"Analyzing the Sustainability of E-commerce platform and consumer behaviour"

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ABSTRACT:

In years to come, we will look back at 2020 as the moment that changed everything. Very rarely any industry has shown such unprecedented and unforeseen growth that can be observed in the sectors of digital and e-commerce, which have performed impeccably amid the crisis of COVID-19. Earlier literature seems to lack more insights on sustainable drivers. Even with decelerating economic condition, COVID-19 has led to a rush in e-commerce activities and accelerated digital transformation. As lockdowns became the new normal, businesses and consumers increasingly "went digital", purchasing goods and services from online mode, raising E-commerce's share of global retail trade from 14% in 2019 to about 17% in 2020. The research has been conducted to study the paradigm shift in the consumer's behaviour towards e-commerce due to pandemics. This study shows rapid consumer movement towards e-commerce. How they embraced the situation resulting in Sustainability and Finance along with technology. The present study has been conducted among the consumers of India. The study is explorative as well as descriptive in nature. This study will help explore the consumer's behaviour towards online shopping. Objective is studying the changes in consumer behaviour towards e commerce pre and post covid. For the given study primary data has been used. The primary data was collected employing a self-constructed questionnaire. The data is collected from respondents located in Mumbai Suburbs. The collected data were analyzed using Excel.

INTRODUCTION:

In years to come, we will look back at 2020 as the moment that changed everything. Nowhere else has unprecedented and unforeseen growth occurred as in the digital and e-commerce sectors, which have boomed amid the COVID-19 crisis.

Amid slowing economic activity, COVID-19 has led to a surge in e-commerce and accelerated digital transformation.

As lockdowns became the new normal, businesses and consumers increasingly "went digital", providing and purchasing more goods and services online, raising e-commerce's share of global retail trade from 14% in 2019 to about 17% in 2020.

The research has been conducted in order to study the paradigm shift in the consumer's behavior towards e-commerce due to pandemic. The study shows that how rapidly consumer is moving towards e-commerce.

The present study has been conducted among the consumers of India. The study is explorative as well as descriptive in nature. This study will be helpful in exploring the consumer's behaviour towards online shopping. For the purpose of the given study primary has been used. The primary data was collected by means of a self-constructed questionnaire. The questionnaire contained a total of 8 items. The data is collected from 224 respondents. The collected data was analysed using Excel.

REVIEW OF LITERATURE:

Covid-19 impact: Consumers move more towards digital.
Aneesh Reddy. 14 April 2020.
Author summarised it up by stating the world was turning digital where entirely new order is being established. But the pace has suddenly increased exponentially. This New Order will require a paradigm shift in strategy from brands. Author concludes only the agile ones will survive the new change. Only the 'Truly Omnichannel' ones will prosper.

Covid-19 impact: While the impact of the lockdown on the Indian film industry at large is still being evaluated, we take a look at how slim production and related fields have suffered in India over the past month
Mimansa Shekhar (April 2020) Author concluded Covid-19 has impacted India's film industry which got affected and had to eventually prepare for a new normal through digital medium. Author concluded Covid-19 impacted the Indian film industry at large which is still being evaluated, we take a look at how slim production and related fields have suffered in India over the past month.

COVID-19 and its impact on Indian economy

Manjula Muthukrishnan (April 2020) Author in the article concluded that COVID-19 had its impact on Indian economy and The Banking Finance at large. Author mentioned that several international economies were becoming cognizant of the risk they face by being overly dependent on one market. Making the current situation a learning opportunity, CXOs of Indian multinationals, who recently attended the annual meeting of the Confederation of Indian Industry (CII), believe this is the time India can work on capturing potentially 40% of their competitor's market share by looking at indigenous production of goods, furthering the country's Make in India campaign.

Understanding COVID-19's Impact on Ecommerce and Online Shopping Behaviour

Victoria Fryer (2020) Author concluded that in future, retailers should expect regular disruption and needs to be prepared for the increasing swings in inventory due to shifts in consumer demand. Operation should be with the expectation that employment disruptions will happen considering the unpredictable nature of job market.

OBJECTIVES:

- To study the impact of Covid 19 on Online shopping pattern

- To study the sustainability of E-commerce platform during pre and post lockdown

- To study the impact in Mumbai Suburban area.

- To study the initiative taken by the platform to attract the consumer during Covid-19

HYPOTHESIS:

HO: There is no difference in the average monthly spending

H1: There is difference in the average monthly spending

HO: There is no difference in the variance of pre and during monthly spending

H1: during covid monthly spending has a higher variance as compared to pre covid monthly spending

HO: There is no difference in Pre-covid and post covid data spending and the population means same

H1: There is difference in Pre-covid and post covid spending and the population means are different

HO: Gender and factors that impact online shopping are independent during covid scenario

H1: Gender and factors that impact online shopping are dependent during covid scenario

LIMITATIONS OF THE STUDY:

This study will be helpful in exploring the consumer's behaviour towards online shopping but is limited to people in Mumbai Suburban city. The primary data was collected by means of a self-constructed questionnaire. The questionnaire contained a total of following items only i.e frequency of buying online, type of products bought online, E-Commerce industry impact on traditional offline shopping, frequency of online shopping before Covid-19, monthly spending for online shopping before and during covid, approximate monthly income earned during covid, monthly spending for online shopping during covid, shopping behaviour change after post covid lockdown. The data is collected from 224 respondents. It is limited to the factors and perception of those respondents only.

RESEARCH METHODOLOGY:

- The study is conducted to find out the impact of covid 19 on shopping behaviour and sustainability of E-Commerce platform during pre and post lockdown phase. The study will also give details about the consumer's behaviour towards online shopping during the phase.
- Primary Data are collected with the help of a structured questionnaire. Secondary Data are collected through various material published online viz., websites, journals, articles, etc.
- The sample size is 224 respondents.
- This study is based on Descriptive research. Simple Random sampling technique is used for this research study
- As customers search digitally to purchase something, a number of variables influence them. Price, trust, protection, ease, time, post sales and reduced offers have been described as key influence factors
- For this analysis used chi square, t-test, f-test, correlation and regression and descriptive analysis. Also applied these tests to analyse the paradigm shift of consumer behaviour towards E- commerce due to pandemic.

DATA ANALYSIS AND INTERPRETATION:

t-Test: Paired Two Sample for Means		What was your monthly spending for online shoppping before covid?	What is your monthly spending for online shoppping during covid?	
Mean		2258.62069	3879.310345	
Variance		3118226.601	8725985.222	
Observations		29	29	
Pearson Correlation		0.767892107		
Hypothesized Mean Difference		0		
df		28		
t Stat		-4.457816564		
P(T<=t) one-tail		6.09385E-05		
t Critical one-tail		1.701130934		
P(T<=t) two-tail		0.000121877		
t Critical two-tail		2.048407142		
The analysis:		As from the analysis we can see that that the value of P for the two tail test is less than 0.05 .		
		So we can reject the null hypothesis and conclude that there is a significant difference in pre and during average monthly spending.		
		Finally we can say that the mean of during average monthly spending is more than that of pre monthly spending .		
		Hence there is an increase in online monthly spending during covid.		

Monthly spending for online shopping
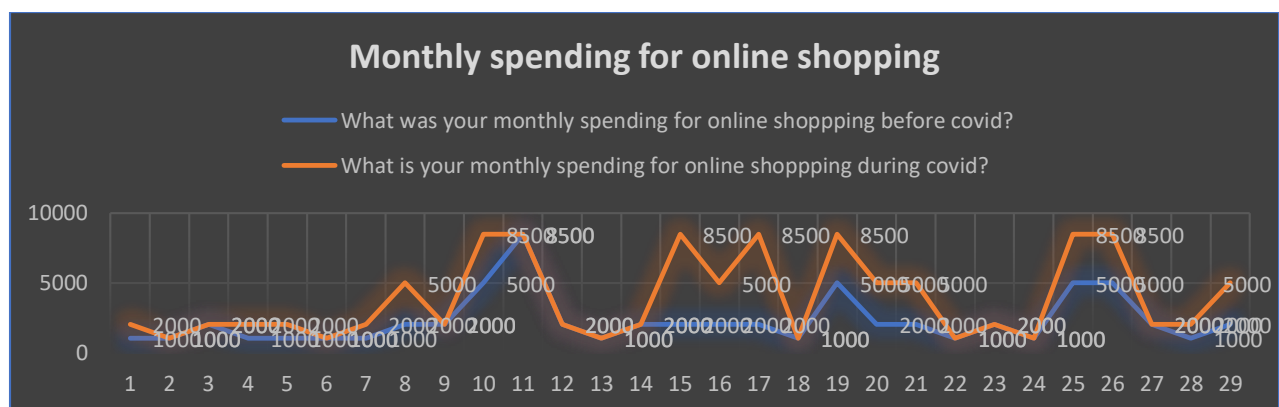
F-Test Two-Sample for Variances

	DURING COVID?	BEFORE COVID?
Mean	3690.58	2334.08
Variance	6626802.81	3812436.88
Observations	223	223
df	222	222
F	1.738	
P(F<=f) one-tail	0.0000217266947769986	
F Critical one-tail	1.2477	

Since P<0.05, we reject the null hypothesis and conclude that during covid monthly spending has a higher variance as compared to pre covid monthly spending

	Variance
Pre-COVID	**3812436.876**
Post-COVID	**6626802.812**

z-Test: Two Sample for Means

	Variable 1	*Variable 2*
Mean	2334.080717	3690.583
Known Variance	3812436.876	6626803
Observations	223	223
Hypothesized Mean Difference	0	
z	-6.269580931	
P(Z<=z) one-tail	1.81011E-10	
z Critical one-tail	1.644853627	
P(Z<=z) two-tail	3.62E-10	
z Critical two-tail	1.959963985	

Z-Test for 2 samples formula= $\dfrac{\bar{x}_1 - \bar{x}_2}{\sqrt{\dfrac{\sigma_1^2}{n_1} + \dfrac{\sigma_2^2}{n_2}}}$

As the Z value is less than -1.96 the Null hypothesis is rejected and alternate hypothesis is accepted

CHI SQUARE TEST

Observed (O)	Consumer Privacy	Payment Methods	Product Delivery	Product Infromation	Consumer Privacy	Grand Total
Female	6	14	43	20	29	112
Male	12	9	42	20	29	112
Grand Total	18	23	85	40	58	224

4. Calculate the expected frequencies with the formula mentioned.

Expected (E)	Consumer Privacy	Payment Methods	Product Delivery	Product Infromation	Consumer Privacy	Grand Total
Female	9	11.5	42.5	20	29	112
Male	9	11.5	42.5	20	29	112
Grand Total	18	23	85	40	58	224

5. Finally calculate the chi square value using the observed and expected frequencies with the help of the formula.

Chi Square (X^2)	Consumer Privacy	Payment Methods	Product Delivery	Product Infromation	Consumer Privacy	Grand Total
Female	1	0.5435	0.0059	0	0	1.5494
Male	1	0.5435	0.0059	0	0	1.5494
Grand Total	2	1.0870	0.0118	0	0	3.0987

6. Now we need to analyse the data using two approaches - Critical Value and p-value approach.

$X^2 > CV$	Reject H_0
$X^2 < CV$	Accept H_0

p-value < α	Reject H_0
p-value > α	Accept H_0

Significance value (α) = 0.05

7. Under CV approach, we first find the Degree of Freedom by applying the given formula.

| Degree of Freedom (df) |
|---|
| r-1 = 1 |
| c-1 = 4 |
| Thus, df = 1*4 = 4 |

Degree of Freedom = $(R - 1) \times (C - 1)$

8. Using the significance value and the df, we get the CV using the function =CHISQ.INV.RT()

Approach 1: Critical Value		
CV	9.4877	=CHISQ.INV.RT(0.05,4)

9. Under p-value approach, we use the function =CHISQ.TEST() and input the required arrays.

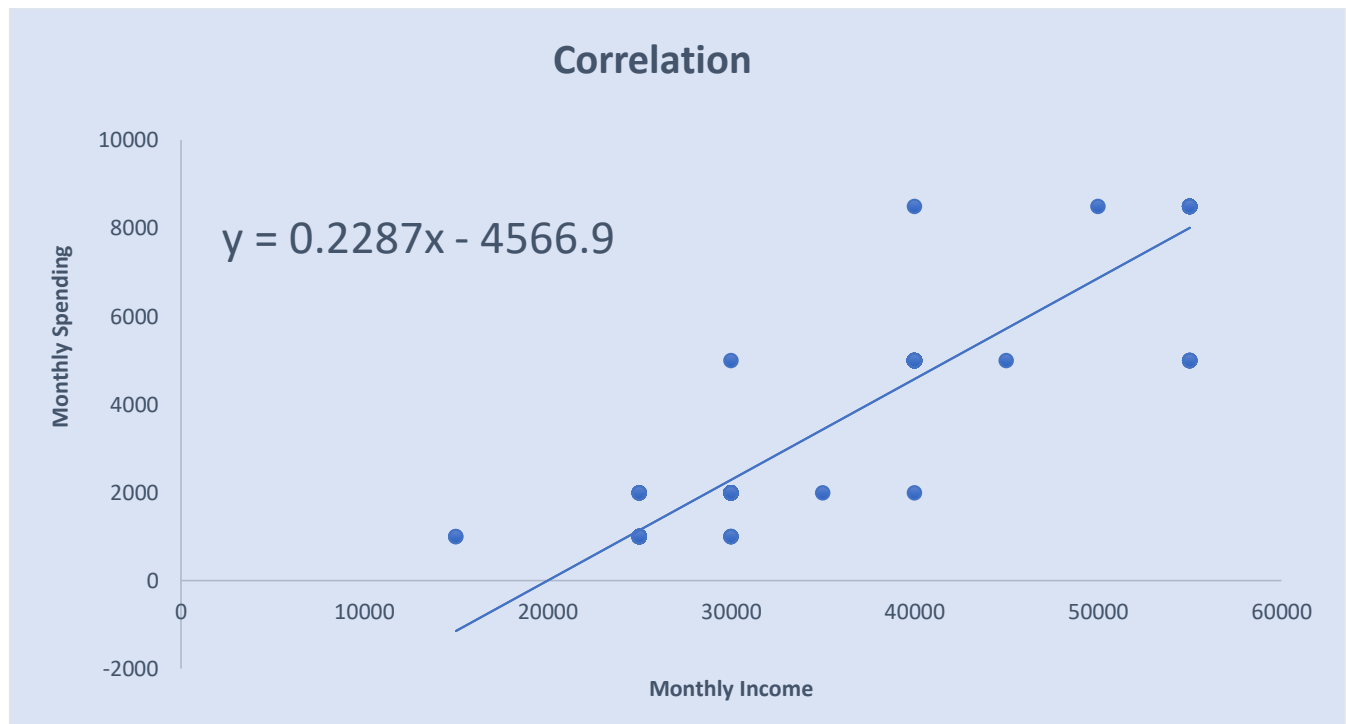| Approach 2: Probability value		
p-value	0.5414	=CHISQ.TEST(B14:F15,B21:F22)

10. Ultimately, we analyse both the values and decide whether Null Hypothesis is accepted or rejected.
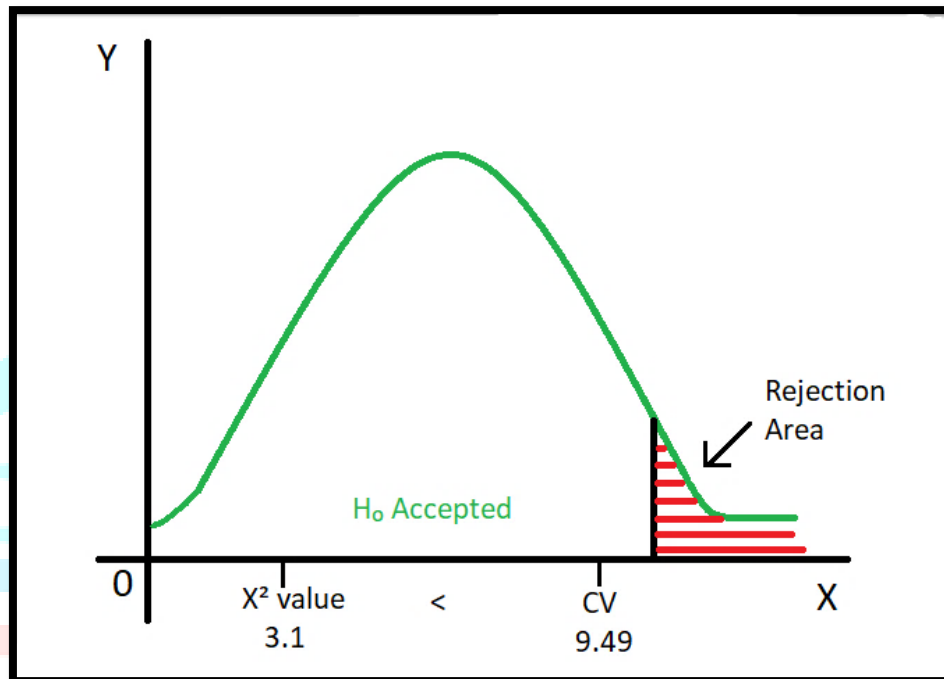
11. We state our conclusion regarding the consumers' behaviour.

$X^2 < CV$ and p-value $> \alpha$
We accept the Null Hypothesis and thus Gender and factors that impact online shopping are independent

Correlation

$y = 0.2287x - 4566.9$

(Scatter plot: X-axis "Monthly Income" ranging 0 to 60000; Y-axis "Monthly Spending" ranging -2000 to 10000)

CONCLUSION

As the world waits impatiently for an effective COVID-19 vaccine to be developed, nobody can reliably forecast when this crisis will end and life will be able to go back to the old and familiar normal again.

However, it looks like some of the effects that the pandemic has injected into our shopping habits will stay with us long after this virus has been eradicated.

Various factors impact customers' search and choice on digital platform when purchasing anything online. Key factors include price, trust, ease and offers.

For this analysis chi square, t test, f-test, correlation and regression and descriptive analysis have been used. These tests were applied to analyse the paradigm shift of consumer behaviour towards E-commerce due to pandemic. From these the following interpretations were drawn.

Chi Square: Through this we come to know that gender and factors impacting online shopping are independent.

T-Test: There is a significant increase in monthly spending on online shopping from pre Covid to during Covid.

F-Test: Through this we conclude that during covid monthly spending has a higher variance as compared to pre covid monthly spending.

Z-Test: There is a difference in monthly spending of the population pre covid and during covid and the population means are different.

Correlation and Regression: There is strong positive correlation between monthly income earned during covid and the spending done on online shopping.

Hence, it can be concluded that the consumer behaviour has shifted to e-commerce due to the pandemic.

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ANNEXURE:

1. Full name
2. Age
3. Gender
4. Has COVID-19 pandemic lockdown increased your frequency of buying online?
5. What type of products do you prefer to buy online ?
6. Due to which of the following factors do you rely on online shopping the most
7. Do you think E-Commerce industry is going to replace your traditional offline shopping of goods?
8. On a scale of 1-10, How frequently did you shop online before Covid-19?
9. What was your monthly spending for online shoppping before covid?
10. What was your approximate monthly income earned during covid?
11. What is your monthly spending for online shoppping during covid?
12. Will your shopping behaviour change again to traditional methods post covid lockdown?