \hline \end{aligned}$ | $\underset{i}{8}$ | Ṭ̛ | $\stackrel{4}{4}$ | $\stackrel{\text { ¢ }}{\substack{\text { cos }}}$ |
| N | $\stackrel{\stackrel{\circ}{\text { ® }} \text { ¢ }}{\substack{\text { a }}}$ | Ñ | ते | $\stackrel{\text { ¢ }}{\text { ¢ }}$ |  | $\underset{i}{7}$ | H1 N ले ले |  |  | $\underset{7}{7}$ | $\underset{\substack{\circ \\ \hline \\ i}}{ }$ | ※ | $\stackrel{\text { ¢ }}{\substack{\text { a }}}$ | $\stackrel{\text { ¢ }}{\substack{\text { ¢ }}}$ | $\stackrel{\rightharpoonup}{7}$ |
| 7 | $\stackrel{\sim}{\sim}$ | $\stackrel{\stackrel{n}{0}}{\stackrel{N}{i}}$ |  | － | $\begin{aligned} & \dot{N} \\ & \stackrel{N}{N} \\ & \stackrel{N}{N} \\ & \underset{i}{2} \end{aligned}$ |  |  | $\stackrel{\rightharpoonup}{7}$ | $\stackrel{0}{\underset{i}{7}}$ | $\underset{i}{9}$ | $\stackrel{\rightharpoonup}{N}$ | $\stackrel{\otimes}{i}$ | $\begin{aligned} & \frac{1}{4} \\ & \stackrel{y}{4} \\ & \underset{\sim}{i} \\ & \hline \end{aligned}$ |  | స̀ |
| $\bigcirc$ | $\stackrel{\underset{\sim}{8}}{\stackrel{0}{i}}$ | へิ | $\stackrel{\circ}{\stackrel{\circ}{\square}}$ | $\stackrel{\circ}{\mathrm{m}}$ |  |  | $\stackrel{\infty}{\stackrel{\infty}{̣}}$ | $\stackrel{\infty}{\infty}$ | $\begin{aligned} & \text { M } \\ & \stackrel{N}{N} \\ & \stackrel{N}{N} \\ & \text { in } \end{aligned}$ | $\stackrel{N}{\stackrel{N}{n}}$ | $\begin{aligned} & 9 \\ & 7 \\ & i \end{aligned}$ | $\underset{F}{\tilde{F}}$ | $\stackrel{\text { ®ٌ }}{\text { N }}$ | $\stackrel{\rightharpoonup}{\text { ¢ }}$ |  |
| $\sigma$ | $\begin{array}{\|l\|l\|} \hline \frac{1}{2} \\ \stackrel{y}{0} \\ \stackrel{y}{c} & 8 \end{array}$ | $\underset{\sim}{\circ}$ | $\stackrel{\stackrel{3}{7}}{\square}$ | $\underset{\sim}{\text { N }}$ | $\underset{i}{7}$ | तָ | $\begin{aligned} & \stackrel{y}{n} \\ & \stackrel{y}{\circ} \\ & \underset{\infty}{\circ} \text { § } \end{aligned}$ | $\underset{\sim}{\text { N}}$ | \％ |  | $\stackrel{O}{7}$ |  | $\begin{aligned} & \text { L®O } \\ & \text { ले } \end{aligned}$ |  | $\stackrel{\text { ® }}{+}$ |
| $\infty$ |  | $\underset{\substack{\underset{\sim}{c} \\ \underset{i}{2}}}{\substack{2}}$ | $\begin{array}{\|c} \underset{N}{N} \\ \end{array}$ |  | $\stackrel{\infty}{\underset{i}{\circ}}$ | $\underset{7}{7}$ | $\stackrel{\text { ¢ }}{\text { ¢ }}$ | \％ | $\underset{1}{\text { Nָ }}$ | $\underset{\substack{\underset{\sim}{\infty}\\}}{ }$ | $\stackrel{\rightharpoonup}{7}$ | $\begin{aligned} & \text { 装 } \\ & \text { KN } \\ & \text { م̣ } \end{aligned}$ | ＋ | $\stackrel{7}{\square}$ | $\stackrel{1}{7}$ |
| N |  |  | on | $\begin{aligned} & \hline \frac{1}{1} \\ & \stackrel{1}{n} \\ & \stackrel{\rightharpoonup}{9} \\ & \text { N } \end{aligned}$ |  | $\underset{\substack{n\\}}{\substack{2}}$ | $\begin{aligned} & \text { 合 } \\ & \hline \end{aligned}$ | $\stackrel{\text { ¢ }}{\substack{\text { ¢ }}}$ |  | $\underset{\substack{\infty \\ \stackrel{\infty}{4} \\ \hline}}{ }$ |  | $\begin{aligned} & \text { 装 } \\ & \text { సे } \\ & \text { ले } \end{aligned}$ | $\underset{\underset{i}{*}}{\underset{i}{2}}$ | $\stackrel{\text { T }}{\substack{\text { a }}}$ | $\underset{i}{7}$ |
| $\bigcirc$ |  | $\begin{aligned} & \mathrm{V} \\ & \underset{i}{1} \\ & \hline \end{aligned}$ | 宮 | $\underset{~}{\text { H }}$ | $\stackrel{\stackrel{1}{4}}{\stackrel{y}{4}} \underset{\stackrel{c}{4}}{\stackrel{1}{4}}$ | N | $\stackrel{\substack{0}}{\substack{0}}$ | $\stackrel{9}{7}$ | べ |  |  | $\underset{i}{\text { İ }}$ | $\stackrel{m}{m}$ | $\stackrel{\rightharpoonup}{7}$ | ¢ |
| n |  |  | $\left\lvert\, \begin{aligned} & \infty \\ & \underset{i}{2} \\ & \hline \end{aligned}\right.$ | $\underset{i}{\stackrel{R}{n}}$ | 导 |  | $$ | $\stackrel{\infty}{\stackrel{\infty}{i}}$ | $\stackrel{\rightharpoonup}{i}$ |  | $\begin{aligned} & \hline \dot{1} \\ & \stackrel{y}{\lambda} \\ & \stackrel{\rightharpoonup}{\lambda} \\ & \underset{i}{2} \end{aligned}$ |  | $\stackrel{\stackrel{0}{0}}{\underset{i}{i}}$ | 7 |  |
| ＋ | $\stackrel{\stackrel{1}{7}}{\square}$ | $\stackrel{7}{7}$ |  | 俞 | $\stackrel{\pi}{\stackrel{\pi}{7}}$ | $\underset{\sim}{\text { ָ̀ }}$ | $\begin{aligned} & \frac{1}{1} \\ & \stackrel{1}{7} \\ & \stackrel{3}{i} \text { N } \end{aligned}$ |  | $\underset{\substack{\text { Nu}}}{\substack{n}}$ | $\stackrel{\bullet}{\mathrm{m}}$ | 국 | $\stackrel{\text { ¢ }}{\substack{\text { ¢ }}}$ | $\begin{aligned} & \hline \text { H } \\ & \text { 突 } \\ & \text { in } \\ & \hline 1 \end{aligned}$ | ＋ |  |
| $\cdots$ | $\begin{aligned} & 1 \\ & \underset{N}{N} \\ & \underset{\sim}{\alpha} \\ & \underset{i}{\circ} \\ & \hline \end{aligned}$ | － | － |  | $\begin{aligned} & \infty \\ & \underset{i}{m} \end{aligned}$ | $\xrightarrow{\text { H }}$ | $\begin{aligned} & \text { Ồ } \\ & \stackrel{\rightharpoonup}{1} \end{aligned}$ |  | $\stackrel{i n}{7}$ | $\stackrel{\circ}{\sim}$ |  | ले | $\begin{aligned} & \stackrel{1}{1} \\ & \stackrel{1}{\infty} \\ & \stackrel{1}{4} \\ & \stackrel{1}{\circ} \end{aligned}$ | $\stackrel{\text { ® }}{\substack{\text { ® }}}$ |  |
| $N$ | $\frac{9}{7}$ | $\underset{\substack{\stackrel{1}{n}}}{ }$ | 묵 | $\stackrel{\rightharpoonup}{7}$ |  | $\stackrel{Y}{7}$ | $\stackrel{\text { ¢ }}{\substack{\text { ¢ }}}$ | $\underset{\sim}{\infty}$ | Ṇ | กิ | $\stackrel{\text { n }}{7}$ | N | $\stackrel{\text { ¢ }}{\text { ¢ }}$ | $\stackrel{\text { ¢ }}{\text { co }}$ | $\underset{i}{7}$ |
| $\checkmark$ | ใิ． | $\underset{i}{9}$ | H N N íc | $\stackrel{\stackrel{1}{7}}{7}$ | 先 $\stackrel{n}{\circ}$ $\infty$ $\infty$ |  |  | $\begin{aligned} & \text { H } \\ & \underset{\sim}{1} \\ & \underset{\sim}{7} \\ & \hline \end{aligned}$ | $\begin{aligned} & \stackrel{1}{2} \\ & \stackrel{\omega}{6} \\ & \end{aligned}$ | $\underset{\sim}{\infty}$ | No | $\stackrel{\circ}{\infty}$ |  |  | $\stackrel{\infty}{\text { ¢ }}$ |
|  | $\square$ | $N$ | $\cdots$ | ＋ | － | $\bigcirc$ | N | $\infty$ | 9 | 9 | $F$ | $\sim$ | $\stackrel{\sim}{\sim}$ | $\underset{\sim}{7}$ | $\stackrel{10}{7}$ |

statement no. 3, 5 and 14 were highly correlated for factor-2 and statements 11, 2 and 3 were highly correlated with factor-3.

## Explanation of Variance

Total variance has been explained by table 5 .

Table-5: Explanation of Variance

| Factors | Initial Eigen Value |  |  | Extraction Sums of Squared Loading |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  | Total | \% of Variance | Cumulative \%/ | Total | \% of Variance | Cumulative \% |
| 1 | 4.696 | 31.308 | 31.308 | 4.696 | 31.308 | 31.308 |
| 2 | 2.192 | 14.611 | 45.919 | 2.192 | 14.611 | 45.919 |
| 3 | 1.776 | 11.839 | 57.758 | 1.776 | 11.839 | 57.758 |
| 4 | 1.336 | 8.905 | 66.664 |  |  |  |
| 5 | 1.127 | 7.513 | 74.177 |  |  |  |
| 6 | .807 | 5.383 | 79.560 |  |  |  |
| 7 | .736 | 4.905 | 84.465 |  |  |  |
| 8 | .533 | 3.550 | 88.015 |  |  |  |
| 9 | .441 | 2.938 | 90.953 |  |  |  |
| 10 | .378 | 2.518 | 93.471 |  |  |  |
| 11 | .353 | 2.350 | 95.821 |  |  |  |
| 12 | .226 | 1.507 | 97.328 |  |  |  |
| 13 | .168 | 1.121 | 98.449 |  |  |  |
| 14 | .143 | .952 | 99.401 |  |  |  |
| 15 | $8.985 E-02$ | .599 | 100.000 |  |  |  |

In the present research researcher selected 3 Eigen values. Eigen value of factor-1 calculated through sum of square factor loading of statements 1 to 15 was 4.696. Similarly Eigen values for factor-2 and factor-3 were found to be 2.192 and 1.776 respectively. After this variance for factor-1, 2 and 3 was found to be $31.308,14.611$ and 11.839 respectively. The percentage of total variance, used as an index to determine how well the total factor solution accounts as percentage of total variations, for young professionals was found to be $57.758 \%$. It was a pretty good bargain, because researcher was able to economize on the number of variables (from 15 statements reduced them to 3 underlying factors), while researcher lost only 42.25 percent of information for young professionals. The percentages of variance explained by factor- 1 to factor-3 for young customers were 31.308, 14.611 and 11.839 , respectively. Three factors extracted from the 15 statements were retained.

## Principal Component Analysis: Varimax Rotation Matrix

Now principal component analysis with Varimax rotation was applied.

Table-6: Principal Component Analysis: Varimax Rotation Matrix

| State <br> ments | Factor-1 | Factor-2 | Factor-3 | Commu <br> nalities |
| :--- | :--- | :--- | :--- | :--- |
| 1 | -.362 | .394 | .219 | .334 |
| 2 | -.147 | .808 | -.125 | .691 |
| 3 | $8.521 \mathrm{E}-02$ | .567 | .586 | .673 |
| 4 | -.427 | .195 | .660 | .656 |
| 5 | $6.637 \mathrm{E}-02$ | .693 | .241 | .543 |
| 6 | -.523 | .550 | -.312 | .673 |
| 7 | -.176 | .674 | $-7.985 \mathrm{E}-02$ | .492 |
| 8 | -.131 | .531 | .269 | .372 |


| 9 | $8.105 \mathrm{E}-02$ | $-4.203 \mathrm{E}-02$ | .749 | .569 |
| :--- | :--- | :--- | :--- | :--- |
| 10 | .749 | .142 | -.253 | .646 |
| 11 | .784 | $-4.206 \mathrm{E}-02$ | -.350 | .739 |
| 12 | .737 | -.284 | -.173 | .654 |
| 13 | .701 | -.311 | .248 | .650 |
| 14 | .688 | $3.700 \mathrm{E}-02$ | .263 | .544 |
| 15 | .593 | -.268 | $7.180 \mathrm{E}-02$ | .429 |

It is clear from above matrix that the factor loading is different from unrotated matrix but the commonalties are same. In this case, statements 10, 11,12,13,14 have high positive correlation for factor-1. It means that statements $10,11,12,13$, 14 can be clubbed into a new factor. Similarly statements 2, 5 \& 7 and statements 9 \& 4 have positive correlation with factor-2 and 3 respectively and also can be clubbed into new factors.

## Explanation of Variance

Total variance has been explained by table 7.
Table-7: Total Variance Explained (Rotation)

| Fac <br> tors | Initial Eigen <br> Value |  | Rotation Sums of <br> Squared Loading |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  | Total | \% of <br> Var. | Cumul <br> $\%$ | Total <br> \% of <br> Var. | Cumul <br> $\%$ |  |
| 1 | 3.712 | 24.746 | 24.746 | 3.712 | 24.746 | 24.746 |
| 2 | 2.962 | 19.746 | 44.492 | 2.962 | 19.746 | 44.492 |
| 3 | 1.990 | 13.267 | 57.758 | 1.990 | 13.267 | 57.758 |

Total variance explained with rotation, the Eigen values are different for factor-1, $2 \& 3$ in comparison to previous unrotated matrix. The Eigen values for factor-1, 2 \& 3 are $3.712,2.962$ and 1.990 respectively. Percentages of variance for factor-1, 2 \& 3 are $24.746,19.746$ and 13.267 respectively. It indicates that three factors extracted from 15 statements have cumulative percentages upto $57.758 \%$ of the total variance. This is pretty good bargain, because researcher is able to economise on the number of variables (from 15 statements reduced them into 3
underlying factors).

## Criteria for significant factor loading

Now the role of factor loading becomes important for interpretation of the factors. Factor loading represent a correlation between statement 1 and factor-1. The criteria given by J. Hair where factor loading based on sample size are taken as the basis for decision about significant factor loading was adopted. This research had 650 respondents as sample, a factor loading of 0.65 has been considered significant. The five statements 1,3 , $6,8, \& 15$ "Customers buy good quality products through e-Commerce" (.394), "Products displayed on the internet are attractive" (.567), "Shopping of products is faster through internet" (.550), "Products shown on Website and product received are same" (.531) and "Problem of unable to actually see and touch the product at internet" (.593) were having factor loading below .65. These statements were not considered for naming.

## Naming of factors

After a factor solution has been obtained, in which all variables have a significant loading on a factor, the researcher attempted to assign some meaning to the pattern of factor loading. Variable with higher loadings are considered more important and have greater influence on the name or label selected to represent a factor. Researcher examined all the underlined variables for a particular factor and placed greater emphasis on those variables with higher loadings to assign a name or label to a factor that accurately reflected the variables loading on that factor. The name or label is not derived or assigned by the factor analysis computer program; rather, the label is intuitively developed by the factor analyst based on its appropriateness for representing the underlying dimension of a particular factor. All three factors have been given appropriate names on the basis of variables represented in each case.

Table-8: Naming of Factors

| Factor <br> Number | Name of <br> factor | Label | Statement | Factor <br> Loading |
| :--- | :--- | :--- | :--- | :--- |
| Factor-1 | Fearing <br> customers | 11 | Fear of disclosure of personal information hinders <br> buying the products <br> Security of money is a big problem <br> Fear of no after sales service of the product <br> Complicated procedure hinders buying the products <br> High cost of products de-motivate e-Commerce usage | .784 |
|  | 12 | 13 |  |  |
| Factor-2 | Convenience <br> seeking <br> customers | 2 | Shopping through internet is easier | .701 |
| Factor-3 | Trusted <br> customers | 9 | 7437 |  |

(a) Factor-1: Fearing customers- This factor is most important factor which explained $24.768 \%$ of the variation. The statements as " Fear of disclosure of personal information hinders buying the products" (.784), "Security of money is a big problem"( .749), "Fear of no after sales service of the product" (.737), "Complicated procedure hinders buying the products"( .701), "High cost of products demotivate e-Commerce usage"( .688) are highly correlated with each other. These statements reflect fear and apprehensions of customers using e-commerce, hence, the researcher names this segment as fearing customers.
(b) Factor-2: Convenience seeking customers - Second kind of factor explained $19.746 \%$ of the variances. In this segment, researcher took the three important variables such as "Shopping through internet is easier" (.808), "E-Commerce provides better customised products" (.693), and "E-Commerce transactions are cheaper" (.674). These statements reflected convenience seeking i.e. researcher named these variables convenience seeking customers.
(c) Factor-3: Trusted customers- This factor explained $13.267 \%$ of the variations. "Customers receive good after sales service" (.749), "Online payment systems are safe" (.660). These statements
show high trust, hence researcher named this segment as trusted customers.
On the basis of results of the study the significant favourable and un-favourable factors were separated which are as follows;

## Favourable factors

Based on the study favourable factors for e-commerce usage are as follows:
(i) Shopping through internet is easier
(ii) E-Commerce provides better customised products
(iii) E-Commerce transactions are cheaper

## Un-favourable factors

Based on the study un-favourable factors for e-commerce usage are as follows:
(i) Fear of disclosure of personal information hinders buying the products
(ii) Security of money is a big problem
(iii) Fear of no after sales service of the product
(iv) Complicated procedure hinders buying the products
(v) Customers find after sales service not to be good

## Conclusion

The present study divided E-commerce users into three categories. First type of customers, named as fearing customers, are afraid to use E-commerce because they think that if they buy the product through E-commerce their privacy will be lost. They feel that E-commerce transaction disclose the information related to them. They also have concern for money security. They think that money may not convert into physical goods. Most of the customers feel that they can not get after sales service. Another fear among the customers is complicated procedure of using the E-commerce transactions. Second kind of customers has been named as Convenience seeking customers. These customers feel that E-commerce transactions are very easy to use and less costly. This group believes that they can get customised product through E-Commerce. The third category of customers, named as trusted customers, feel that they will receive good after sales service from the marketers and also online payment systems are safe.

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