

# E-commerce in India and the impact of COVID-19

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**Abstract:** The advent of smartphones and growth of the internet has completely transformed shopping experience. Online shopping is a rapidly growing phenomenon in India, enabling customers to shop at their convenience. To ensure continued growth of online shopping, understanding factors which influence customer satisfaction becomes paramount. The purpose of this research is to explore the key factors which influence consumers' online shopping behaviour. Also, e-commerce industry is majorly impacted due to COVID-19. This research looks into consumers' shopping behaviour during COVID-19 pandemic. By collecting data from online shoppers and analysing it, we found out the main factors which influence customers purchasing online. By comparing the shopping behaviour before and during COVID-19 lockdown, we were able to discern the changes in online shopping due to the pandemic. Our study will be helpful to understand the factors influencing e-commerce in India, and also in the context of COVID-19.

**Keywords:** Ecommerce in India; Covid-19 and ecommerce; Lockdown and ecommerce; Online shopping; Ecommerce adoption; Online shopping behaviour; Customer satisfaction in ecommerce; Factors affecting customer ecommerce shopping behaviour; Impact of Covid-19 on ecommerce; Effect of bandwidth on ecommerce; Ecommerce penetration; Ecommerce in developing country

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## 1. Introduction

E-commerce has had remarkable success and provides significant economic and social benefits in developed countries; however, it is still a niche in several developing countries. Various factors, including low levels of internet penetration, infrastructure, and government rules and regulation, hinder the growth of e-

commerce in these countries. Moreover, consumers in developing countries are used to face to face transactions and do not have a clear understanding of the various processes involved in online shopping resulting in various trust issues.

In recent times, there has been an increase in e-commerce companies in India due to the rapid spread of COVID-19. The pandemic is one of the reasons why people are not showing interest in shopping from physical stores, which means that there might be an increase in online shopping due to which there has been an evident increase of the companies like Metro Cash, Spencer's retail has tied up with internet firms, Future Group has started door delivery services, etc., moving to online platforms for their business (Business Standard, Jul 15, 2018). Recent investment made by Facebook in the Jio Platform has the vision to provide digital solutions to 60 million small and micro businesses, 120 million farmers, 30 million small merchants in the informal sector. This deal in India will have a great impact on retail and e-commerce in India ("Reliance Jio Facebook deal, here are all the companies Jio has invested in so far", Money Control, May 11, 2020).

Companies that follow brick and mortar businesses like clothing outlets, grocery stores will be forced to shift to online amid COVID-19. In metropolitan cities like Delhi, Mumbai and Bangalore there has been a spike in online spending about 135%, 133%, and 12% respectively during lockdown ("E-commerce spends surpass pre-COVID-19 levels post lockdown in Delhi, Mumbai, Bengaluru", The Economic Times, Jul 30, 2020). Prior to COVID-19, online shopping was used for buying products which are not available in physical stores or when the top brands go for a clearance sale but the pandemic has increased both penetration and growth of e-commerce which has increased to 5% penetration rate from 3% before COVID-19 in India ("India's e-commerce penetration will double to 11 per cent by 2024: Goldman Sachs", The Economic Times, Jul 27, 2020).

However, while e-commerce shows rapid growth in India, consumer behaviour in online shopping does not seem to have been researched fully. What are the different factors which encourage or discourage customers from shopping online? Are there any differences in online shopping behaviour based on the demographics of a customer? How do customers perceive online shopping amid COVID-19?

This study specifically examines the of important factors which influence consumers towards e-commerce and the effect of COVID-19 on e-commerce. The paper contains a brief review of the literature on e-commerce and followed by data collection. Further, data analysis is done on a data set which contains responses of 474 customers spread all over India who are using online services where we attempted to measure the usage level of each demographic factor, identified important factors which influence online shopping and also measured the change in dynamics of e-commerce due to COVID-19. Finally, we make conclusions on factors using results from data analysis that influence positively to choose e-commerce services and the level of impact of COVID-19 on e-commerce services.

## 2. Literature Review

Online shopping or e-commerce as it is popularly called, is a tool that helps in the buying, selling, and delivering products, information, or services by combining the desires of the firms and its customers in a more optimized and cost-efficient manners through the internet (Ngai et al, 2002, Esmailpour et al 2016). E-commerce draws on technology such as mobile commerce, supply chain management, internet marketing, online transaction processing, electronic data interchange, inventory management systems, and automated data collection systems (Seshadri 2017). The factors which influence the growth of e-commerce in a country are diverse amongst which GDP per capita, an average level of education, online payment portal support, and telecommunication infrastructure are few prominent ones (Gibbs et al, 2002).

The factors which influence the penetration of e-commerce have typically been fragmented. To understand these factors, along with the customer's online behaviour an adaptation of the technology acceptance model (TAM Model) was done. This adapted framework of TAM deals with the action, attitude, and intention of customers to shop online (Monsuwe et al, 2004).

E-commerce has been growing at a fast pace over the last few years but to stay ahead of the competition, it is important to devise strategies keeping in mind the different types of online customers and the various factors that influence customers' online shopping behaviour. There are two different categories of online shoppers: "the problem solver", the one who shops to buy a specific product, and the other group seeking "fun, fantasy, arousal, sensory stimulation and enjoyment" (Hirschman et al, 1982, Babin et al, 1994).

Customers are disappointed with the depth of a merchant's product offering and poor customer services. Customers also reported that their overall online shopping experience was enjoyable, timesaving, and reduced the overall effort when compared with a traditional retail store (Jarvenpaa et al, 1996). Product characteristics like availability, brand name, price, availability of alternatives along with perceived risk which are financial risk, non-delivery risk, etc., influence customer buying decisions (Monsuwe et al, 2004, Hana et al, 2014, Pandey et al, 2019). Convenience and product type available are the two factors which majorly influence online shopping (Chiang et al, 2003). Customer's behaviour changed based on their perception of high-risk and low-risk products. For example, when purchasing computer online uncertainty and risk were more salient than when purchasing books online (Lowengart et al, 2001).

Consumers in developed countries have become accustomed to using the internet and have benefited from using e-commerce, whereas customers in developing countries are used to face-to-face transactions and do not trust the electronic processes involved (Gil-Saura et al, 2020). For example, in Lithuania convenience, simplicity, and better prices had a positive influence whereas privacy concerns and inconvenient delivery negatively influenced customer's online buying behaviour. Customers of the age group 25-35 were more comfortable shopping online (Skaržauskienė et al, 2015).

Developing economies such as India and China have made noticeable progress in recent years because of modernization and economic reforms. Not just domestic players, international marketers are also attracted to such vast and untapped markets. Therefore, as global competition intensifies and developing countries

grow in purchasing power, firms see opportunities for expansion into untapped markets other than metropolitan cities such as tier 2 cities (Thakur Preeti et al, 2020). In India, e-commerce has been growing in popularity by reaching about 120 million users in 2018 and is expected to reach 220 million users by 2025 (www.ibef.org). Retail e-commerce sales in India will climb 31.0% this year to reach \$32.7 billion. This growth has been enabled in part by the e-commerce market leaders in India – Flipkart, Amazon, and Paytm Mall – who have been expanding into a new sector, including grocery. This investment along with India’s rising internet and smartphone use, as well as the country’s young population and expanding middle class, have contributed to a growing number of digital buyers (emarketer.com).

The sudden and world wide COVID-19 pandemic has greatly impacted e-commerce, as consumers are preferring not to visit physical stores and order online instead. Some literature on this is available, for example impact of COVID-19 on e-commerce activities has been studied in countries like Pakistan (Bhatti, Akram et al, Nov 2020), Malaysia (Hasanat, Hoque et al, Apr 2020) and India (Nivethitha, Manjula et al, Nov 2020). A study on the impact of COVID-19 with reference to Maslow’s theory of hierarchy of needs in Turkey has been presented (DUYGUN and SEN, Jun 2020). The impact of COVID-19 on B2B e-commerce activities has also been studied (Sheth, Jul 2020). But there seems to be not much work done on the impact of COVID-19 on e-commerce in India, which is where this article should fill the gap.

### 3. Research Objectives and Hypotheses

#### 3.1. Objectives

- To understand the factors that influence consumers’ purchasing through e-commerce in India
- To understand the impact of COVID-19 on e-commerce

#### 3.2. Formulation of Hypotheses

H1: Discounts and offers have a positive effect on the customer online shopping

H2: Seller and product ratings have a positive impact on purchasing products online

H3: Concerns over privacy and personal information theft have a negative impact on purchasing online

H4: Impact of the bandwidth of the internet on e-commerce services throughout the country

H5: Frequency of buying products online has increased due to the COVID-19 pandemic

H6: Dependency on e-commerce has increased due to the COVID-19 and the lockdown

### 4. Methodology

A survey in the form of a questionnaire was developed to gather relevant information from respondents which consisted of three sections. Section 1 consisted of questions to collect respondents’ demographic

information such as gender, age, primary occupation, and location. Section 2 consisted of questions that covered variables or factors such as offers and discounts, customer service, return policy, etc. which influence customers' purchasing online. Section 3 consisted of questions related to online purchasing before the coronavirus pandemic and during the coronavirus pandemic which is used to compare the impact on the e-commerce industry.

The Google form was sent to 600 randomly selected respondents across the states of India during July and August of 2020 from which 474 responded. Data analysis is done on the sample size of 474.

## 5. Demographic Characteristics of the Sample

Based on the survey, male respondents represented 54.6% of the total respondents while female respondents accounted for 45.4%. The majority of the sample was in-between the age groups 18-27 (41.4%). Majority of the data (approximately 66%) was collected from the states Karnataka, Gujarat, Delhi, Maharashtra, and Andhra Pradesh. A majority of the respondents were employees (38.2%) followed by students who participated in survey (25.1%). Based on the survey all the respondents have had the experience of purchasing products or services through various e-commerce applications (Table 1).

	Frequency	Percentage
Gender		
Male	259	54.64
Female	214	45.14
Total	474	100
Age		
Below 18	4	0.84
18-27	196	41.35
28-40	77	16.24

41-55	111	23.41
56 and above	86	18.14
Total	474	100
Primary Occupation		
Student	119	25.10
Employee	181	38.18
Self-employed	63	13.28
Homemaker	45	9.50
Retired	42	8.86
Unemployed	24	5.06
Total	474	100

Table 1: Demographic distribution of the sample

## 6. Data Analysis and Interpretation

### 6.1 Factors influencing online shopping

Various factors that influence customer satisfaction towards e-commerce include personal information, credit/debit card details, offers and discounts, fast and reliable delivery, customer service, product range, return policy, and a clear website layout. A chi-squared test was done to understand if satisfaction levels are dependent on the above-mentioned variable. SPSS tool was used to perform the analysis.

The result of the chi-squared test indicates that all the above-mentioned variables have a significant impact on customer satisfaction (Table 2).

Hypothesis	Parameters of Satisfaction	p-values
1	Discounts and offers	0.000
2	Seller and product ratings	0.000
3	Information and data security	0.000

Table 2: Chi-squared test to understand the variables which influence customer satisfaction

Hypothesis 1 - Discounts and offers have a positive effect on the customer online shopping

The level of comfortability of customer shopping online depends on discounts and offers. From Figure 1, we can see that 86% of responses show that offers and discounts are very important. Only 4% have responded that offers and discounts are not important.

Hypothesis 2 - Seller and product ratings have a positive impact while purchasing products online

From Table 2. it can be seen that customer preference is dependent on seller and product ratings. The research also shows that 85% of the respondents have responded that seller ratings are very important (Figure 2). Also, almost 71% of the responses show product ratings are very important and seller and product ratings have influenced purchasing decisions.



Figure 1: Importance of discounts and offers

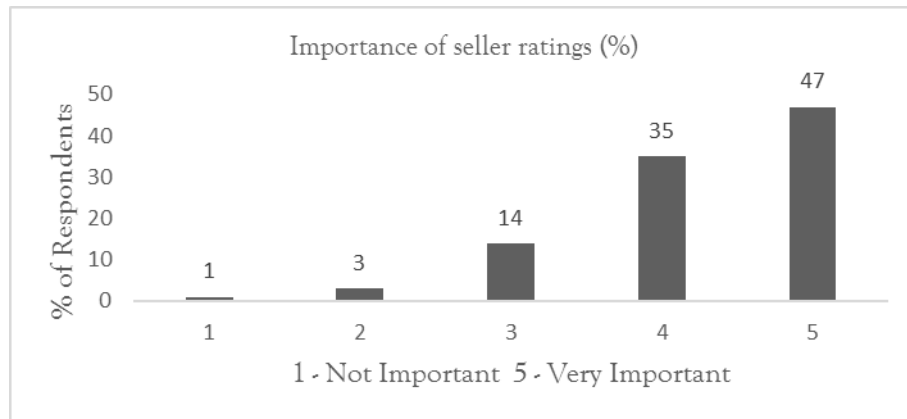


Figure 2: Importance of seller ratings

Hypothesis 3 - Concerns over personal information security have a negative impact on purchasing online

From Figure 3 it can be seen that privacy concerns play an important role in determining the satisfaction level of customers when they shop online. From the research, almost 43% of the sample respondents say that they are not comfortable to provide their personal information while shopping online and almost 27.8% of the customers are somewhat comfortable in providing their personal information (Figure 3).

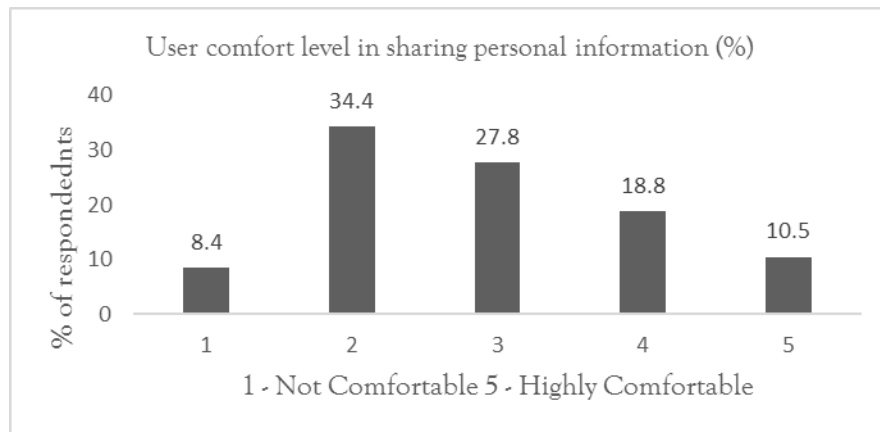


Figure 3: User comfort in sharing personal information

Hypothesis 4 - Impact of the bandwidth of the internet on e-commerce services throughout the country

From the research, it can be seen that 50.6% of customers say that unstable internet connection discourages them from shopping online. Only 17% of the customers say their shopping experience does not get affected due to the lack of stable internet connection (Figure 4). Hence, it can be concluded that 50% customers have reported unstable bandwidth which has impacted their online shopping experience.



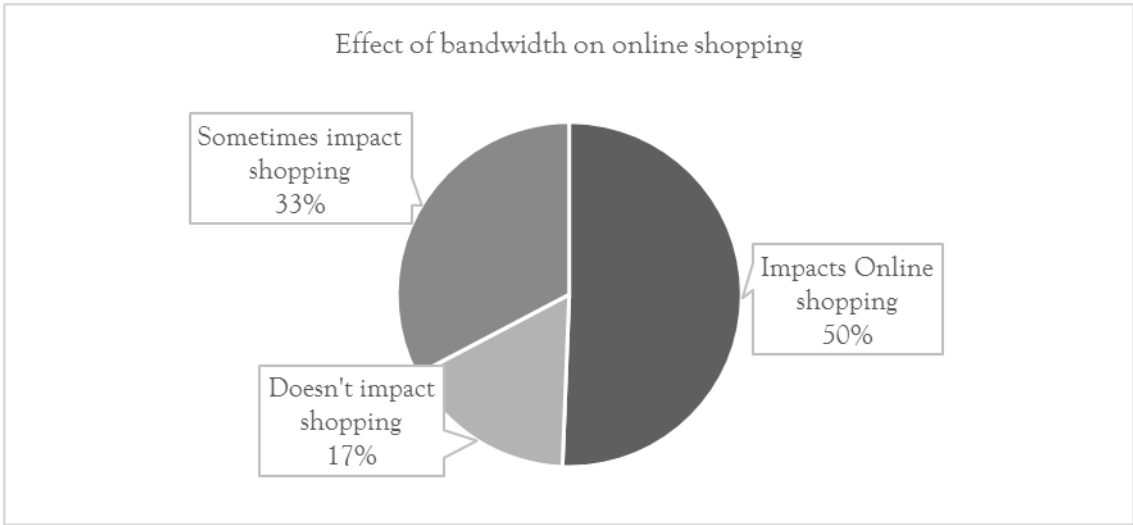


Figure 4: Impact of internet bandwidth on customer satisfaction

Hypothesis 5 - Frequency of buying products online per month from e-commerce has increased due to the COVID-19 pandemic

From the research, it can be seen that the number of online purchases per month increased tremendously during lockdown in India due to COVID-19. From Figure 5, it can be seen that customers with low purchase frequency (0-2 times, 3-4 times) has been reduced by half while customers with higher purchase frequencies (3-4 times, more than 7 times) has increased by three times. This indicates that there has been a significant increase in customer buying frequency from e-commerce during lockdown in India due to COVID-19 pandemic.

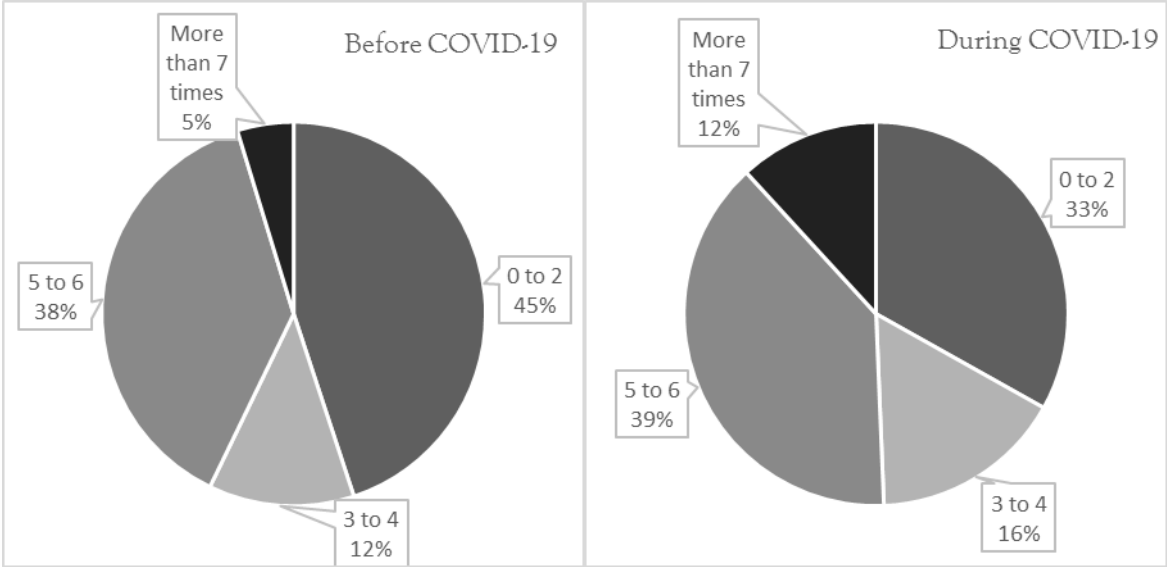


Figure 5: Frequency of purchase before and during COVID-19

Hypothesis 6 - Dependency on e-commerce has increased due to the COVID-19 and the lockdown situation

There seems to be a sharp increase in the average online buying frequency due to COVID-19 (Table 3)

	Average online buying frequency per month
Before COVID-19	2.20
During COVID-19	3.92

Table 3: Increase in online buying frequency due to COVID-19

We corroborated this with a paired sample t-test and found that the p-value is 0.00, confirming that the online buying frequency has indeed increased due to the COVID-19 pandemic.

From the survey, it can be seen that there are a few changes in the type of e-commerce platform and services used before and during COVID-19. From Figure 6, it can be seen that there has been a tremendous increase in using virtual education and OTT platforms. Dependence on digital payment systems has also increased indicating measures to reduce contact with other people and follow social distancing. The food delivery and cab services platforms have been hard hit due to the pandemic.

From Figure 7, it can be seen that the purchase of apparel, books, and electronics has decreased tremendously, whereas the purchase of the essential goods, health and beauty supplements have increased during the lockdown period.

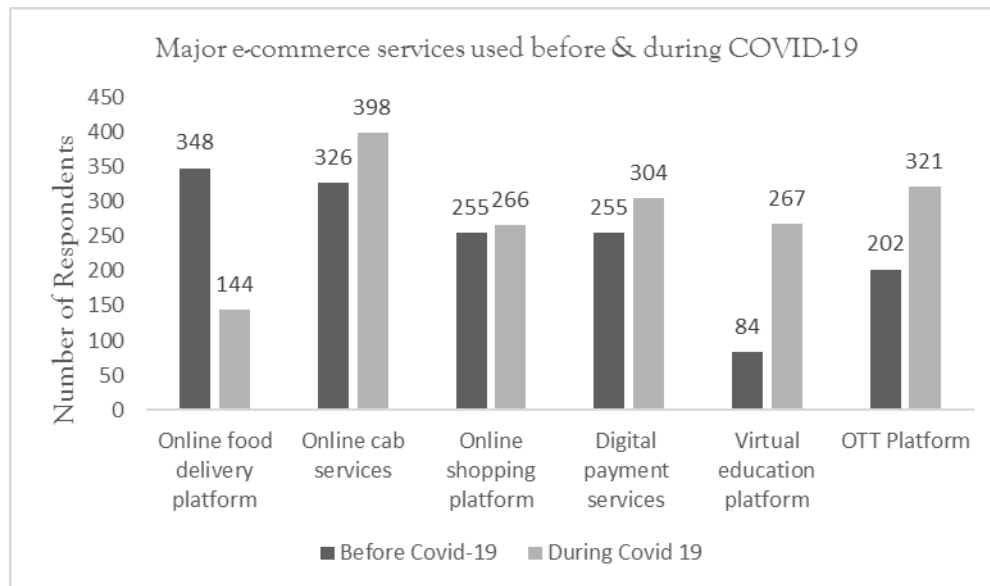


Figure 6: Major e-commerce services used before & during COVID-19.

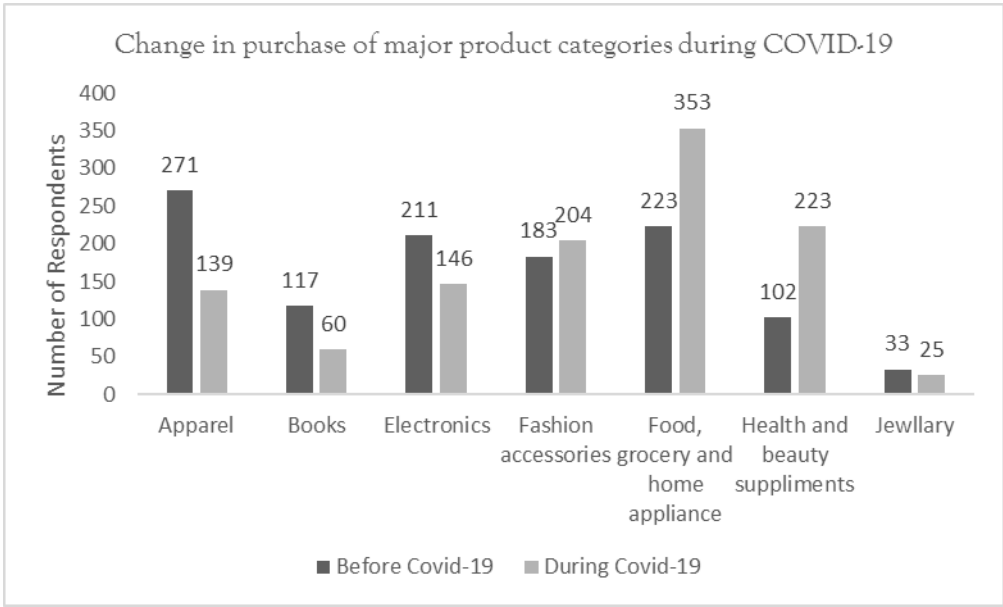


Figure 7: Change in purchase of major product categories during COVID-19.

The survey also indicates approximately 72% of the customers have become familiar using various e-commerce platforms during the pandemic. The survey also indicates that 81.8% of the customers would continue shopping online even after the pandemic is over (Figure 8 and Figure 9).

Hence it can be concluded that the dependence on some of the e-commerce platforms has increased during the pandemic and the shopping on other e-commerce platforms will increase once the pandemic situation is over since a lot of people have become more and more comfortable and familiar using the e-commerce platform during the pandemic.

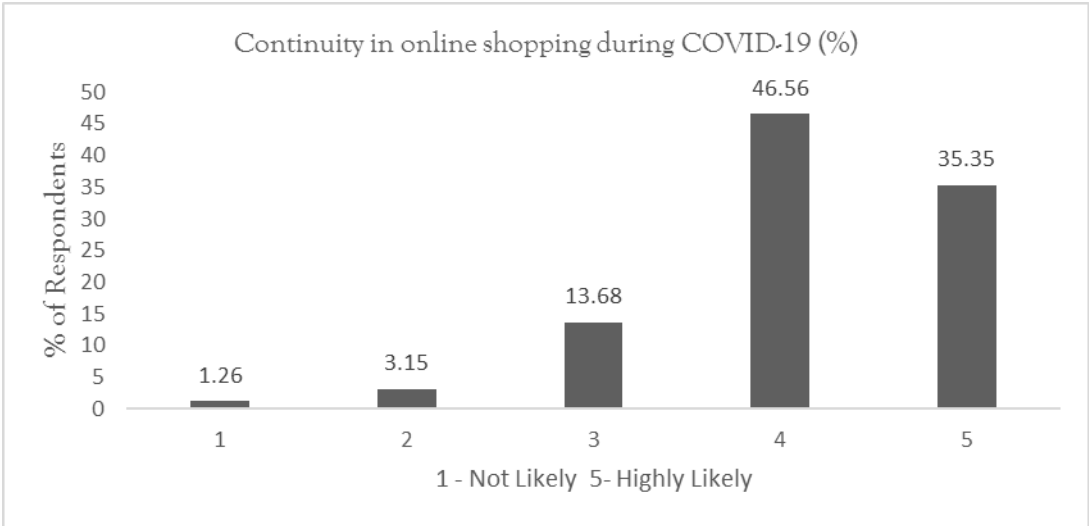


Figure 8: Continuity in online shopping during COVID-19

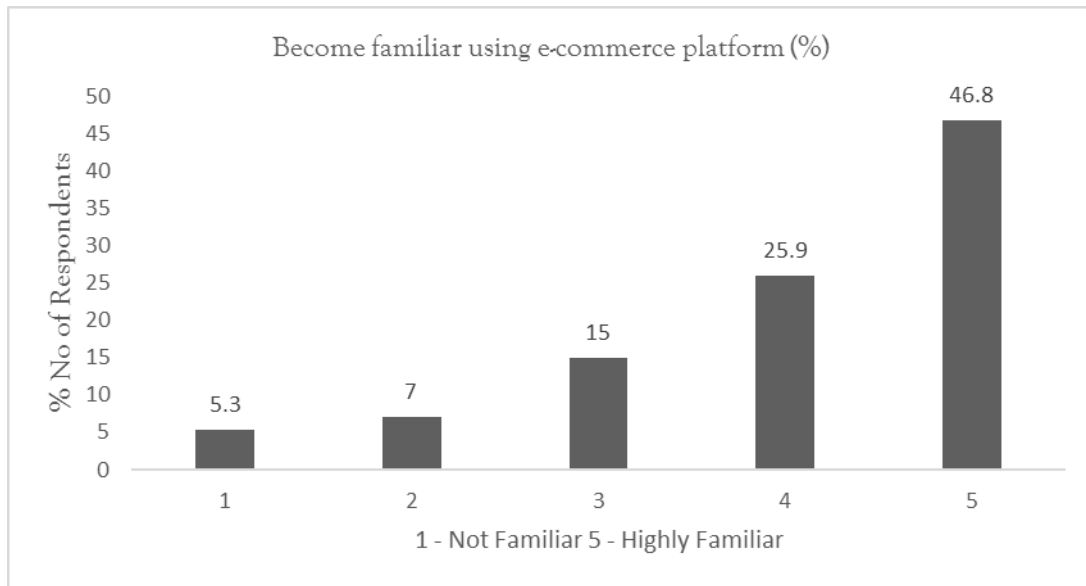


Figure 9: Became familiar using e-commerce

### 6.2 Analysis of the impact of COVID-19 for each demographic factors

An interesting insight from Figure 10 is that a majority of respondents, that is 57% of total responses have increased their usage of e-commerce, while 25% of respondents said that the COVID-19 has not shown any impact on their e-commerce usage (Figure 10). Having said that, there are 18% of people whose purchase frequency got reduced during this pandemic, the major reasons can be slower delivery than usual (which is one of the significant factors that influence the customer to buy online) and the lack of safe delivery options with respect to COVID-19 parameters by e-commerce companies.

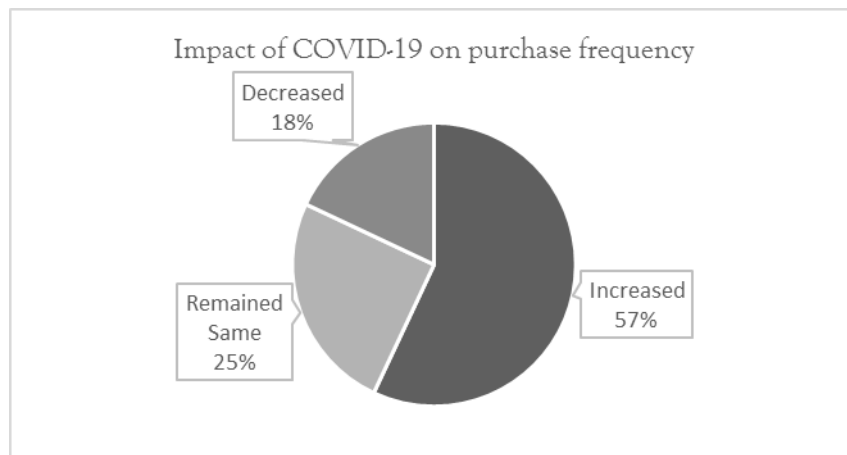


Figure 10: Impact of COVID-19 on purchase frequency

The demographic information captures information on the gender of the respondent and the graph (Figure 11) compares the level of usage of e-commerce services with respect to gender during COVID-19 and pre

COVID-19. Most of the male and female respondents have increased their frequency of purchase from e-commerce during this pandemic. Most of the population irrespective of their gender have depended on online shopping for satisfying their everyday needs. This is evident from the graph that the overall dependence of e-commerce has increased or remained the same for most of the population.



Figure 11: Frequency of online shopping with respect to gender

In Figure 12, we have tried to measure the dependence on online shopping based on the age group of respondents (Figure 12). The population of age group 18-27 has almost no change in preference of online shopping due to the pandemic, one of the reasons for this might be that most of the respondents in the age group of 18-27 were already acquainted with online shopping and they continued shopping online during COVID-19. The maximum increase has been for age groups 28-40, 41-55 and 56 and above. Probably the pandemic has left the older groups with no choice other than online shopping, due to their increased vulnerability to COVID-19.

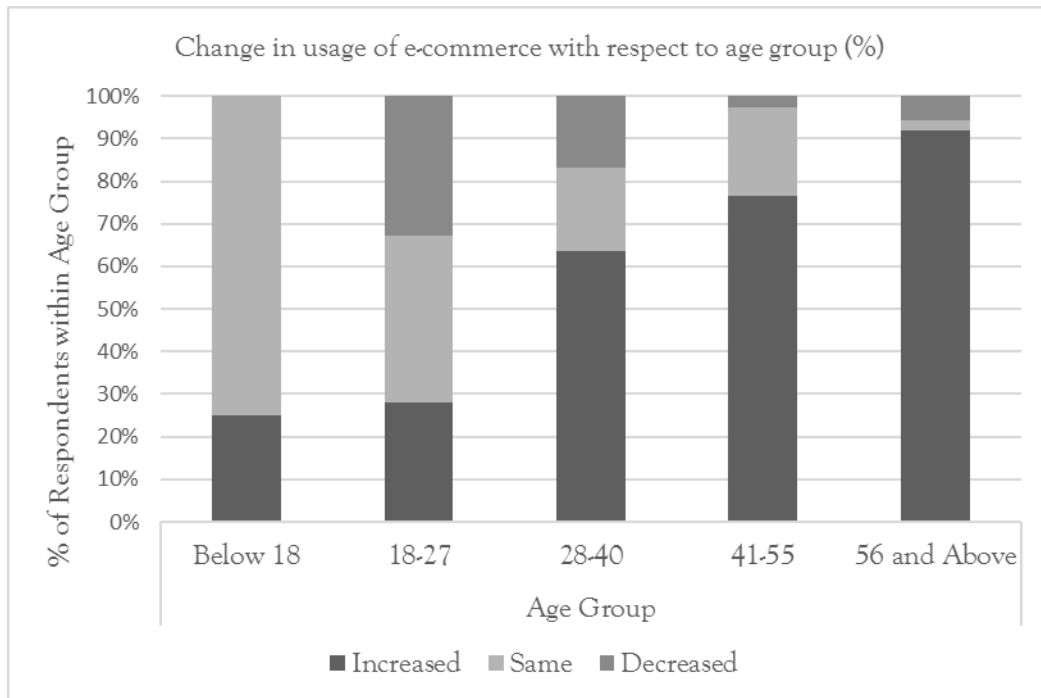


Figure 12: Change in usage of e-commerce with respect to age group

From the below graph, the dependence of e-commerce has increased among the retired, employee, homemaker, and self-employed category of the population (Figure 13). The dependence on e-commerce on average has remained the same for the student category whereas the unemployed shows a decrease in the purchase.

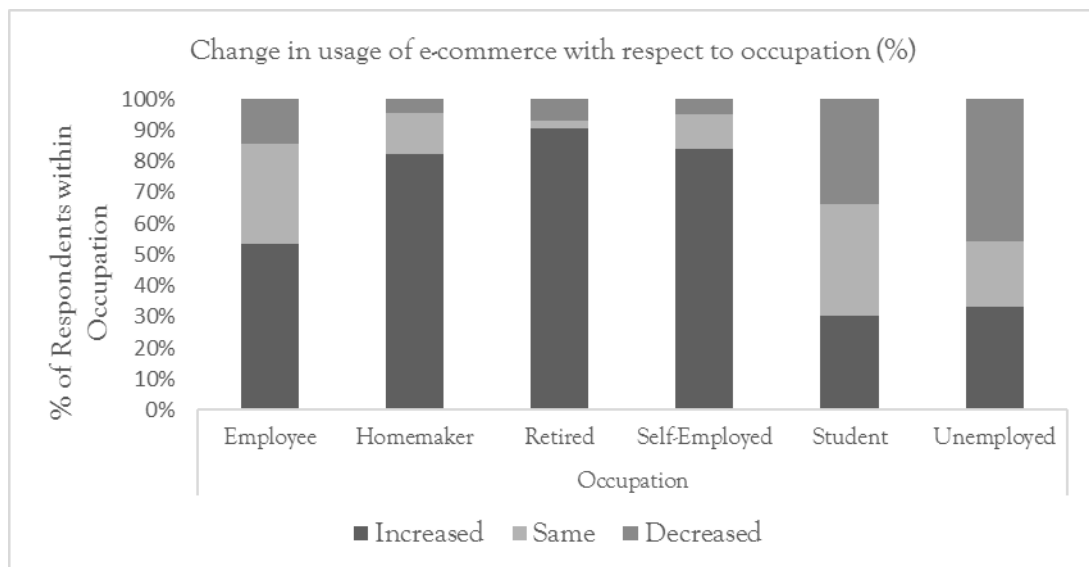


Figure 13: Change in usage of e-commerce with respect to occupation

### Summary of the findings

The key findings of the analysis are that discounts and offers have a positive impact on customers online shopping, positive sellers and product ratings will motivate customers to shop online and concerns over information security have negative impact on customer online shopping experience. Additionally, the study shows that COVID-19 have increased the dependency on e-commerce where usage of virtual education platforms and the purchase of e-commerce products like health and beauty products have increased. Customers have become more familiar with e-commerce services and more likely to continue shopping online after lockdown. Furthermore, the analysis explains the impact of COVID-19 with respect to demographics factors where male have increased their shopping online during COVID-19 and a greater number of customers of age group "56 and above" who are retired have started using e-commerce during COVID-19.

## 7. LIMITATIONS

In the process of data collection, this paper focused on metropolitan cities where the use of e-commerce is maximum. However, as rural India's per capita GDP has grown at 6.2% CAGR since 2000 (IBEF), there is scope for research on the penetration of e-commerce in remote areas and developing rural India in the future. The paper precisely explains the factors which influence customers to buy products online, e-commerce is equally present in services sector and these are increasing drastically. Factors which impact online services could be a subject of future research. There are various categories in e-commerce products, for example, in the electronics category, there are different products such as laptops, mobiles, home appliances, etc., that may have different buying frequencies. This granularity is not taken into account in this research as each category is different research on its own.

## 8. CONCLUSION

E-commerce is the latest phenomenon creating a revolution in the way business is conducted. It can grow at an exponential rate for the coming few years supported by the penetration of smartphones and the internet. Hence, it becomes necessary to understand the various parameters which influence customers' satisfaction towards shopping regularly through these platforms which change regularly with changes in their needs and demands. This paper has identified a few parameters which impact customers' satisfaction towards such services and also analysed the impact of COVID-19 of such services. COVID-19 has provided the opportunity for many e-commerce services to understand the growing needs of its customers and analyse the various growth sectors which they can target and continue to grow further.

Further research can be conducted to analyse the shopping patterns of the customers and clearly understand their attitudes towards various products and services provided by various e-commerce organizations.

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