

# An Empirical Study on E-Commerce – A Customer Satisfaction in Delhi and Noida

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## ABSTRACT

The basic features found in Business – to – Consumer (B2C) e-commerce, and quality aspects of their adaptation to Indian conditions are studied. The customer satisfaction is analyzed for e-commerce with selected aspects viz., User Interface Quality, Information Security, Payments/Transactions and Delivery in Time. Several B2C e-commerce sites in India are reviewed to understand the payment, and delivery of products to customer's challenges. A Descriptive research methodology is used to survey and collect data from the customers in Delhi and Noida residents. The study is carried over by reviewing the basic features, functioning of B2C ecommerce and also by examining the information in websites. A hypothesis is formulated for the mean value identified for different aspects i.e. the aspect [User Interface Quality (User Friendly), Security & Payment, Shipping & Delivery] of E-commerce is a significant factor for E-commerce Study conducted for Customer Satisfaction. The Research in Noida and Delhi NCR has proven user-friendliness, payment, security, delivery and packaging all are important aspects of e-commerce sites (t-test confidence interval of 95%). It also concluded that the desire for direct purchase in the store is high, although there are a lot of improvements for e-commerce sites, yet the percentage shown up is relatively good.

## 1. Introduction

E-commerce (Electronic Commerce) is a platform for purchasing and selling of product and/or services take place through Internet along with the aid of Computer networks. E-commerce can be broadly sub-divided into seven categories namely, E-tailing i.e. Virtual Storefronts having online catalogs, Online Marketplaces, Gathering data for business, B2B exchange of data, Email and fax information to hold back the customers, Buying & Selling in B2B or B2C, and Security in payments. The development of e-commerce started at 1971 or 1972 when Advanced Research Projects Agency Network (ARPANET) arrangements. Later Michael Aldrich demonstrated his first online shopping and that's how e-commerce had its start. Online shopping was invented by Michael Aldrich in 1979 (Tkacz&Kapczynski, 2009). Gateshead SIS/Tesco is first Business-to-customer (B2C) online shopping in 1984.

Secure Socket Layer (SSL) and anti-spyware services are some security protocols that ensure safe browsing and payments/transactions over World Wide Web. Availability and acceptance of Credit card, emerging IT assisted Banking like Internet Banking and Mobile Banking has brought in innovations and widening of e-Commerce. Many factors are controlling the people today like spending more time travelling to workplace, working on night shifts, etc. pulls customers to go for online shopping instead of direct shopping at the stores. Also customers have option to add to cart list in online stores or tend checkout the product on one go; delivery is also done safely.

### Models of E-Commerce

Identifying the model of E-commerce is first and foremost step for developing an e-commerce website. E-commerce is categorized into four basic models, namely

- a. Business – to – Business (B2B) model

- b. Business – to – Consumer (B2C) model
- c. Consumer – to – Consumer (C2C) model
- d. Consumer – to – Business (C2B) model

The Business – to – Consumer (B2C) model is our interest of study; it basically involves the transaction of products or services between a business organization and consumers (customers / respondents). Thus any purchase or sale of products or services in online by displaying the product specifications as catalogs and storing the information in database is B2C E-commerce. This model involves Online Shopping, Internet Banking, Ticket Booking and many more services done through Internet for consumers directly. Any E-commerce website before implementing the project's actual design, some user interface designs is constructed to visualize the user friendliness with the system (fig 1)



Fig 1: User Interface Option; Source: SwapnaKodali (2007)

E-commerce model is accepted by buyers (consumers) due to availability of wide variety at one place, time and money cut down as travelling is nullified, shop working time / opening time problems not present, as elimination of middlemen is avoided customer get cheaper products. The major factors are monetary, performance, time, source, social, and psychological. The Significant factors involved are Delivery Performance, time saved, website functional properties, internet familiarity and price saved whereas the non-significant factors are website aesthetic properties, risk, customer support and product variety. The businesses are promoting ecommerce as low cost of doing business online, attracts customers from all corners of the world, products provided at cheaper price to customers.

## Objectives

The Objectives of the study are to review the basic features found in Business – to – Consumer (B2C) e-commerce and their adaption to Indian conditions and to analyze customer satisfaction with selected aspects of e-commerce viz., User Interface Quality, Information Security, Payments/Transactions and Delivery in Time.

## 2. Literature Review

Sharma (2013) studied the consumer behavior towards online shopping, the factors influencing customer's risk while shopping online and finally the perceptions about online shopping in terms of the demographic variables, viz., age, gender and occupation. The structured questionnaire (designed on a Likert Scale) is used to measure the perceptions about online shopping. The hypotheses testing of Independent sample t-test, ANOVA at 95% confidence interval. The benefits such as Discounts, Searching on online catalog - Customized search using filter (features, prize, size, color), Busy Schedule of customers helps them to do shopping online easily and Consumers can gather information about merchandise for comparison. It was concluded that 'Online shopping in India is in its growing stage. Customers are gaining confidence in online purchases'.

Hawk (2004), studied the basic features of economies and business practices found in developing countries and assess the aspects that provided a base for adaption of Business-to-Consumer (B2C) ecommerce at regional conditions. He highlights the three areas namely Russia, India and Latin America in his study and the results show that in Russia mailing is used where as in India and Latin America courier services are opted as delivery option. Similarly payment options used by these countries are Cash on Delivery (COD), Credit cards or E-money.

Eid (2011) studied the factors that influence Saudi Arabia Customers over Customer Loyalty, Satisfaction and Trust of Business-to-Consumer (B2C) e-commerce. He adopted structured self-administered questionnaire comprising questions like perceiving user interface and information quality, privacy, and security risk as key factors. The hypotheses 'An increase in perceived user interface quality (UIQ) will have a direct positive effect on customer satisfaction (ECS)' is formulated. Structured Equation Model (SEM) method was implemented to analyze, which concluded that the interface and information quality had a positive impact on customer satisfaction whereas the privacy and risk factors were weakly related to customer satisfaction.

Hiwarkar (2013) studied the role of Government involved in facilitating market access and business opportunities (mainly SME's), providing educational and skills development resources and supporting Infrastructure development. Basically exploratory research is conducted and it's found that commercialization of the internet has driven E-commerce to become one of the most competent channels for inter-organizational business processes. He concluded that conventional model of business is undergoing an aquatic change and creates the occasion to reach online consumers around the globe.

Javadi, Dolatabadi, Nourbakhsh, Poursaedi and Asadollahi (2012) studied the factors affecting on online shopping behavior of consumers that might be one of the most important issues of e-commerce and marketing field. However, there is to know about consumer behavior online is very limited because it is a complex social phenomenon of technology, many factors involved. He used a model check of perceived risk variables infrastructure impact and return on the behavior of shopping online political attitudes and subjective norms, perceived behavioral control, the innovative online shopping behavior and attitudes specific areas of research hypotheses. The hypotheses were investigated using 200 questionnaires dispersed among online stores of Iran. Consumer responses online shops in Iran randomly selected. Finally, regression analysis data for the study speculated test. The study concludes that the financial risks and risks of adverse impact on the attitude of non-delivery of online purchases.

Park and Kim (2003) studied the interaction between the real world of shopping is mostly based on face-to-face between consumers and service personnel interact in e-commerce activity occurs mainly through the retailer's website. This study investigated the relationship between online shopping and buying behavior of consumers between various features. Online survey, the results of the online bookstore 602 customers in Korea showed that the quality of information, quality and safety concepts of user interface affect the relationship between satisfaction and the benefits of information, which, in turn, has a significant relationship to the site commitment and actual purchase behavior of consumers.

## 3. Research Methodology

### Objectives of Study

The Objectives of the study are as follows

- a. To review the basic features found in Business – to – Consumer (B2C) e-commerce and their adaption to Indian conditions.
- b. To analyze customer satisfaction with selected aspects of e-commerce viz., User Interface Quality, Information Security, Payments/Transactions and Delivery in Time.

### Methodology

A Descriptive research methodology is used to survey and collect data from the customers in Delhi and Noida residents. The study is carried over by reviewing the basic features, functioning of B2C ecommerce and also by examining the information in websites.

### Sample Technique

The primary data is collected from respondents of various age groups, after preparing Structured Questionnaire. The sample survey is conducted with 108 respondents who are currently living in Noida and Delhi. Bipolar rating scale is used to prepare the questionnaires which have responsive choices provided for each item as shown in the following example:

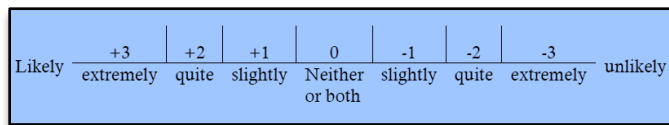


Fig 2: Bipolar rating scale; Source: VasinChooprayoon (2011)

**Data Analysis Technique**

Data analysis techniques are carried out using Excel and SPSS software. For the descriptive analysis, Charts and figures such as bar graphs, pie charts and clustered charts are used to describe the data collected. Also one-sample t-test is carried out to find the important factors that influence E-Commerce. The hypotheses are tested at the level of significance 0.05.

**Research Model**

The research model hypotheses formulated are listed below

1. *The User Interface Quality (User Friendly) aspect of E-commerce is a significant factor for E-commerce Study conducted for Customer Satisfaction*
2. The User Interface Quality i.e. User Friendly aspect of E-commerce comprises of the Look & feel (design/content), User Login feature (User Sign-in feature), Navigation / Checkout and FAQs (Self-help).
3. *The Security & Payment aspect of E-commerce is a significant factor for E-commerce Study conducted for Customer Satisfaction*
4. The Security and Payment aspect of E-commerce comprises of the Completion of Payment, Refund when transaction fails and Secure Payment.

5. *The Shipping & Delivery aspect of E-commerce is a significant factor for E-commerce Study conducted for Customer Satisfaction*
6. The Shipping and Delivery comprises of the Timeliness of Delivery, Completeness of Delivery and Packaging Quality.

**4. Data Analysis**

**Descriptive Analysis on Aspects of E-commerce**

The data collected from respondents from Noida and Delhi residents are analyzed through descriptive statistics such as means, standard deviation and variance. The hypotheses formulated for the mean value helps to infer the importance of the different aspects of e-commerce. The Independent one sample t-test at 95% confidence interval is conducted on the research model designed.

The table 1 provides the descriptive statistics (Range, Mean, Standard deviation and Variance) of the aspects viz., User Interface Quality (User Friendly), Security & Payment and Shipping & Delivery. From table 1, we can say that, on an average (mean – 3.52) respondent provided higher satisfaction rating to Shipping & Delivery yet the deviation (0.98) in rating provided among respondents is also high for Shipping & Delivery. On the other hand, on an average (mean – 3.35) respondent provided lesser satisfaction rating to User-friendly aspect but the deviation (0.87) is comparatively less. Similarly on an average (mean – 3.46) respondent provided mediocre rating to Security & Payment aspect and the deviation (0.95) also remain in the middle of other two aspects.

**Table 1: Descriptive Statistics Major Aspects**

	N	Minimum	Maximum	Mean	Std. Deviation
User Friendly	108	1.00	5.00	3.3542	.87617
Security and Payment	108	1.00	5.00	3.4691	.95917
Shipping and Delivery	108	1.00	5.00	3.5215	.98516
Valid N (list wise)	108				

Source: SPSS Output

The table 2 represents the one sample t-test carried over on the aspects of the E-commerce, viz., User Interface Quality (User Friendly), Security & Payment and Shipping & Delivery. The mean value is obtained from SPSS output is appropriately set as test value for conducting the one sample t-test in SPSS. We consider 95% confidence interval which means 0.05 is the

level of significance. As all the factors had significance value less than 0.05 then we accepted the hypotheses. Hence all the aspects of E-commerce namely the User Interface Quality (User Friendly), Security & Payment and Shipping & Delivery are identified as an important factor for E-commerce study, which is inferred from the table 2.

**Table 2: One-Sample Test**

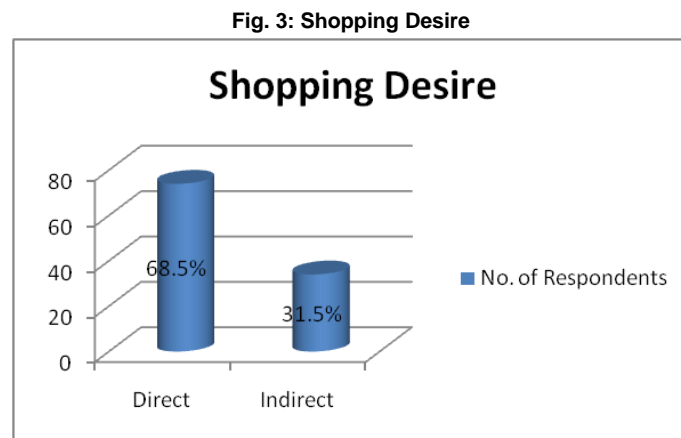
	Test Value = 3					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
User Friendly	4.201	107	.000	.35417	.1870	.5213
Security and Payment	5.082	107	.000	.46907	.2861	.6520
Shipping and Delivery	5.501	107	.000	.52148	.3336	.7094

Source: SPSS Output

**Analysis on Shopping Desire**

The desire to shop directly at stores for purchase i.e. Offline shopping Vs indirect shopping i.e. through online E-Commerce websites is portrayed in the figure 3. The majority respondents have preferred shopping desire at stores directly

(68.5%), whereas the indirect or online shopping is 31.5%. The table 3 shows the results of Chi-Square results which imply that there is significant relationship between the Age Group and Shopping desire.



Source: Excel Output

**Table 3: Chi-Square Tests (Shopping Desire Association with Age Group)**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.604 <sup>a</sup>	1	.010		
Continuity Correction <sup>b</sup>	5.469	1	.019		
Likelihood Ratio	6.349	1	.012		
Fisher's Exact Test				.019	.011
Linear-by-Linear Association	6.543	1	.011		
N of Valid Cases	108				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.44.

Source: SPSS Output

The table 4 shows the percentage of respondents in each age group who prefer online shopping and offline shopping respectively. The head count of the corresponding age group is also depicted in the table 4. The age group between 19 and 24 has more percentage of respondents and it is inferred that

maximum from this group i.e. 52.8% says direct offline shopping. The desire to buy online the product or services in the age group, below 18 is 1.9%, 19-24 is 15.7% and 25-35 is 13.9%. This group 25-35 has higher percent of respondents who prefer online shopping rather than direct shopping.

		Shopping Desire		Total	
		Direct	Indirect		
Age Group	Below 18	Count	2	2	4
		% of Total	1.9%	1.9%	3.7%
	19 – 24	Count	57	17	74
		% of Total	52.8%	15.7%	68.5%
	25 – 35	Count	13	15	28
		% of Total	12.0%	13.9%	25.9%
	Above 36	Count	2	0	2
		% of Total	1.9%	0.0%	1.9%
Total		Count	74	34	108
		% of Total	68.5%	31.5%	100.0%

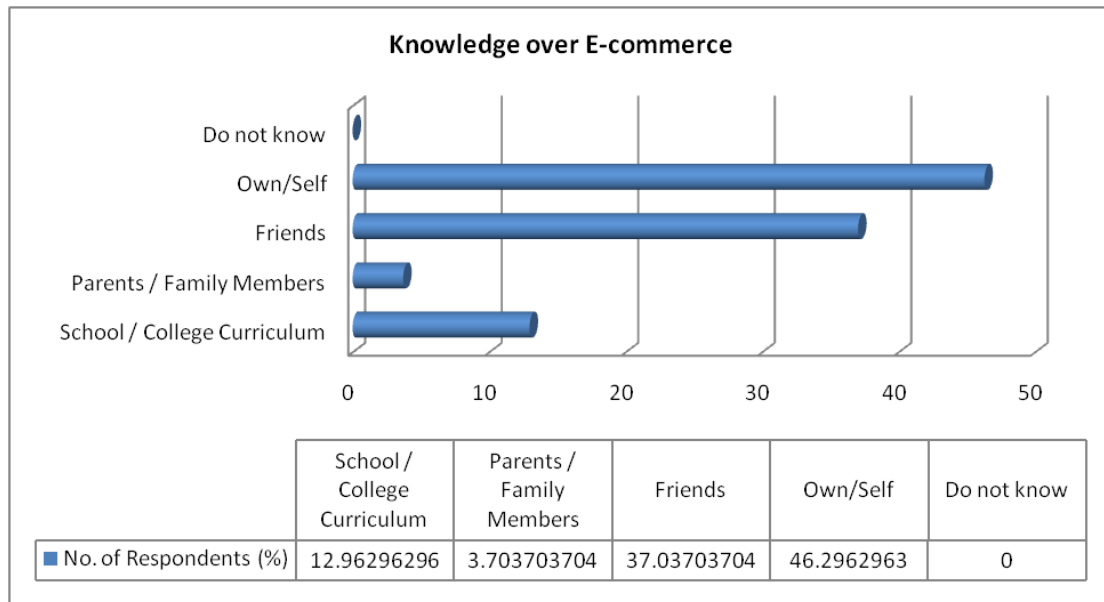
Source: SPSS Output

**Knowledge over E-commerce**

The customer's knowledge over E-commerce is whether through School / College Curriculum, Parents / Family Members, Friends, Own / self (by their own) is represented in the figure 4. The knowledge about e-commerce is obtained by own self which contribute to 46.29% and the next immediate

source of knowledge for e-commerce for the respondents are friends which contribute 37% approximately. The Chi-Square results show there is no relation of knowledge with desire to shop (Table 5).

**Fig. 4: Customer's knowledge on E-commerce**



Source: Excel Output

**Table 5: Chi-Square Tests (Shopping Desire Association with Knowledge)**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.746 <sup>a</sup>	2	.253
Likelihood Ratio	2.764	2	.251
Linear-by-Linear Association	2.454	1	.117
N of Valid Cases	108		

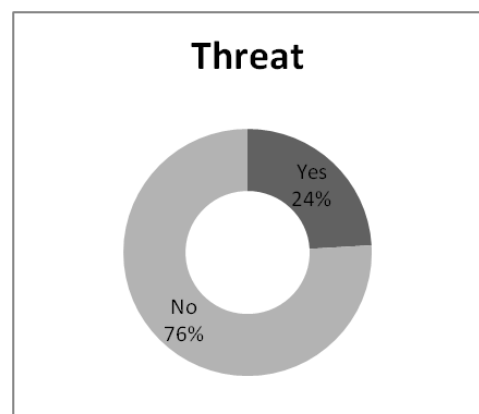
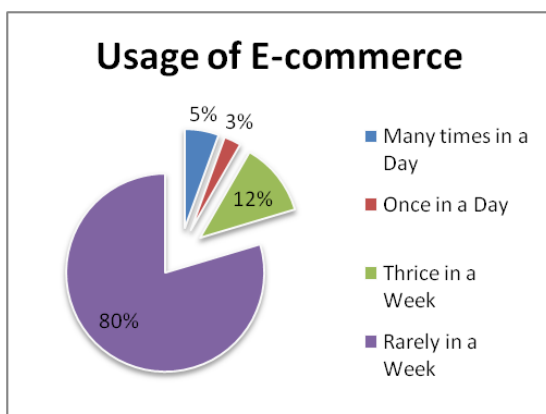
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.67.

Source: SPSS Output

**Usage & Threat**

The overall usage of E-commerce in terms of number of times respondents shop online is shown in the figure 5. Among this 80% of the respondents use online shopping rarely in a week. The security threats faced in E-commerce by

respondents is shown in the same figure. From the figure we could easily interpret that 76% of the respondents have not faced any security threats whereas only 24% of the respondents have faced security concerns.



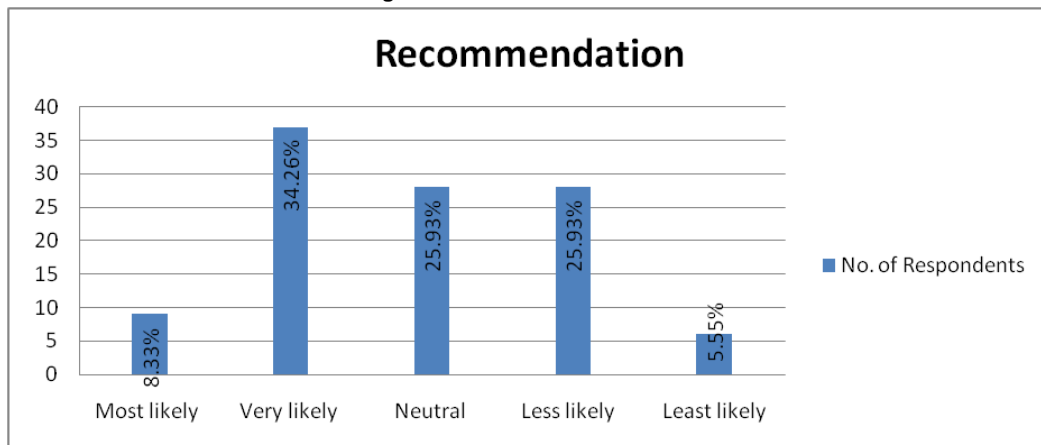
**Fig. 5: Usage & Threat of E-commerce by Customers; Source: Excel Output**

### Consumer's Recommendation and Ranking

The following figure 6 is a bar diagram that represents the number of respondents (y-axis) who recommend e-commerce to others. The percentage of respondents who most likely to least likely (x-axis) recommend is also mentioned in the figure.

34.26% respondents will very likely recommend e-commerce to others and the percent of respondents who are neutral for recommendation as well as less likely to recommend are 25.93% each.

Fig. 6: Recommend E-commerce



Source: Excel Output

The Rank orders for the E-commerce aspects are identified using the clustered bar graph. In overall more number of respondents provided highest rank for Payments / Transactions. Similarly more number of respondents provided

least rank for User Interface Quality (User Friendliness). Hence the rank order of importance is Payments / Transactions, Information Security, Content's Trust Worthiness, Delivery in Time and User Interface Quality (User Friendliness).

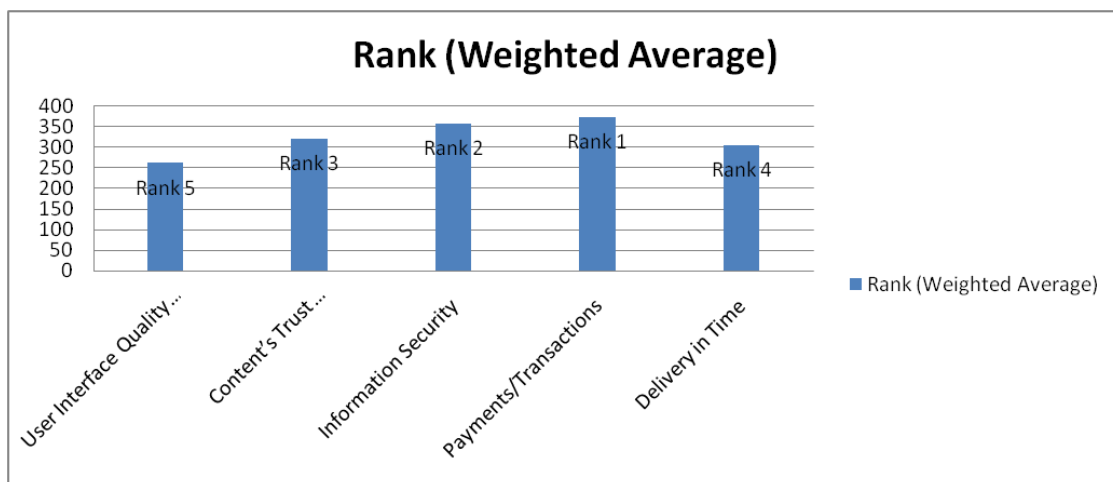


Fig. 7: Ranking Importance of E-commerce; Source: Excel Output

### 5. Results and findings

The data analysis is conducted using descriptive statistics such as mean, standard deviation and variance which represents brings out the below findings.

- On an average (mean – 3.52) respondent provided higher satisfaction rating to Shipping & Delivery yet the deviation (0.98) in rating provided among respondents is also high for Shipping & Delivery.
- On an average (mean – 3.35) respondent provided lesser satisfaction rating to User-friendly aspect but the deviation (0.87) is comparatively less.
- Similarly on an average (mean – 3.46) respondent provided mediocre rating to Security & Payment aspect and the deviation (0.95) also remain in the middle of other two aspects.

The inferred results using hypotheses t-test (level of significance – 0.05) is mentioned below.

- The User Interface Quality (User Friendly) aspect of E-commerce is found as an important aspect for E-commerce Study.
- The Security & Payment aspect of E-commerce is found as an important aspect for E-commerce Study
- The Shipping & Delivery aspect of E-commerce is found as an important aspect for E-commerce Study. Hence The Timeliness of Delivery, Completeness of Delivery and Packaging Quality factors of Shipping & Delivery aspect are also important.

The data analysis conducted using tabulation results from cross tabs of descriptive statistics yields the findings as shown below.

- The age group between 19 and 24 has more percentage of respondents and it is inferred that maximum from this group i.e. 52.8% says direct offline shopping.
- And majority respondents has preferred shopping desire at stores directly (68.5%), whereas the indirect or online shopping is 31.5%
- The desire to buy online the product or services in the age group, below 18 is 1.9%, 19-24 is 15.7% and 25-35 is 13.9%. This group 25-35 has higher percent of respondents who prefer online shopping rather than direct shopping.

From the other methods of data analysis like bar graphs, pie charts and clustered charts we infer the following results

- The knowledge about e-commerce is obtained by own self which contribute to 46.29% and the next immediate source of knowledge for e-commerce for the respondents are friends which contribute 37% approximately
- 34.26% respondents will very likely recommend e-commerce to others and the percentage of respondents who are neutral for recommendation as well as less likely to recommend are 25.93% each

The rank order of importance is Payments / Transactions, Information Security, Content's Trust Worthiness, Delivery in Time and User Interface Quality (User Friendliness).

## 6. Conclusion

The Internet has nowadays become more common in terms of usage of online resources, social media and business perspectives. The E-commerce basically has attained much growth and has much improving trends to attract customers in Business to Consumer (B2C) model. The study conducted in Noida and Delhi NCR has proven that User Friendliness, Security & Payment and Delivery & Packaging all are important aspects of E-commerce websites (t-test at 95% confidence interval).

The features of E-commerce helps customers think it saves time, fast purchase and it's reliable also. Though these are applicable overall in the world and better in developed countries, there is flaw in security and payment of cash. Some customers also feel that delivery of products is based on the convenience of the delivery staff, which has negative impact on the customer satisfaction.

The Shopping desire is higher at direct stores even though there are so many improvements in E-commerce websites but the percentage shown is comparatively good. There exists security threat for nearly one quarter of the respondents. Finally the recommendation to other consumers is more likely to recommend e-commerce. actual purchase behavior of consumers.

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