

# Consumer Behavior Analysis Towards Online Shopping of Apparels With Special Reference to Coimbatore and Erode Districts

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ABSTRACT: Online shopping is a good example of the revolution in business. E-commerce has made the life of individuals and groups simple and innovative; the behavior of consumers in online shopping is different from the physical market in which they have access to the product. The purpose of this research was to study consumer behavior in apparels online shopping, particularly in Tamil Nadu's Coimbatore and Erode Districts. The main question of research is how consumers act when they shop online. The questionnaire survey collected primary data through face-to-face and personal contact in Coimbatore and Erode Districts.

In this study, customer-oriented factors such as "time saving," "product quality," "product price," "convenience," "accessibility," "shop anywhere and anytime" are the main specific factors affecting the attitude of customers towards online shopping for apparels s. Technology-oriented factors, "guaranteed quality," "delivery cash" and "discounts and promotions are the main specific factors affecting customers attitudes toward apparels online shopping.

KEYWORDS: Internet shopping, Attitude, Intention, Trust, Shopping experience, Service experience, Product quality.

# I. INTRODUCTION

The term Internet is used by companies and individuals as a business tool. The Internet has become a new mediator between companies and their clients. The Internet is now a public, cooperative and self-sustaining facility that hundreds of millions of people around the world can access. The Internet has now been accepted as a major effective communication channel challenging traditional channels such as radio, magazines and television. The Internet shop offers different ways of communicating online with communication differences tools that need to better decide their impact on customer communications.

The apparent capabilities of the internet involve information collection, purchase of a good or representation of a service. The advancement of Internet technology allows online shopping options to be expanded beyond traditional methods, which may waste more time. With a growing number of people turning to the Internet and the ecommerce world for shopping, business, payment and online banking, these transactions need to be secured by new technological advances. The growth of people gravitates towards a more comprehensive use of the Internet as a convenience for technology, the availability of information and the ability to interact by increasing and developing the Internet. Consumer behavior is the key to every enterprise. In addition, companies continue to

establish an online presence, finding that some consumers are still reluctant to move in the same direction.

# II. BACKGROUND CONSUMER BEHAVIOR

"Consumer behavior is the study of people, groups or organizations and the processes they use to select, secure and dispose of products, services, experiences or ideas to meet the needs and impacts of these processes on consumers and society." With the above reference, each individual's consumer behavior is different depending on purchasing choices that are influenced by purchasing habits and choices that are manipulated by psychological and social drivers that affect the purchase decision process.

Decision-making varies from person to person, place to place and focus on consumers ' past experience; we can predict future trends by marketing profitable products and services. Due to two main factors, the popularity of interactive media such as the World Wide Web is growing rapidly every day in this modern world:

- 1) Most companies do their business online and make their website their product and services showroom.
- 2) Consumer segments are increasing rapidly due to increased needs and demand, including online shopping.

# III. E-COMMERCE/ONLINE SHOPPING

The Internet makes life easy and innovative. People do business online and trade is easier and faster. The Internet offers new ways of promoting business. In order to show their services and products, the website becomes an essential part of the online business. The Internet brings together all competitors and consumers. It is a new way of promoting, advertising products and services on the market.

Online consumers are always looking for new products, new attractiveness and price compatibility with their budget. The internet is the best way to save time and money by buying online anywhere and anytime in their budget range. Online shoppers have no restrictions on online shopping. They also use the internet to compare goods and services prices, news, social networks, search information, etc.

#### IV. CONSUMER BEHAVIOR OVER INTERNET

The Consumer Behavior Reports are designed to provide media, industry analysts and merchants with insight into trends in online shopping, purchasing behavior, product pricing and market share. Of those 10 percent of online consumers who bought from their mobile phone, most (58 percent) indicated that they used the mobile Internet to buy digital content for their phone, according to consumer behavior reports.

Although some consumers have not moved beyond basic mobile personalization and casual gaming, some online consumers have made substantial purchases from their mobile phones, such as consumer electronics (61 per cent), computers (42 per cent), books (39 per cent), clothing (52 per cent), and jewelry (24 per cent) (Consumer behavior report, April 2018).

Compared to the physical world, consumer behavior in the electronics environment is critical and crucial understanding can be examined if the factors affecting purchase decisions are ignored and unambiguous. Online consumers fear the opportunity to examine the product specifically considered to be an influential factor in the purchase decision physically. Consumer behavior patterns can therefore be fundamentally different from traditional environments in online shopping.

# V. REVIEW OF LITERATURE

Haugtvedt, Machleit & Yalch, 2005<sup>(1)</sup> analyzed that references to online methods for each product decrease in successive shopping stages, in particular between searches and comparisons. If you want to calculate the sale, online companies need an offline presence. For some products, this is more important than for others, as indicated by the varying buying preferences online. If the experience of consumers with online shopping leads to more trust and less aversion to closing online sales, offline companies must be aware of the perceived benefits of online shopping for products such as books, CDs and apparels s, which have traditionally been purchased in brick and mortar stores. This indicates that offline companies must cultivate an online presence in these product categories.

Wang & Yang, 2010<sup>(2)</sup> presents that, the electronic equipment takes a high percent of the individuals shopping. Compared with other goods, online shopping of apparels adds great convenience to the life of the people. Buying electronic gadgets online gives customers an opportunity to find a great variety of product online, and customers can review a wide selection of products and find special offers and discount with the best deals online. In the coming years, the development of online retailers is improving and promises a bright future. However, the tangible and intangible problems of apparels online shopping still exist and the online store retailers lack the customer knowledge in some extent. Therefore, our intention is to explore customer behavior when purchasing apparels s through investigating the factors that can affect online shoppers' attitudes, intention and actual buying behavior. In this research, we offered the online retailers some suggestions to improve their sales and attract more customers.

Keisidou, Sarigiannidis, Maditinos, 2011<sup>(3)</sup> studied that, online shopping is among the most popular activities of the internet, yet the reasons why consumers buy online are still unclear. Although it is implied that consumer acceptance of online shopping is affected by different products. Consumer's attitude while making online purchase was examined in the context of different product types. Many factors were selected to be analyzed, which are Personal Innovativeness of Information Technology (PIIT), Self-efficacy, Perceived security, Privacy, Product involvement and how they affect consumer attitude towards online shopping. PIIT, perceived security and product involvement have an effect on the attitude towards online shopping.

According to *Jun and Jaafar*, 2011<sup>(4)</sup>, business revolution is a good example which is provided by online shopping. Ecommerce is experiencing a period of rapid development currently in China; for the expansion of the online shopping market, large number of Internet users provides a good foundation. After studying and analyzing different variables this research found that there were relationships between the perceived usability, perceived security, and perceived privacy, perceived after-sales service, perceived marketing mix, perceived reputation and consumers' attitude to adopting online shopping in China. However, only marketing mix and reputation were significantly influence consumers' attitude to adopt online shopping. After studying this journal we able to understand consumers' online purchase behavior.

According to *Burkolter & Kluge*, 2011<sup>(5)</sup> online shopping entering in a consolidation phase, so there is a need for research differentiating online consumer behavior for a range of product categories. Also, individual differences in online shopping need to be considered. Therefore, in this research a survey is conducted for nine different product categories for online information search and online shopping as well as socio-demographic and individual variables (shopping orientation, need for emotion, and



fashion leadership) was conducted in Germany. Results showed significant differences in online information search as well as shopping regarding gender, status of employment, and education. Moreover, individual variables were differently related to online shopping behavior.

*Gao*, 2012<sup>(6)</sup> presents that, Online seekers are the main sources of online shopping. Online shoppers always want to seek information within few clicks and reach to the most relevant information according to their requirements such as competitive brands, best price offers, product specification and consumer word-of-mouth.

According to *Kapoor*, 2012<sup>(7)</sup> online decision making and online shopping phenomena are governed by a number of consumer acceptance and behavior characteristics and grounded in theoretical aspects of consumer decision making. There are number of factors that affect what we buy, when we buy, and why we buy. In reference to buying online, the factors that influence consumers are marketing efforts, socio-cultural influences, psychological factors, personal questions, post decision behavior, and experience.

Chandra and Sinha, 2013<sup>(10)</sup> studied that, now days the new and latest type of retail shopping are online shopping. It has now been adopted all over the world including India. In many other countries this shopping method is still not as well known or accepted, and though the knowledge of online shopping in India is now beginning to increase rapidly. To analyze factors affecting on online shopping behavior of consumers that might be one of the most important issues of e-commerce and marketing field, this is the main objective of the study. It is a complicated sociotechnical phenomenon and involves too many factors so that there is very limited knowledge about online consumer behavior.

Karunakaran, 2016<sup>(11)</sup> analyzed that E-commerce has made life simple and innovative of individuals and groups; consumer Behavior in online shopping is different from the physical market where he has access to see the product. The purpose of the research was to study the consumer behavior in online shopping of apparels especially in India. The main research question in thesis is how consumers behave while shopping online. Primary data was collected through the questionnaire survey and by emails from personal contacts in major cities of India. Price, time saving and convenience were identified as important factors which lead to certain buying behavior in online shopping. The www is rebuild around people where social circles influence and lead to online buying.

#### RESEARCH OBJECTIVES

- To clarify and get insight into consumer behavior towards online shopping of apparels.
- To study the perceptions of adopters in respect of demographic profile.
- To study consumers' expectations of online stores.
- To analyze the consumers wants and needs.

- To find out factors that influences the consumers towards online shopping.
- To describe the distinctions between traditional consumer behavior and online consumer behavior.

Based on the conclusions and tools developed, effective government and online purchasing policy can be suggested / used in order to overcome the current sales stagnation scenario and grow future demand for online shopping.

# RESEARCH QUESTIONS

- How do consumers act during online shopping?
- What are the main factors affecting the online consumer when considering and making an online purchase?
- What types of brands and segments can be found when purchasing apparels in the identified consumers?
- What is the relationship with the factors and consumer groups identified?

#### VI. RESEARCH METHODOLOGY

The main purpose of study was to study the consumer behavior that purchases apparels in Coimbatore and Erode districts with the help of internet. Online consumer behavior is influenced by many factors when making online purchase. In order to provide good piece of work and build understanding in this subject we conducted initial research in literature on consumer behavior and e-commerce. We have reviewed those theories and related studies that had similar areas to focus and give particular attention to their consequences. For this research it is decided to use questionnaire approach that would be filled by people in Coimbatore and Erode districts especially those people who are having an habit of online purchase of Apparels

#### SAMPLE

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The factor that intended to examine can be applied to and investigated in Coimbatore City population that uses the internet and buys apparels. Since there is time and resource constraint that is why specific population had been approached in order to generalize the results includes 240 respondents of 12 each from each district. The questionnaire was mainly distributed in major parts of Coimbatore and Erode district so 240 Respondents are studied for analysis and research.

# **DEMOGRAPHY OF RESPONDENTS**

The questionnaire involved two major divisions, one part is general information of respondents, and the other part is specific questions regarding customers' attitude, intention and different influencing factors of online shopping apparels. There are four questions in the general information part, which separately are city type, gender, age, monthly income and major. All of these demographics information need to be offered by the respondents and the

aim is to give a clear picture to the readers about the respondents" general information.

**Table 1: Demography Analysis of Respondents** 

Gender	Fraguenes	Percentage	
Female	Frequency 108	45%	
Male	132	55%	
Grand Total	240	100%	
Age Distribution	Frequency	Ü	
18-25	54	22.5%	
26-35	96	40.0%	
36-45	66	27.5%	
46 & above	24	10%	
Grand Total	240	100%	
Education Background	Frequency	Percentage	
Matriculation or below	0	0%	
Intermediate	18	7.5%	
Bachelors	102	42.5%	
Masters or Above	120	50%	
Grand Total	240	100%	
Income Distribution	Frequency	Percentage	
Less than Rs10,000	36	15%	
Rs10,000-30,000	66	27.5%	
Rs30,000- 50,000	72	30%	
More than Rs50,000	66	27.5%	
Grand Total	240	100%	
How frequently do you shop online?	Frequency	Percentage	
Never	0	0%	
at least once a week	18	7.5%	
at least once a month e	48	20%	
at least once in six month	78	32.5%	
	96	40%	
at least once a year  Grand Total	240	100%	
Products segmentations Gents and Women Wear	Frequency		
Kids Garments	54 84	22.5%	
		35%	
Unique Dress Materials	60	25%	
Wedding Wears	42	17.5%	
Grand Total	240	100%ch ;	
Do you like to purchase apparels via E- Shopping?	Frequency	Percentage	
11 0			
Yes	156	65%	
No C. I.T. I	84	35%	
Grand Total	240	100%	
How much time (per week) do you spend while surfing the Net?	Frequency	Percentage	
0-2 hours	48	20%	
2-6 hours	66	27.5%	
6-10 hours	60	25%	
10-15 hours	42	17.5%	
Greater than 15 hours	24	10%	
Grand Total	240	100%	
Average amount that spend on per purchase	E	D	
while shopping online?	Frequency	Percentage	
Less than Rs 1000	12	6%	
Rs 1000- Rs.5000	42	17.5%	
Rs 5000-Rs 10,000	72	30%	
Rs 10,000-Rs 15,000	78	32.5%	

More than Rs 15,000	42	15%
Grand Total	240	100%

From the above table and figure, we can easily analyze that majority of the respondents are male in the survey as compared to females, we have 55% of males and 45% percentage of females have participated in this survey. From the figure named as age wise analysis, it is clear that in this survey we have 16 frequencies in the age of 26-35 with percentage 40% which is the highest percentage among other age distribution. In age distribution of 36-45 we have 27% and 23% fall in 18-25 age and rest 10% fall in more than 46 years old respondents. The highest frequency 50% among the respondents falls under the category of Master's or above level of studies followed by the 42.5% who has the Bachelor's degree. A very nominal percentage of almost 7.5 % categorized in the intermediate level of studies. From the survey it was analyzed that the highest frequency 30% in income distribution falls under 30,000-50,000pm and 27.5% fall under 10,000-30,000 and more than 50,000pm smallest frequency 15% falls under less than 10,000. Majority of the 40% of respondents have bought online at least once a year, 32.5% of respondents have bought things online once in six month, 20% respondents bought online things once in a month and 7.5 percentage lies under the category of respondents who buy at least once a week. From the above chart, total 240 respondents who had made online purchasing out of which 84 respondents bought Kids apparels. It is the highest frequency of 35% followed by Unique dress products of 25%. Men and Women wears are bought by 22.5%. Wedding Wears are bought by 17.5% of consumers who are buying online. This question was asked to judge whether consumer like to purchase apparels via eshopping or not. It is analyzed that 65 % of respondents like to purchase goods via e-shopping while 35 % of them don't like to purchase goods online. It was asked in survey questionnaire that how much time (per week) you spend while surfing the net. As per response, 27.5% people say that they spend 2-6 hours per week on net surfing and 25% of respondents say they spend 6-10 hours per week while 20% respondents spend 0-2 hours and 10% greater than 15 hours, It can be easily analyzed from sample of data that majority of the people spend 2-6 hours (per week) on net surfing. From the above chart, total 40 respondents who had made online purchasing out of which 32.5% respondents spend Rs10,000-15,000 on per purchase. It is the highest frequency followed by Rs5000-10,000 spend by 30% of respondents. 17.5% respondents spend Rs1000-5000, 15% and 6% respondents spend more than Rs15,000 and less than Rs1000 respectively.

#### VII. ONLINE SHOPPING ATTITUDE

H<sub>0</sub>: Consumers responses towards online shopping of Apparels of Coimbatore District are same as consumer's responses of Erode District.

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 $H_1$ : Consumers responses towards online shopping of electronic goods of Coimbatore District are not same as

consumer's responses of Erode District.

Table 2: Recall your online buying/shopping experience and please indicate you degree of agreement with the following statements: 1 = strongly agree, 2 = agree, 3 = Neither Agree nor Disagree, 4 = Disagree, 5 = Strongly Disagree

Questions	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
I prefer making a purchase from internet than using local malls or stores	12	9	8	4	7
I can get the latest information from the Internet regarding different products/services that is not available in the market	22	8	5	2	2
I have sufficient internet accessibility to shop online	20	11	7	1	1
Questions	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
Online shopping is more convenient than in-store shopping.	19	6	6	3	6
Online shopping saves time over in-store shopping.	24	5	7	2	2
Online shopping allows me to shop anywhere and at anytime.	27	7	4	1	1
Online shopping provides me with the opportunity to get the products delivered on specific date and time anywhere as required.	30	4	4	0	2
Products purchased through the Internet are with guaranteed quality.	22	6	4	3	4
Internet provides regular discounts and promotional offers to me.	27	5	3	1	4
Cash on Delivery is a better way to pay while shopping on the internet	30	7	3	0	0
I trust the delivery process of the shopping websites.	16	6	5	4	9

#### **DESCRIPTIVES**

Questions		SD	Std Error
I prefer making a purchase from internet than using local malls or stores			
	2.45	1.467	0.229
I can get the latest information from the Internet regarding different products/services that is not			
available in the market	1.85	1.138	0.178
I have sufficient internet accessibility to shop online	1.71	0.988	0.155
Online shopping is more convenient than in-store shopping.	2.12	1.496	0.221
Online shopping saves time over in-store shopping.	1.66	1.135	0.188
Online shopping allows me to shop anywhere and at anytime.			
	1.32	0.95	0.154
Online shopping provides me with the opportunity to get the products delivered on specific date and time anywhere as required.	1.31	1.028	0.165
Products purchased through the Internet are with guaranteed quality.	1.91	1.378	0.219

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Internet provides regular discounts and promotional offers to me.	1.36	1.304	0.208
Cash on Delivery is a better way to pay while shopping on the internet	1.25	1.629	0.274
I trust the delivery process of the shopping websites.	1.22	1.612	0.264

# ANOVA

		Sum of Squares	d.f.	Mean Square	F	Sig.
I prefer making a purchase from	Between Groups	4.326	1	4.326	2.064	.159
internet than using local malls or stores	Within Groups	81.723	39	2.095		
	Total	86.049	40			
I can get the latest information from	Between Groups	.442	1	.442	.336	.566
the Internet regarding different	Within Groups	51.363	39	1.317		
products/services that is not available	Total	51.805	40			
in the market (Latest info)						
I have sufficient internet accessibility to	Between Groups	1.399	1	1.399	1.451	.236
shop online (accessibility)	Within Groups	37.625	39	.965		
	Total	39.024	40			
Online shopping is more convenient	Between Groups	.995	1	.995	.438	.512
than in-store shopping. (Convenience)	Within Groups	88.566	39	2.271		
	Total	89.561	40			
Online shopping saves time over in-	Between Groups	.995	1	.995	.767	.386
store shopping (Save time)	Within Groups	50.566	39	1.297		
	Total	51.561	40			
Online shopping allows me to shop	Between Groups	.610	1	.610	.670	.418
anywhere and at anytime. (Anywhere	Within Groups	35.488	/39	.910		
Anytime)	Total	36.098	40			
Online shopping provides me with the	Between Groups	.737	1	.737	.692	.411
opportunity to get the products	Within Groups	41.507	39	1.064		
delivered on specific date and time anywhere as required.	Total	42.244	40			
Products purchased through the	Between Groups	3.415	1	3.415	1.837	.183
Internet are with guaranteed quality.	Within Groups	72.488	39	1.859		
(Guaranteed quality)	Total	75.902	40			
Internet provides regular discounts and	Between Groups	2.090	~ 1	2.090	1.236	.273
promotional offers to me. (Discounts)	Within Groups	65.958	39	1.691		
	Total	68.049	40			
Cash on Delivery is a better way to pay	Between Groups	.647	1	.647	.239	.628
while shopping on the Internet. (cash on delivery)	Within Groups Ch in	Engineer\\\105.451	39	2.704		
	Total	106.098	40			
I trust the delivery process of the	Between Groups	1.569	1	1.569	.598	.444
shopping websites.(Delivery process)	Within Groups	102.382	39	2.625		
- · · · · · · · · · · · · · · · · · · ·	Total	103.951	40			

The above table shows that the calculated value of F is less than the table value of 4.091 at 5% level of significance with d.f. being v1 = 1 and v2 = 39. This analysis not supports the null-hypothesis that there is difference in sample means. It is therefore, concluded that the consumers responses towards online shopping of apparels is insignificant and this supports the alternate hypothesis that the consumer's responses towards online shopping of apparels of Coimbatore District are not same as consumer's responses of Erode District. So there is difference between consumer responses.

#### VIII. FINDINGS

Customer-oriented factors 'time saving', 'product quality', 'product price', 'convenience', 'accessibility', 'shop anywhere and anytime' are the main specific factors influence customers attitudes toward apparels online shopping. The technology-oriented factors, 'guaranteed quality', 'cash on delivery', and 'discounts and promotions are the main specific factors influence customers attitudes toward apparels online shopping. The attitude towards online shopping is different in Coimbatore and Erode Districts.



### IX. CONCLUSIONS

The online market for clothing takes a high percentage of people shopping on it with the flourishing of online shopping activities. Understanding the online shopping behavior of customers in the clothing sector, improving the important specific factors that influence online shopping in two different cities will help online retailers to become more competitive. This study therefore examines the specific factors affecting the online attitude of customers to clothing in two different districts. It is believed that the results can provide retailers of online clothing with a detailed picture of how to make effective efforts on specific factors to lead customers to positive attitudes towards online shopping clothing and strong purchasing.

#### X. LIMITATIONS

This study focuses primarily on the behavior of consumers in the online shopping process. This study is limited to the scenario to identify variables of consumer behavior in the apparel purchasing process. This study is limited to consumer behavior only in apparel online shopping. This study focused on online shopping behavior, but was limited to a specific field of clothing; however, online shopping research on clothing is lacking. We have therefore used limited sources to support our research.

#### XI. SUGGESTIONS

Study in other states of India can explore understanding of consumer behavior towards online shopping in other regions in India too. This study is related to online shopping, but it specified to apparels field, even if the further research will be focused on other fields, it also can take this study as a basis. Study in other countries where online shopping are equally popular and have equal market shares, gives feasible area for a comparative study. The further research should take wider places and more general samples.

### REFERENCES

- [1] Haugtvedt, Curtis P., Machleit, Karen, A. and Yalch, Richard: Online Consumer Psychology: Understanding and Influencing Consumer Behavior. Mar. 2005, Lawrence Erlbaum Associates, Inc., p. 380-383.
- [2] Wang, Dan & Yang, Liuzi: Customer Buying Behavior —Online shopping towards apparels . 2010, Umea School of Business, p.11-17.
- [3] Keisidou, Ellisavet, Sarigiannidis, Lazaros and Maditinos, Dimitrios: Consumer characteristics and their effect on accepting online shopping, in the context of different product types. Issue 2, 2011, Int. Journal of Business Science and Applied Management, Vol.6.
- [4] Jun, Guo and Jaafar, Noor Ismawati: A Study on Consumers' Attitude towards Online Shopping in China. Dec.2011, International Journal of Business and Social Science, No. 22, Vol. 2.

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- [5] Burkolter, Dina and Kluge, Annette: Online consumer behavior and its relationship with socio-demographics, shopping orientations, need for emotion, and fashion leadership. 2011, Journal of Business and Media Psychology.
- [6] Gao, Yuan: Web systems design and Online consumer behavior. 2012, London, Idea Group Inc., p.32.
- [7] Kapoor, Ramneek: Consumer Behaviour: Text & Cases. 2012, New Delhi, Tata McGraw Hill Education Pvt. Ltd., p. 104.
- [8] Javadi, Mohammad Hossein Moshref, Dolatabadi, Hossein Rezaei, Nourbakhsh, Mojtaba, Poursaeedi, Amir and Asadollahi, Ahmad Reza: An Analysis of Factors Affecting on Online Shopping Behavior of Consumers. Sep.2012, International Journal of Marketing Studies, Vol. 4, No. 5.
- [9] Chandra, Ashok Kumar and Sinha, Devendra Kumar: Factors Affecting The Online Shopping Behaviour: A Study With Reference to Bhilai Durg. 2013, International Journal of Advanced Research in Management and Social Sciences, Vol.2, No. 5.
- [10] Karunakaran: Consumer behavior towards online shopping of apparels in India. 2013, Seinajoki University of Applied Sciences, p.52-60.