

A STUDY ON IMPACT OF COVID-19 ON HOUSEHOLD INCOME AND EXPENDITURE

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Abstract

The objective of our paper is to recognize the consequence of COVID 19 on household finances i.e. effect of the pandemic on their income, expenditure pattern, method of payment, manner of buying. This paper also analyses how the income of respondents from different occupations and various sectors has been impacted due to measures taken during COVID 19. In this paper, we consider customer expenditure and increase of Covid-19, and consequent government-enforced lockdown in India. Primary data about change in income of individuals, change in pattern of expenditure before and after COVID 19 was collected. The data was collected using the random sampling method. The respondents belong to different age groups. They work in differing occupations such as salaried, self-employed, professional, etc. Their organizations are further categorized into distinct sectors such as Banking and Financial Services, Educational Institutes, Manufacturing industry, Government organization, IT Enabled services, legal advisory, medical practice and so on. Hence, we could conduct the study on the income of respondents belonging to those industries affected post COVID 19. There is a substantial association between measures taken to prevent COVID 19 and the expenditure pattern of individuals pre and post COVID 19

Key words: Household finances; Expenditure patterns; Impact; Covid-19

Introduction

The outbreak of COVID 19 has increased risk for human life. As the disease is highly infectious, the initiatives to deal with the spread comprises of important steps such as disassociate oneself from public gathering, self-isolation at home, closing of institutes and resources used by general public, constraints on transportability and even lockdown of the whole nation. The ramification of these steps taken can be alarming for economies around the world. It means the regular operations in the country must be stopped to reduce the fast spread of pandemic. The stoppage of all operations has resulted in anticipation of extended global recession.

Beginning of January 2020 after China witnessed the first death due to Covid, the coronavirus spread across globally and overshadowed the news titles contributing to a elementary change in the outlook with respect to health, social and political aspects, and an exceptional unfavorable effect on the present and future anticipation of family units, businesses and the macro-economy (Dimitris K. Chronopoulos, Marcel Lukas, John O.S. Wilson, 2020).

The first COVID-19 positive case in India was registered on 30th January 2020 (IndiaToday). The cases have increased since then regularly and substantially. The Government of India declared a three weeklong countrywide lockdown with the purpose of restricting the increase in the number of cases due to fast spread of this virus. The lockdown was imposed with effect from 25th March 2020. All educational institutions, offices, public places, tourist places, public utilities, religious places, all non-essential businesses, and services, including retail establishments were shut down during this period. All modes of commutation and travelling had also been stopped. This lockdown was further extended from April 15th, 2020 to May 03rd, 2020 and as the conditions could not become better the lockdown was stretched from 4th May, 2020 to 17th May, 2020 and then till 31st May after which the services were resumed in a phased manner.

As COVID-19 started to spread increase throughout India in March 2020, families across the nation were encountered with severe modifications in many facets. Enormous amount of businesses was shut down by administration rule. While the people adapted how they survived and strived in return to unpredictability

regarding how the time to come would be, they also immediately changed the manner and amount of expenditure. This study pursues to process transaction-type household data to support a rectified and more extensive insight of how households switched expenses just as the report the virus transmission.

All businesses and towns were broadly closed, with prediction of the deterioration in commercial movement beating all proceedings. Administrators at all positions of government and beyond a broad scope of establishments have made efforts to alleviate the financial damage on households and small organizations. Nevertheless, the pace at which the commercial displacement is arising has made it problematic for administrators to appropriately aim monetary provocation to households. Lastly, very less is recognized regarding how households behave in their expenditure to a pandemic and across a huge number of families and occupations. This study intends to end this disparity by applying data about individual expenditure and earnings to evaluate the repercussions of the COVID-19 outbreak on the expenditure manner of approximately 235 respondents from Indian cities.

COVID 19 impact on income

For this study, a literature review on socio-economic factors impacting household finances was conducted. The financial crunch in nation induced due to the economy coming to a standstill is appalling. Approximately 84 out every 100 Indian households are witnessing reduction in earnings from the time the lockdown started. The drop in earnings impacted population in the lower and middle sections of the earnings dispersion very critically (Knowledge @ Wharton, June 2020).

Household earnings are utilized here to attribute to the entire earnings of family members ('household' is as defined by shared home and services) from any source (Lydia D.Morris, 1984). Households in the middle-income groups are troubled immensely possibly because they are most probably reliant on sources of earnings that are strike because of the lockdown. The employees who are hugely effected because of lockdown steps are daily and salaried wage earners, accompanied by random workers and own-account workers. The households having permanent jobs, with the ability to perform official activities from their residence and maintain earnings.

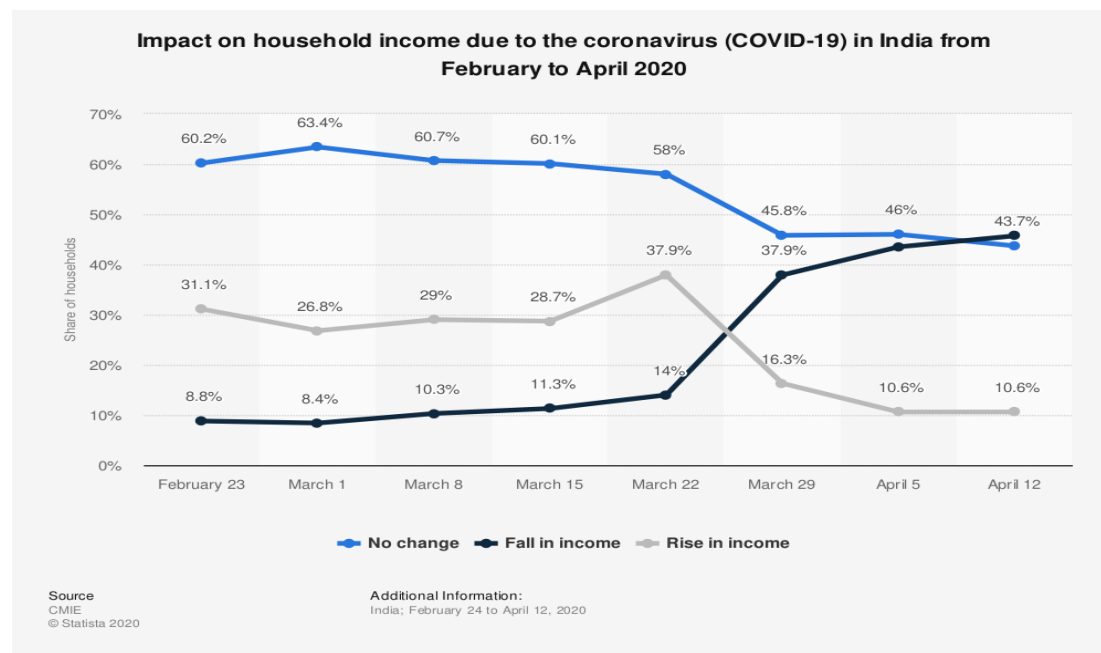
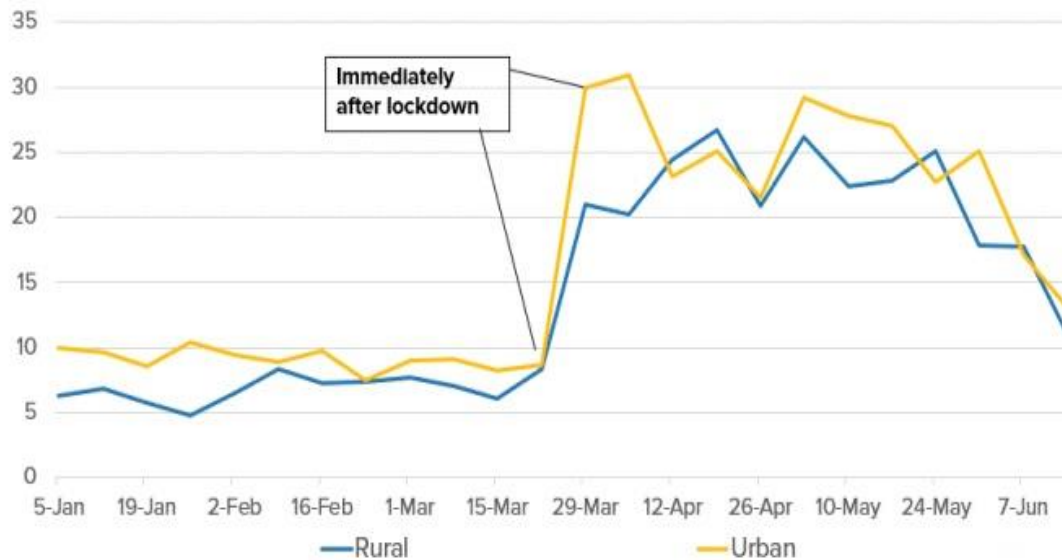


Figure 1: Impact of COVID-19 on household income

Rural and urban unemployment

Unemployment rate saw an immediate spike after India imposed the lockdown in late-March but data showed an improvement since early May.



Source: Centre for Monitoring Indian Economy

Figure 2: Unemployment rate

The people left with no work in both villages and towns / cities saw a steep increase towards the end of March 2020. It stayed comparatively high in April, ahead of exhibiting indication of recovery starting in May when a few activities began again.

Factors influencing household expenditure:

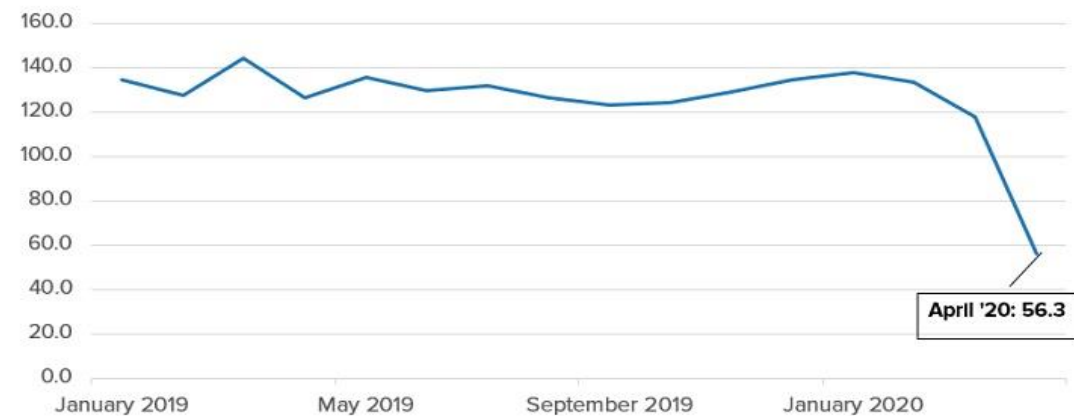
A study on household expenditure method has evolved due to the influence of household opinions and actions on commercial progress and policy devising objectives (Deaton, Ruiz-Castillo & Thomas, 1980). Innumerable research commenced on developed countries adopt yearly earning as an alternate for a family's financial condition. Nevertheless, household expenditure can be a superior estimation of commercial situation, particularly in developing nations where yearly earning is unpredictable and irregular (T.J. Sekhampu, F. Niyimbanira, 2013). Some studies examine the influence of both earnings and literacy on household physical and mental wellness spending (Himanshu Sekhar Rout, 2008). Consumers with high earnings inclined to act somewhat likewise in their manner of expenditure attitude to consumers with lesser earnings. This is broadly persistent with study by Kaplan, Violante and Weidner (2014).

Sector-wise or industry-wise impact of lockdown

The nation's lockdown started during March end and was afterwards prolonged several times. Rigid constraints stopped majority economic activities and leading to millions of people, majority of them were the workers who earn wages on a daily basis, to lose their jobs and the main source of income.

Index of Industrial Production

Data showed a sharp contraction in industrial output in April as most of the industrial sector remained shut due to the national lockdown



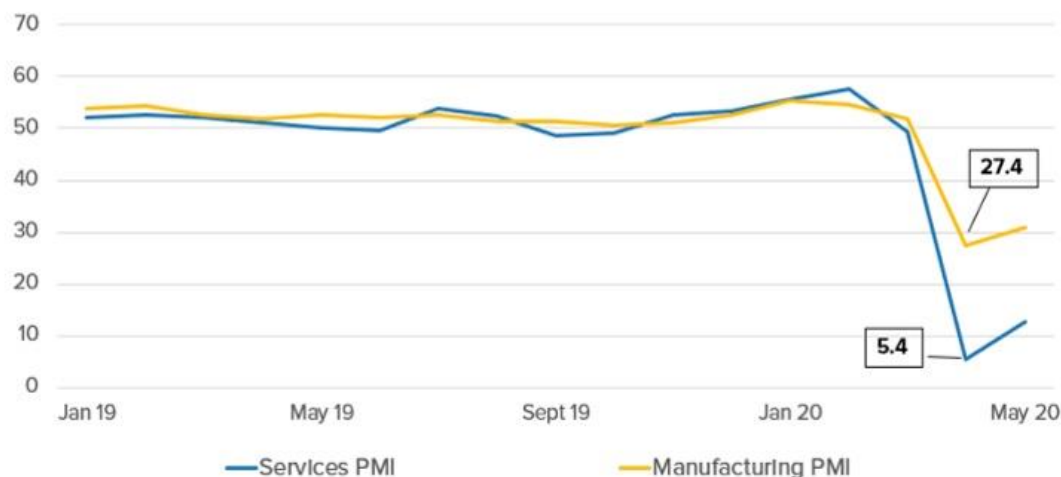
Source: National Statistics Office, Government of India

Figure 3: Industrial Production

India's industrialized manufacturing declined strongly in April when the nation moved into lockdown and nearly all manufacturing plants had to be halted. The index contracted by 55.5% in comparison to previous year during the same period. This involves sectors such as mining, manufacturing, and electricity. Manufacturing of consumption goods witnessed a steep drop for the month (CNBC, June 2020).

India's manufacturing and services sectors

The service's sector recorded its largest month on month contraction ever in business activity and new orders in April due to lockdown restrictions



Source: IHS/Markit monthly data

Figure 4: Purchasing Manager's Index of Manufacturing and Service sectors

The services industry fell apart in April as nearly all industries were closed due to the lockdown. Business movements in the services sector too dropped severely in May as the pandemic interrupted activities, diminished user presence in shops resulted into decrease in demand (CNBC, June 2020).

The deficit incurred by imposing a lockdown in the nation was assessed at 26 billion U.S. dollars and a considerable reduction in economic growth predicted in the quarter ending of June 2020 as well (statista, April 2020).

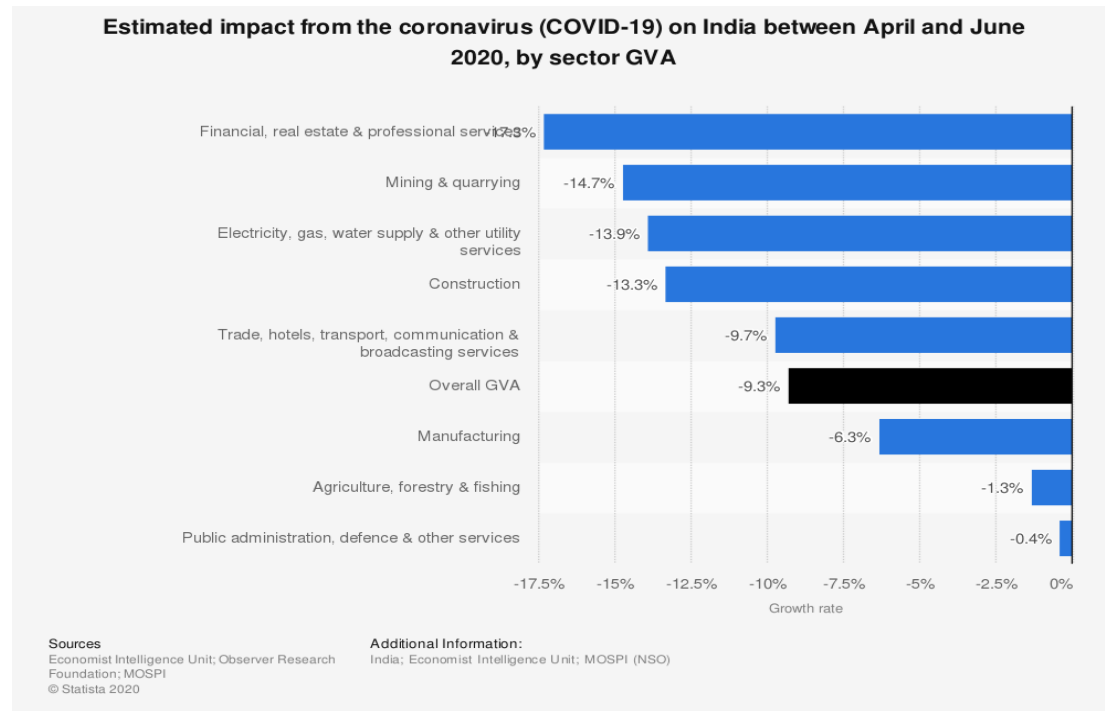


Figure 5: Sector-wise impact of COVID 19

Inclination towards health food during COVID 19

The worldwide natural food business is observing a booming advancement of 25-100% as customers carry on identifying immunity as armament against coronavirus. Whole Foods market, the world's biggest natural food merchant, due to a surge in demand began to put restrictions for the consumers to perform online shopping. India also faced increase in demand up to 100% for some natural food administrators (Pure&ecoindia, June 2020).

An Indian association developing itself in preparing protein bread and cookies witnessed online buying increase by 15% in mid-March, with the firm assuming customers are preferring more healthy food alternatives as COVID-19 persists to increase. According to India's first high protein bread maker, The Health Factory, customers have also begun to "eat right" (nutraingredients-asia.com, 2020)

Internet consumption during COVID 19

The lockdown, amidst changing a lot of things all around us, made our Internet connection umbilical. It became a major source of Entertainment, our connection to the outside world, collaboration tool to get jobs done and our information place for learning and acquiring new skills. Internet usage in India witnessed an significant increase during the pandemic and the subsequent strict measures in place. In order to maintain the continued business, users were forced to explore new options to maintain life especially during the new normal of social distancing and the restricted workforce.

The biggest beneficiary during the current lockdown is Telecom sector. "The COVID-19 driven lockdown has come as a Godsend to the fixed broadband sector, which has been stagnating with subscribers at 18-19 million since 2016 because of the intense price war in the mobile telephony space. But now, subscriptions to fixed broadband, especially in the urban areas, have surged because millions are working from home," says a CRISIL report. The telecom company - Vodafone which has its in more than 65 countries, in few markets saw more than 50% increase in the data transmission (Business Today, July 2020)

Currently India is home to 18 million broadband connections that saw as high as 18 GB data per day consumed during lockdown. Video conferencing services saw record downloads, e-commerce players witnessed huge demand for groceries leading them to pivot essentials to focus business, and streaming platforms received unprecedented audiences and time spent (Dataquest, July 2020).

Buying behavior during COVID 19

E-commerce has witnessed an increased momentum due to the critical situation of COVID 19 and the subsequent lockdowns. Some groups will witness a momentous and last switch towards online sales avenues while for other customers will go back to usual purchasing patterns,"YouGov India General Manager Deepa Bhatia said. The aptitude to shift online for buying seems to be robust amidst tier I cities (51 per cent) than tier II and III population (41 per cent each). Buying for a few essentials like grocery and food and dining gained a lot of push via web sales between the lockdown (The Times of India, 2020). BigBasket and Grofers, India's largest online grocers, have closely made twice as large the number of day to day deliveries in comparison with March, as more customers bump into the internet to shop for basic necessities during the continuing lockdown. The rush has appeared in spite of closed storage places in the beginning of the lockdown that started on March 25 to prevent the speedily transmission of the Covid-19 (ET tech, 2020).

Methodology:

A well-structured questionnaire was framed and circulated among 250 households with the use of random sampling technique. The respondents, both male and female, were a group of respondents between age group of 21 to 70. The respondents belong to tier 1 and tier 2 cities in India i.e. Mumbai, Pune and Indore. The respondents pertained to different occupations such as salaried, self-employed having business or profession. The industries to which their line of work belongs are Banking and Financial Services, IT, Manufacturing, Government organization, Educational institute, medical practice, legal advisory services, Telecom and so on. The respondents were asked questions about change in income post COVID 19, expenditure pattern pre and post COVID 19 i.e. major household expenses incurred, mode of buying basic utilities and grocery before and after COVID 19 i.e. online and in-store.

The study of impact of COVID 19 on household income and expenses was conducted using primary data. The data was collected using random sampling method. The respondents both male and female, were a group of households between the age group of 21 and 70.

The questionnaire was circulated among 250 individuals, out of which 239 responded. The research questions were framed to determine the age, gender, occupation of respondents, sector, impact of COVID 19 on their income, change in internet or bandwidth expenses due to COVID 19 lockdown, change in expenditure on health foods during COVID 19, manner of buying essentials during lockdown i.e. online or in-store.

The respondents belong to tier 1 and tier 2 cities in India i.e. Mumbai, Pune and Indore. The respondents were employed in different industries such as banking and financial services, educational institutes, manufacturing, medical profession, consultancy, government organization, IT, etc. The reason behind collecting data from people belonging to different industries was to find the association between the occupation and impact of COVID 19 on income and expenditure of respondents. Statistical tests were performed to find the association between age, gender, occupation and sector and income, health foods expenditure, internet expenditure. Conclusions were drawn after performing statistical tests such as chi-square and one-way ANOVA.

Hypothesis:

The null hypotheses are as follows:

1. There is no association between gender and change in income during COVID 19.
2. There is no correlation between age and amount spent on health foods pre and post COVID 19.
3. There is no association between occupation and percentage change in expenditure on internet or bandwidth.
4. There is no association between employment sector or industry of respondent and impact on monthly income during COVID 19.

Testing Hypothesis 1: Association between gender and change in monthly income of respondents during COVID 19

The respondents were asked how their monthly income was impacted during COVID 19. They were given three options which are 'increased', 'decreased' and 'remained similar' which are dependent variables. To understand the association between gender and change in income of respondents, we perform chi-square test. The conclusions of the test as mentioned below in Table 1.

Table 1: Results of statistical test to find association between gender and impact on monthly income pre and post COVID-19

Change in income * Gender Crosstabulation

Count

			Gender		Total
			Female	Male	
Change in income	Decreased		39	63	102
	Remained same		61	76	137
Total			100	139	239

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.951	1	.330
Likelihood Ratio	.953	1	.329
N of Valid Cases	239		

The p value i.e. the significance value of 2 tailed test is more than .05 which indicates that null hypothesis cannot be rejected. Thus, it can be determined that there is no association between gender and impact on monthly income of respondents during COVID 19.

Testing Hypothesis 2: Association between age and change in amount spent on health food before and during COVID 19

The respondents interviewed belonged to age group 21 to 70. They respondents were asked regarding the increase in expenditure on health food (natural foods, organic foods, whole foods). Out of 239, 133 respondents notified that they have increased expenditure in health food. The information about percentage increase in

amount spent on health food during COVID 19 is provided by respondents. To check the association between age and percentage change in expenditure on health food, we have conducted one-way ANOVA. The outcomes of the test are provided in table 2 below.

Table 2: Results of statistical test to find association between age and change in amount of expenditure on health food during COVID 19.

Descriptives								
Change in amount spent on health foods								
	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
21-30	94	0.16	0.19	0.02	0.12	0.2	0	0.75
31-40	104	0.18	0.23	0.02	0.14	0.23	0	1.5
41-50	21	0.16	0.21	0.05	0.06	0.26	0	0.75
51-60	10	0.26	0.26	0.08	0.07	0.44	0	0.6
61-70	10	0.16	0.19	0.06	0.02	0.3	0	0.5
Total	239	0.17	0.21	0.01	0.15	0.2	0	1.5

ANOVA					
Change in amount spent on health foods					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	0.1	4	0.02	0.55	0.7
Within Groups	10.49	234	0.04		
Total	10.59	238			

The p value is more than .05 that means null hypothesis cannot be rejected. This means there is no association between age and change in amount spent on health foods during COVID 19.

Testing Hypothesis 3: Association between occupation and percentage change in expenditure on internet or bandwidth during COVID 19

The main occupation of the respondents was salaried, profession or business. Further their basic occupation was categorized into various sectors or industries. Out of 239, 98 respondents notified that their internet expenses have increased during COVID 19. To understand the association between occupation and percentage change in

amount spent on internet during COVID 19, one-way ANOVA has been conducted. The result is given in Table 3 below.

Table 3: ANOVA for association between occupation and percentage increase in expenditure on internet during COVID 19

Descriptives

Increase in Internet Expenses during COVID 19

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Salaries	157	.1862	.27528	.02197	.1428	.2296	.00	1.50
Retired	10	.0500	.10801	.03416	-.0273	.1273	.00	.30
Profession	51	.1853	.41549	.05818	.0684	.3022	.00	2.00
Business	21	.2119	.30899	.06743	.0713	.3526	.00	1.10
Total	239	.1826	.30859	.01996	.1432	.2219	.00	2.00

ANOVA

Increase in Internet Expenses during COVID 19

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.196	3	.065	.684	.563
Within Groups	22.468	235	.096		
Total	22.664	238			

The p value is more than 0.05 that means the null hypothesis cannot be rejected and that there is no association between occupation of respondents and percentage increase in expenditure on internet and bandwidth during COVID 19.

Testing Hypothesis 4: Association between employment sector or industry of respondent and impact on monthly income during COVID 19.

The main occupation of respondents interviewed is salaried, business or profession. The prominent sector to which their profession of organization pertained to are banking and financial services, Educational institutes, IT, Manufacturing, Government organization, CA, consultancy, Medical practice, telecom, legal advisor, pharmaceuticals, digital marketing.

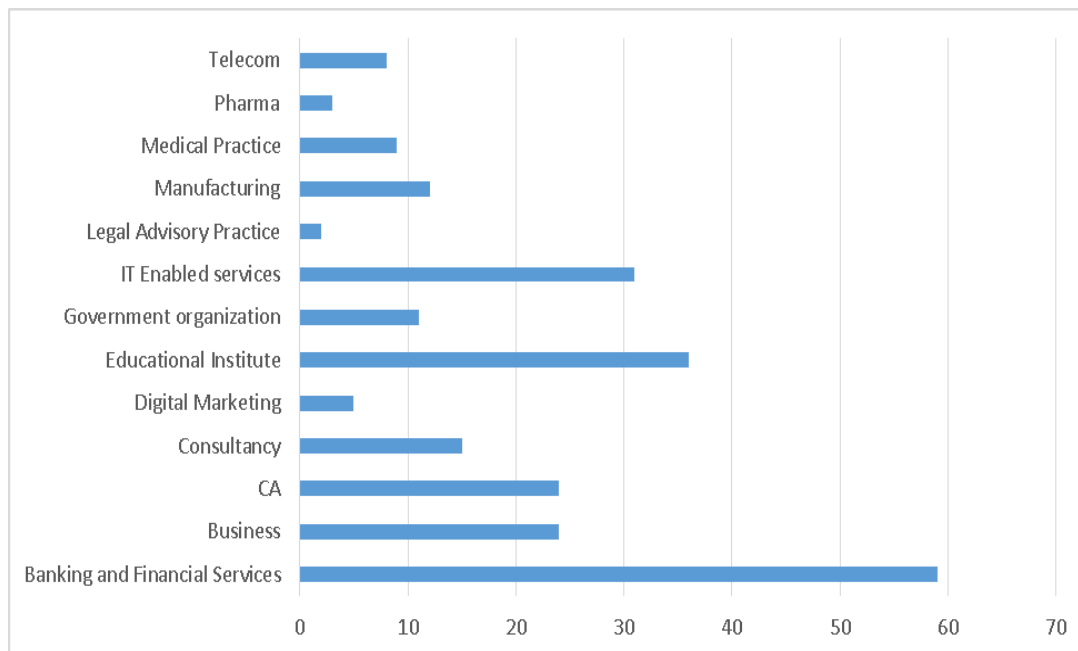


Figure 6: Number of respondents from different industries

To understand the association between these industries and impact on monthly income of respondents, chi-square test is used. The conclusions of the test are shown in Table 4.

Table 4: Association between sector or industry of respondents with impact on income during COVID 19.

Sector * Change in income Crosstabulation

Count

		Change in income		Total
		Decreased	Remained same	
Sector	Banking and Financial Services	23	36	59
	Business	18	6	24
	CA	13	11	24
	Consultancy	5	10	15
	Digital Marketing	3	2	5
	Educational Institute	19	17	36
	Government organization	2	9	11
	IT Enabled services	6	25	31
	Legal Advisory Practice	1	1	2

	Manufacturing	5	7	12
	Medical Practice	4	5	9
	Pharma	0	3	3
	Telecom	3	5	8
	Total	102	137	239

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	28.335	13	.008
Likelihood Ratio	30.874	13	.004
N of Valid Cases	239		

The p value is less than 0.05, that means the null hypothesis is not accepted. There is association between employment sector or industry of respondents and impact on monthly income during COVID 19.

Research Findings:

The test conducted to find out the result of first hypothesis infers that the gender of users participated in survey and change in their income post COVID19 is completely unrelated. 43% of the respondents stated that their income went down after COVID 19 and 57% of the respondents said that it remained same. As discussed in the literature review, 84% of the Indian households have seen decrease in income since the lockdown, and there was no earlier study relating to gender and income changes.

The second hypothesis results indicate that there is no association between age and increase in amount spent on health foods during COVID 19. The respondents though indicated that there is an increase in the amount of expenditure on health foods such as organic foods, natural foods, etc. The literature collected also shows that the demand has also surged for Whole Foods, natural foods and protein breads and cookies.

During the lockdown, internet connection became the major source of work and entertainment for majority population. Due to increased number of video conferences, downloads and more reliance on online entertainment, there was an acceleration in broadband subscriptions. Per day data consumption during lockdown also came to 18 GB. In this study, 40% of the respondents said that their internet expenses have gone up during lockdown. But there is no association between occupation and increase in internet expenses during COVID 19.

The test conducted for fourth hypothesis indicates that there is an association between employment sector of respondents and change in their income post COVID 19. 41% of the respondents reported that their monthly income has decreased post COVID 19. Figure 7 shows the number of respondents employed in different industries reporting decrease in income post COVID 19.

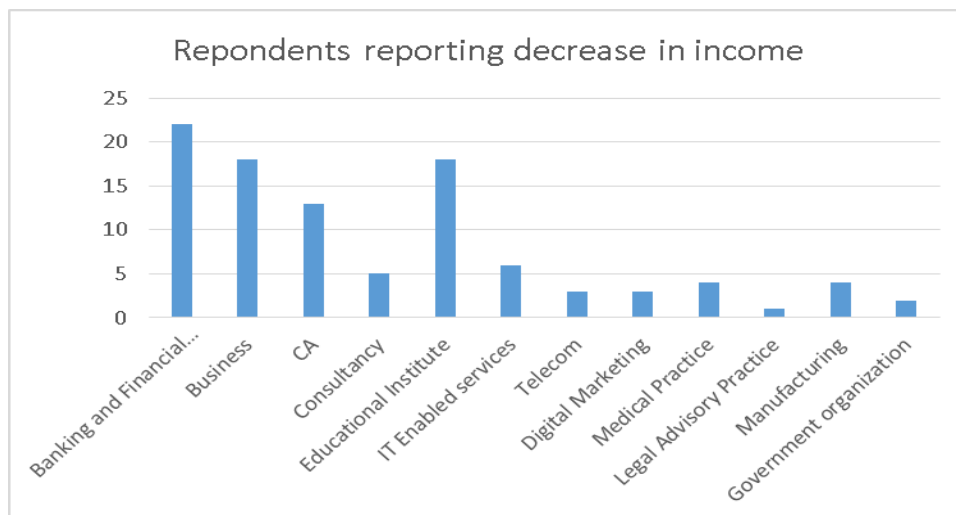
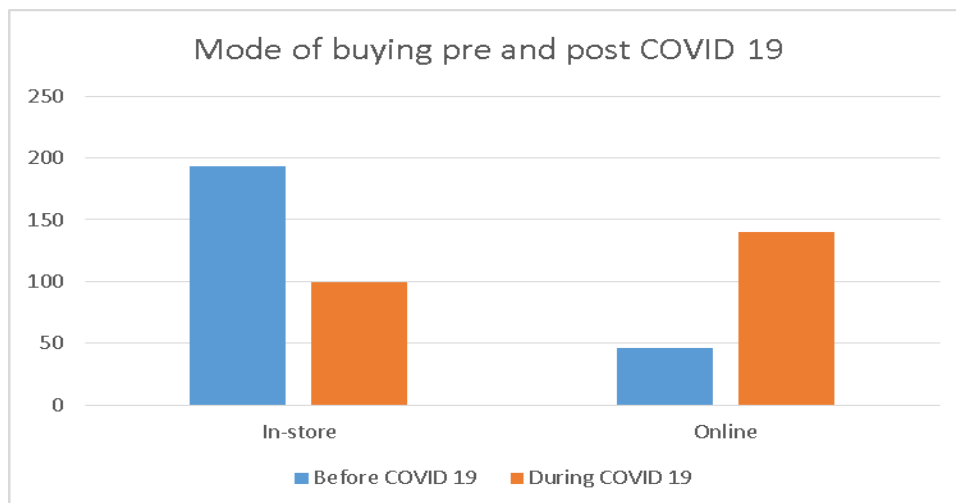


Figure 7: Sector wise decrease in income of respondents

The figure indicates that respondents working in banking and financial services sector have been impacted the most. Respondents employed in Educational institutes and those who are self-employed have also dealt with the same situation. The literature collected provides information that manufacturing, and service industry have witnessed sharpest decline in revenue due to lockdown.

The respondents were asked about their preference regarding mode of buying utilities and groceries i.e. online and offline pre and post COVID 19. Figure 8 displays the preference of 239 respondents towards manner of shopping.

Figure 8: Online and offline expenses pre and post COVID 19



The majority expenses of respondents before COVID 19 were on travelling, entertainment, grocery and apparel shopping. As per the responses received in questionnaire, majority expenses incurred during COVID 19 are online entertainment and online grocery shopping. The population from Tier I cities have more inclination towards online shopping specially for grocery, food and dining.

Discussion:

The primary aim of conducting the study is to understand the influence of COVID 19 on income of people employed in various industries and their regular household expenditure. To conduct this research, a structured

questionnaire was distributed among various households belonging to Tier I and Tier II cities. The quantitative data obtained in the form of questionnaire was further analyzed by framing various hypotheses and the results were obtained after applying various statistical tests to these hypotheses.

The respondents are employed in diversified industries such as banking and financial services, educational institutions, manufacturing, telecom, IT, consultancy and so on. They have disclosed that their income has been impacted due to COVID 19 measures taken by government. Respondents have also acknowledged the fact that their internet expenses, expenses towards health foods have also escalated.

Previously, research has been conducted about the COVID 19 impact on stock prices, impact on Indian economy, impact on oil prices, gold, cryptocurrencies, geopolitical risk. Study has also been conducted on the effect of COVID 19 on income of households in India (Chicago Booth).

In extension to the literature available on household finances during an epidemic, factors influencing household expenditure, this research paper delivers further outcomes associated with influence of COVID 19 on household income, amount of expenditure and manner of expenditure. It also discusses about the impact on remuneration of people engaged in various industries.

Further research can be conducted on measures taken by households towards cutting down expenses and increase the savings in order to deal with this difficult situation.

Conclusion:

The repercussions of COVID 19 have shown serious results. Due to the steps taken by government to control the transmission of coronavirus like social distancing and putting a halt to all economic activities, income of population has been impacted. Due to work from home and staying at home during lockdown, internet expenses have also been impacted. People have also become immunity conscious and have started spending more on health foods. Population in Tier I and Tier II cities has also shifted their preferred mode of shopping to online from in-store shopping. As the restaurants were closed and majority population started cooking at home, the demand for ready-to-cook food also increased during COVID 19.

Limitations:

1. The research is based on random sampling method instead of consensus method.

The respondents are from Tier I and Tier II cities. Hence, the findings may not give overall view of people's perceptions and preferences across all regions in India

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