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Assessing the Impact of COVID-19 Pandemic on the Grocery Shopping Behaviors of Indian Customer

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Abstract

The Covid-19 pandemic, the lockdown, and social distancing mandates have disrupted consumer buying and shopping habits. The immediate response to the Covid-19 spread and lockdown was the hoarding demand generated by the household for consumer goods. The study has assessed the impact of Covid-19 on the Grocery Shopping behavior of Indian consumers. The result shows that Rice, Cooking Oil, Sugar, hand wash, tea powder, vegetables, flour, fruits, Cereals, Pulses, and biscuits were the higher preferred items for hoarding. Two-step cluster analysis re-groups the respondents into low hoarding tendency, medium hoarding, and high hoarding tendency. Hoarding tendency is associated with the level of urbanization and income of the respondents but is independent of Covid-19 infection in the family. Furthermore, consumers shopped less often and visited shopping malls less frequently in favor of buying from local sellers. Further Covid-19 Pandemic induced the adoption of digital payment modes by the consumer. The study has important implications regarding adopting e-commerce and e-payments for retailers and surfaced research opportunities for social scientists to monitor the changes in consumer buying behaviour after the pandemic.

Keywords: Covid-19, Change in Consumer Buying Behaviour, Hoarding tendency, Shopping frequency, Shopping destination & Online payment.

Introduction

The global community faced a new and unique challenge with the Covid-19 pandemic. China was the first nation to see the massive spread of a new Coronavirus. (Zhu et al., 2020) Moreover, the virus quickly began to spread around the world. The WHO labeled the coronavirus outbreak as a "pandemic" on March 11, 2020 (WHO, 2020). In its early phase, the form and nature of the virus were a mystery; the only thing which was recognized was that the virus spread through human contact (Morens & Fauci, 2020). Medical practitioners were also unknown of the course of medication; there was no sign of immediate vaccine availability. Without proven medical treatment, the challenge was to curb the spread of the highly contagious virus Covid-19 (Sharma et al., 2020).

To control the spread of the virus, China used the weapon of lockdown. As China was the first country to tackle the Covid-19 situation rest of the world followed Chine's path to control the spread of the virus by declaring country-wide lockdowns and imposing strict social distancing norms (Kaplan Juliana, 2020). Due to restrictions on cross-border travel and manufacturing, the global supply chain was disrupted. (Magableh Ghazim, 2021). The first Covid-19 infection was reported in India on January 27, 2020(Andrews et al., 2020). However, after a month's lag, the number of cases started to surge, affecting more states and union territories by the beginning of March(Siddiqui et al., 2020). On March 22, Janata Curfew was called in the country, which was further extended into the nationwide lockdown. On March 24, 2020, the Prime Minister of India declared a 21-days lockdown to safeguard the country's 1.3 billion people from infection. The decision was made on March 22, 2020, after a 14-hour voluntary public curfew known as the Janata (people) Curfew (The Economic Times, 2020).

The outbreak of the pandemic and subsequent lockdown imposed in the country was a sudden shock to the citizen of the country. The lockdown had an omnipresent impact across sectors of the economy. The immediate effect was uncertainties, mass unemployment, and recession. In addition, the economic downturn made Indians apprehensive about losing their employment (Aneja & Ahuja, 2021; Ganesh, 2020). Halt on all production activities most adversely impacted sections working in the formal and informal sectors of the economy(Chaudhary et al., 2020). In 2019–2020, India had 86.1 million salaried employees overall. (Vyas, 2020). This number decreased to 68.4 million in April 2020. It increased to 73.8 million by August 2020, but it was still 12.7 million less than in February 2020. (Ramakumar et al., 2021; Vyas, 2020). Products and services' output decreased as temporary industries and offices closed. Supply networks suffered significant disruptions. A concurrent contraction occurred on the demand side, independent of the supply shock. When economic units closed down, people lost their employment and salaries, and aggregate effective demand decreased. (Ramakumar et al., 2021).

The Covid-19 Pandemic, the lockdown, and social distancing mandates have disrupted consumer buying and shopping habits (Sheth, 2020). Consumers embraced newer technology that makes work, study, and consumption more convenient as they were forced to live under house arrest for an extended period (Sheth, 2020). The lockdown imposed on the economy brought a sudden change in consumer behavior. The change is mainly attributed to three

reasons. Firstly, the constraints imposed by the government on the social movement. Henceforth it was a government-imposed behavioral change. As there were movement restrictions, households preferred to select the most convenient shops for purchasing, and proximity played a significant for shopping destinations. Hence, impulse buying shifted to planned buying. Secondly, it was an outcome of the economic consequences of the lockdown that attributed to a sudden fall in income and uncertainties. As a result, customers were stockpiling up necessities for everyday usage.

The usual trend is to delay the acquisition and use of discretionary goods and services during times of crisis and uncertainty. Consumers classified goods into essential and non-essential items; preference was given to only essentials for shopping, and there was less demand for lifestyle products (Enormous, 2020). Thirdly the health consciousness, wherein individuals take safety measures to reduce the perceived risk during pandemic situations. The pandemic triggered health consciousness as one of the crucial influencers in making the purchasing decision. Mask and sanitizer were the new products added to the consumer purchasing basket.

Furthermore, with immunity booster medicines, households traditionally tried Ayurvedic Herbs and Spices to safeguard against infection. Technology adaptation was another positive change observed in the pandemic. To avoid infection, consumers shifted to an online model of ordering and payment. Small vendors facilitated ordering using SMS and WhatsApp messages. UPI-based payment apps surged as consumers intended to conduct contactless transactions. Whereas out of sheer necessity, the education sector shifted to an online teaching-learning model.

A McKinsey and Company study claims, "The contagious, isolated, and unstable economic climate have altered consumer behavior." These new consumer behaviors span all spheres of life, including how people work, learn, communicate, travel, shop and consume, live at home, entertain themselves, and deal with health and well-being (Sajal Kohli et al., 2020). A PWC survey, Covid-19 quickly changed consumer behavior, leading people to purchase more non-perishable goods, cleaning products, frozen meals, and other necessities while also taking advantage of internet shopping(Kate Ploy, 2020).

The present paper has empirically analyzed the changes in consumer behavior, its nature dimension, and its magnitude. The paper is mainly divided into the following parts.

1. The research question answered in the paper is mainly classified into the following parts.
    a. **Understanding the hoarding tendency**: Under the study item-wise, consumer preference for hoarding was evaluated. Further, using a two-step cluster analysis, the respondents were classified into different profiles based on their item hoarding behavior. Finally, an association between item hoarding preference and the demographics of the respondents was analyzed.
    b. **Change in consumer Purchasing Pattern:** Change in consumer purchasing pattern was evaluated for Cereals & Pulses and Groceries. In addition, the change was evaluated regarding the frequency of purchasing, shopping destination, and mode of payment method.

Review of Literature

The impact of Covid-19 on consumer buying behavior was a thrust area for researchers. As a result, numerous studies have been conducted to assess the impact of Covid-19 on consumer behavior. The research on Hoarding Tendency, Changes in Shopping frequency, Changing in Shopping destination, and Changes in Payment methods is reviewed.

Hoarding:

The general public has experienced unprecedented levels of worry and dreads as a consequence of the Covid-19 pandemic (Islam et al., 2021; Xiong et al., 2020). As the Covid-19 pandemic spreads, people began hoarding supplies, including food, masks, toilet paper, and disinfectants (Laguna et al., 2020; Sim et al., 2020). It was a panic-buying outcome of anxiety, fear, and agitation. Panic buying is "a circumstance in which many individuals immediately purchase as much food and fuel as they can out of fear for the worse" (Cambridge Dictionary, 2022). The studies have identified the Covid-19 pandemic panic buying infused by numerous factors. Better knowledge of the Covid-19 pandemic increases vigilance toward the Covid-19 pandemic, and a stronger external health locus of control enhances Covid-19 -induced hoarding intention (Syahrivar et al., 2021). Further several psychological factors such as scarcity cues (e.g., loss of income), distress (e.g., depression), and neuroticism facilitated over-purchasing(Bentall Id et al., 2021). A snow-balling effect stimulated the Panic Buying behavior, as a small group of customers, out of fear, engage in panic buying; it spreads to other customers, enhanced by extensive social media sharing of pictures and videos of bare shelves in shops(Arafat et al., 2020; Taylor, 2021). Additionally, the news reporting analysis revealed that panic purchasing is influenced by media coverage (Yasir Arafat et al., 2020)

Psychopathic personality traits also motivate selfish over-purchasing (Taylor, 2021). Health belief model dimensions reveal perceived susceptibility and severity of contracting Covid-19, outcome expectation, i.e., the positive utility they place on panic buying, cues to action, and perceived in protecting themselves against Covid-19 influence on panic buying, and further partially mediated by the consumers' perceived scarcity of products(Chua et al., 2021). It was discovered that a broad range of variables impacted Covid-19 pandemic panic purchasing behavior, including primary crisis/disease-related, secondary psychological, informational, and socio-political, and third supply chain-related (Rajkumar & Yasir Arafat, 2021).

Further, media report analysis reveals that economic factors such as scarcity, increased demand, the importance of the product, and anticipation of price hikes (Bryan Lufkin, 2020) contributed to hoarding behavior. Other factors were a rumor, psychological factors (safety-seeking behavior, uncertainty, anxiety reduction, and taking control), social learning, lack of trust, government action, and experience were also responsible for panic buying(Arafat et al., 2020).

Noteworthy, Panic purchasing and hoarding were common human behaviors during times of Covid-19 crises across all economic classes, including low-income people (Yoshizaki et al., 2020). Furthermore, the population across cultures and national boundaries has shown a panic

purchasing tendency at each step of the Covid-19 pandemic. India's fast-moving consumer goods companies are under pressure to raise output to satisfy demand in the Covid-19 pandemic (Kaur & Malik, 2020). The perceived threat of Covid-19, high intolerance of uncertainty, and a great extent of information gathering about Covid-19 induced the reduction in purchasing frequency and contributed to increased purchasing quantity(Schmidt et al., 2021). Food products have the highest level of shopping expenditures and grow within the commodities assessed for the developed economy(Rossolov et al., 2022).

Frequency of Purchase:

According to Nielsen research, shoppers decreased their frequency of visits to physical shops when Covid-19 happened in March 2020 (Janssen et al., 2021), reduced their occasions of out-of-home consumption bought more frequently from online shopping channels(Nguyen et al., 2021; Pham et al., 2020). The study conducted by McKinsey and Company further reinforced consumers' reduction in shopping frequency (Sajal Kohli et al., 2020). Instead of making many trips to the store, the customer sought to make all of their purchases in one trip, increasing the volume and decreasing the diversity of their purchases (Vázquez-Martínez et al., 2021).

The reduction in the frequency of purchases is attributed to multiple reasons, including high levels of a perceived threat of Covid-19. Furthermore, a higher frequency of information gathering (media exposure) was positively associated with higher Perceived Threat. Lowering the frequency of shopping is attributed to the perception of an increased risk of Covid-19 infection while shopping and more items purchased during each visit (Schmidt et al., 2021). Further, reduction in shopping frequency is associated with gender, wherein women reduced their shopping visits. Level of education also contributed to lowering the shopping frequency; comparatively, higher-educated individual reduced their shopping visits more than those lesser educated(Schmidt et al., 2021). The comparative study of different nations revealed that the reduction in shopping frequency revealed more significant in developed countries(Rossolov et al., 2022). The reduced shopping visits to stores increased online shopping frequency during social distancing(Nguyen et al., 2021).

Shopping Destination:

One of the "pivotal" changes in buying patterns following Covid-19 is a trend away from malls and toward small stores. (Thau Barbara, 2021). Customers shop at local retailers or buy locally sourced products(Ha et al., 2021). Consumers were becoming increasingly concerned about Covid-19's impact from a health and financial perspective. They embraced internet shopping, concentrated on fundamental necessities, and shopped more carefully for local goods. (Accenture, 2020). Customers prefer to phone their neighborhood retail businesses and request home delivery. (Grashuis et al., 2020).Additionally, consumers offset fewer mall trips with increased internet buying (Denise Lee Yohn, 2020).

Mode of payment:

During the lockdown period, usage of eWallet increased(Undale et al., 2021). Using mobile-based payments for transactions facilitated social distancing, preventing the spread of the

Covid-19 virus(Nugrahini & Alfian, 2021). Performance expectancy, perceived usefulness, perceived security, and perceived ease of use enhanced the use of online payment (Abushamleh et al., 2021). Perceived utility and usability substantially impact behavioral intention to use e-wallets beyond the perceived risk of Covid-19 infection(Candy et al., 2022). Digital payments' flexibility makes it simpler for businesses to adjust to interruptions. Businesses with online payment facilities fared better during the pandemic because internet payments enabled them to do business in lockdown and in social isolation(GPFI, 2021; Muzi et al., 2021).

Research Methodology

Data Collection Instrument:

The study collected data using a structured questionnaire to satisfy the stated objectives. Therefore, the developed instrument mainly contains the following subparts:

Demographic information: The first part intends to collect the respondent's demographic information. It includes gender, location (rural/urban), Family Income, occupation, and whether any family member is infected with Covid-19.

Hoarding Tendency: To understand the hoarding tendency initially list of Grocery Items was prepared using a literature review. Further, the list of also firmed with the household women and retailers, and the final 24 items were retained in the list; one open-ended response option was also provided to mention if any other item was purchased with a hoarding intention.

Change in Purchasing Behaviour: the study intends to understand the change in purchasing behavior in terms of Frequency of Purchasing, Shopping Destination, and mode of payment. The study has used the before/after approach to evaluate the change in Purchasing Behaviour.

- **Frequency of Purchase** To understand the change in purchase frequency, respondents were asked to indicate the frequency of purchase generally followed before Covid-19 and after Covid-19 . The response options were, Daily, Twice in Week, Once in Week, Twice in a Month, Once in Month, and Not specific (As per need).
- **Shopping Destination:** Consumers purchase the requisite Grocery items from multiple shopping destinations. These shopping destinations can be generally classified as Nearby Vendor shops, Super Market Shopping, and Shopping malls**.** Respondents were requested to indicate how frequently they were purchasing Grocery items from specified shopping destination before Covid-19 and after Covid-19 . The response options were Always, Very Often, Some of the Time, Rarely, and Never.
- **Payment Mode:** It is evaluated whether the use of Online-UPI payment has been stimulated due to Covid-19 . Respondents were requested to indicate the payment method. Generally, they followed before Covid-19 and after Covid-19 . The response options were Always, Very Often, Some of the Time, Rarely, and Never.

Sampling design: Data were collected during the pandemic; social media was used to collect the data. The Google form questionnaire link was circulated on social media to solicit a response. A total of 735 responses were selected for the study after data cleaning.

Data Analysis: Data cleaning operations were performed on the collected responses to ensure the data was suitable for further statistical procedures. The respondents with higher missing variables were excluded from the study, and 735 responses were used for the analysis.

The data analysis is primarily divided into two sections: analyzing the hoarding tendency. To understand the hoarding behavior, respondents were presented with a list of Grocery items and asked to select the item they purchased to ensure the stock during the pandemic. Then, the percentage of people who purchased the item to ensure the stock in the lockdown is computed. The Pareto chart presents the order of the percentage of people who purchased the item to ensure the stock in the lockdown. Further two-step cluster analysis was performed to profile the respondents based on their item stocking behavior. The Chi-square test is used to identify the association between the demographics of the respondents and the hoarding tendency profile.

The second data analysis section analyzes changes in consumer purchasing behavior in terms of Frequency of Purchasing, Shopping Destination, and Payment Mode. To assess the change in Purchasing Behavior Wilcoxon paired signed rank test is used.

Result:

Data analysis was mainly divided into two sections. One is understanding the hoarding behavior, and the second is evaluating the respondents' purchasing patterns change.

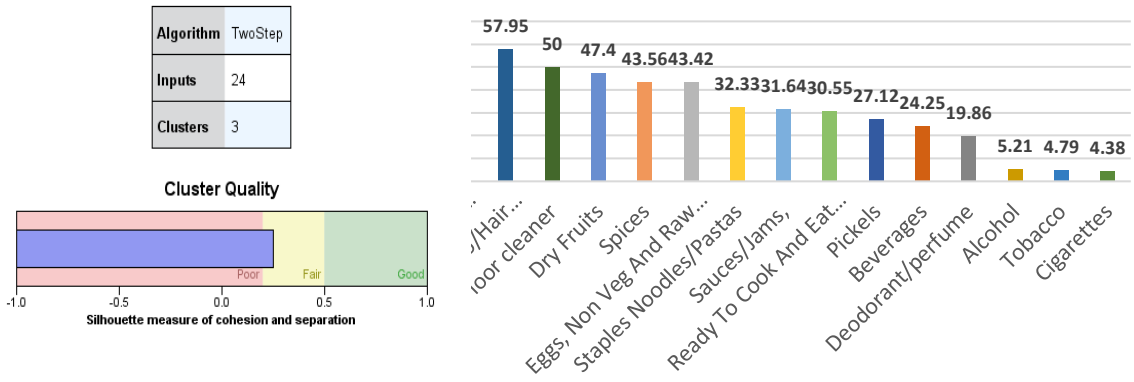
Hoarding Behavior:

Respondents were presented with a list of Grocery, food, and vegetable items to understand the hoarding behavior and asked to select items they purchased to ensure the stock during the pandemic. Table No.1 shows the percentage of people who purchased the item to ensure the stock in the lockdown. The Pareto chart reveals that rice, cooking oil, and sugar were the most purchased items to ensure stock. In addition, people also ensured the stock of hand wash and sanitizer.

Further cluster analysis was performed to profile the respondents based on their item stocking behavior. Two-step cluster analysis re-groups the respondents into three significant clusters. The clusters were named 1. Low hoarding tendency, 2. Medium hoarding tendency 3. High hoarding tendency.

Graph. No.1: Order of Preference for Stocking Items in Covid-19

Figure 1 Cluster Analysis Model Summary



Cluster Profiles Further cluster analysis was performed to profile the respondents based on their item stocking behavior. Two-step cluster analysis re-groups the respondents into three significant clusters. The clusters were named 1. Low hoarding tendency, 2. Medium hoarding tendency 3. High hoarding tendency. The "silhouette measure of cohesion and separation," which measures the overall goodness-of-fit of the cluster structure, specifies the fair structure (Van den Berge et al., 2017). The silhouette ranges from −1 to +1, and a high number implies that the object is highly matched to its Cluster and poorly matched to surrounding clusters(Battaglia et al., 2016; Protopapadakis et al., 2017). A detailed discussion of the Cluster is presented below.

Cluster-1: Low Hoarding Tendency:

This group has shown a low hoarding tendency compared to the two prior groups. The group accounts for 21.5 percent of the respondents. Out of the total respondents under the group, 61 percent of respondents indicated they stocked rice, and 51.5 percent of respondents stated they were insured cooking oil. For all other items, a comparatively less percentage of individuals stated that they hoarded the goods. This group's further decline in respondents hoarding luxurious food items is evident.

Cluster-2: Medium Hoarding Tendency:

This Cluster represents the groups of individuals having a comparatively high hoarding tendency for necessity items and a comparatively low hoarding tendency for luxurious food items. The group is the biggest, accounting for 47 percent of the respondents. More than 90 percent of respondents ensured the inventory of necessary food items like Rice, Cooking Oil, Sugar, Handwash, and a sanitizer, furthermore hoarding preferences for the items like Tea Powder, Vegetables, Flour, Fruits and Cereals & Pulses were also seen as more than 70 percent respondents keep the inventory of these items. Whereas high hoarding tendency was not seen for luxurious items like Biscuits and Bakery Items, Soaps/Shampoo/Hair oil/Cosmetics, Floor cleaner, Dry Fruits, Spices, Eggs, Non-Veg and Raw Meat, Staples, Noodles/Pasta and Sauces/Jams.

Cluster-3: High Hoarding Tendency:

This Cluster represents the group of individuals with the highest hoarding tendency. The group accounts for 21.5 percent of respondents. Moreover, the group has shown a higher inclination toward storing the goods. For example, all the respondents (100 percent) have ensured the stock of Rice, Cooking oil, and tea powder. Additionally, a comparatively high percentage of respondents have stored Hand wash & sanitizer, vegetables, fruits, and flour. Along with necessary food items, the group was also bullish on ensuring the availability of luxurious items such as biscuits and bakery items, noodles, sauces & jams, and spices. This shows the change in lifestyle of a specific section of society, for whom bakery items have become part of their regular consumption basket.

Table 1: Cluster Wise Item Hoarding Percentage

Item	Cluster 1	Cluster 2	Cluster 3	Percentage
Rice	140 (61.1)	323 (93.9)	157 (100)	84.93
Cooking Oil	118 (51.5)	331 (96.2)	157 (100)	83.01
Sugar	92 (40.2)	321 (93.3)	151 (96.2)	77.26
Hand Wash	81 (35.4)	311 (90.4)	154 (98.1)	74.79
Tea Power	82 (35.8)	303 (88.1)	157 (100)	74.25
Vegetables	103 (45)	276 (80.2)	154 (98.1)	73.01
Flour	85 (37.1)	274 (79.7)	143 (91.1)	68.77
Fruits	63 (27.5)	241 (70.1)	155 (98.7)	62.88
Cereals & Pulses	73 (31.9)	240 (69.8)	133 (84.7)	61.1
Biscuits And Bakery Items	59 (25.8)	225 (65.4)	154 (98.1)	60
Soaps/Shampoo/Hair oil/Cosmetics	34 (14.8)	236 (68.6)	153 (97.5)	57.95
Floor cleaner	13 (5.7)	210 (61)	142 (90.4)	50
Dry Fruits	25 (10.9)	180 (52.3)	141 (89.8)	47.4
Spices	19 (8.3)	152 (44.2)	147 (93.6)	43.56
Eggs, Non Veg And Raw Meat	37 (16.2)	161 (46.8)	119 (75.8)	43.42

Staples Noodles/Pastas	18 (7.9)	68 (19.8)	150 (95.5)	32.33
Sauces/Jams,	7 (3.1)	81 (23.5)	143 (91.1)	31.64
Ready To Cook And Eat Products Idli/Dosa/Khaman Mix	31 (13.5)	79 (23)	113 (72)	30.55
Pical	4 (1.7)	77 (22.4)	117 (74.5)	27.12
Beverages	19 (8.3)	53 (15.4)	105 (66.9)	24.25
Deodorant/perfume	7 (3.1)	42 (12.2)	96 (61.1)	19.86
Alcohol	8 (3.5)	12 (3.5)	18 (11.5)	5.21
Tobacco	5 (2.2)	10 (2.9)	20 (12.7)	4.79
Cigarettes	3 (1.3)	6 (1.7)	23 (14.6)	4.38

Location:

Table No. 2 shows the assessment association between hoarding tendency and demographics of the respondents using the chi-square test. The study reveals a significant association between the location of the respondents and hoarding habits (χ^2= 15.258, P value=0.004). Rural India was not spared from spreading the virus, and the lockdown was imposed in villages. It is seen that urban and rural households ensured the inventory by hoarding the necessary items. At the same time, a more intensive hoarding tendency was seen in Urban and Semi-urban areas than in rural areas. The percentage analysis shows that 25 percent of respondents from Semi Urban areas and 22 percent from Urban areas show a high hoarding tendency, whereas for rural areas, comparatively less (18.8 percent) of households fall high tendency cluster. Conversely, relatively higher proportionate (39.9 percent) rural respondents accounted for the low hoarding tendency cluster than semi-urban (25.2 percent) and Urban (26.6 percent).

Family Income

Furthermore, the study enforced the association between income and hoarding tendency (χ2= 18.786, P value=0.016). Out of the respondents under the below 2.5 lakh income, 35.6 percent accounts for low hoarding tendency, whereas 43.5 percent for medium tendency and 20 percent for high hoarding tendency. Besides, for 10 lakh and above income, the percentage of respondents belonging to high hoarding tendency rises to 30.20 percent, and for 7.5 lakh to 10 lakh, it is 37.90 percent.

Table 2: Association between Hoarding Tendency and Demographics of the Respondents:

Dimensions	Indicators	Count / Percent	Hoarding Tendency			Total	Chi-square	P-Value
			Low Hoarding Tendency	Medium Hoarding Tendency	High Hoarding Tendency			
Location	Rural	Count	110	114	52	276	15.25	0.00
		Percent	39.90	41.30	18.80	100		
	Semi Urban	Count	30	59	30	119		
		Percent	25.20	49.60	25.20	100		
	Urban	Count	89	171	75	335		
		Percent	26.60	51.00	22.40	100		
Family Income	Below 2.5 Lakh	Count	148	181	87	416	18.78	0.01
		Percent	35.60	43.50	20.90	100		
	2.5 Lakh - 5 Lakh	Count	48	88	29	165		
		Percent	29.10	53.30	17.60	100		
	5 Lakh - 7.5 Lakh	Count	15	45	17	77		
		Percent	19.50	58.40	22.10	100		
	7.5 Lakh -10 Lakh	Count	6	12	11	29		
		Percent	20.70	41.40	37.90	100		
	10 Lakh above	Count	12	18	13	43		
		Percent	27.90	41.90	30.20	100		
	Yes	Count	65	87	49	201	2.014	0.36

Family member tested Covid-19 positive		Percent	32.30	43.30	24.40	100		
	No	Count	164	257	108	529		
		Percent	31.00	48.60	20.40	100		

Family member tested Covid-19 positive:

Moreover, the hoarding tendency is independent of the family members' Covid-19 infection (χ^2= 2.014 P value = 0.365). Of the total respondents contacted, 62.50 percent or their family members were Covid-19, infected respondents. The analysis reveals that irrespective of Covid-19 infection, there was a general fear, anxiety a panic about the Covid-19 pandemic.

Change in Purchasing Behavior:

Further, this study has assessed the purchasing behavior for Cereals, Pulses & Grocery items, and Vegetables & fruits. The behavior change is assessed using parameters such as a change in purchase frequency, preference for shopping destination, and packaging preference. A further change in the mode of payment method is also assessed. To assess the behavior, a change pre-post method was adopted. On the given parameter, respondents were asked to indicate their behavior before Covid-19 and their purchasing behavior after Covid-19. Henceforth, the data collected was ordinal to evaluate whether any significant change occurred. Wilcoxon paired signed rank test is used.

Table 3: Descriptive Statistics of Consumer Shopping Behaviors Before/After Covid-19

Criteria	**Response Option**	**Before Count**	**Percentage Before**	**After Count**	**After Percentage**
Shopping Frequency					
Cereals, Pulses & Grocery items	Not specific	108	14.80%	133	18.20%
	once in Month	214	29.30%	234	32.00%
	Twice in Month	107	14.60%	115	15.70%
	Once in Week	144	19.70%	135	18.50%
	Twice	106	14.50%	86	11.80%
	Daily	52	7.10%	28	3.80%

Shopping Destination					
Nearby Vendor shop	Never	26	3.60%	31	4.20%
	Rarely	81	11.10%	113	15.50%
	Some of the time	216	29.50%	215	29.40%
	Very Often	188	25.70%	176	24.10%
	Always	220	30.10%	196	26.80%
Super Market	Never	78	10.70%	139	19.00%
	Rarely	91	12.40%	197	26.90%
	Some of the time	238	32.60%	220	30.10%
	Very Often	164	22.40%	113	15.50%
	Always	160	21.90%	62	8.50%
Shopping Mall	Never	161	22.00%	290	39.70%
	Rarely	152	20.80%	203	27.80%
	Some of the time	210	28.70%	141	19.30%
	Very Often	115	15.70%	56	7.70%
	Always	93	12.70%	41	5.60%
Payment Method					
Cash Payment	Never	21	2.90%	47	6.40%
	Rarely	48	6.60%	153	20.90%
	Some of the time	133	18.20%	200	27.40%
	Very Often	155	21.20%	142	19.40%
	Always	374	51.20%	189	25.90%
Online UPI	Never	66	9.00%	45	6.20%
	Rarely	106	14.50%	70	9.60%

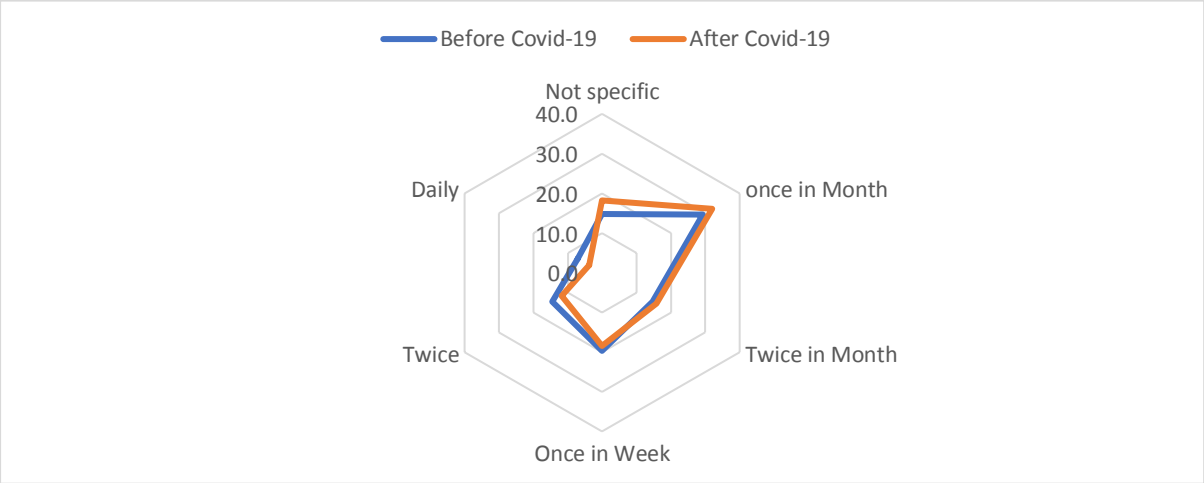
	Some of the time	230	31.50%	155	21.20%
	Very Often	169	23.10%	200	27.40%
	Always	160	21.90%	261	35.70%

Table 4: The hypotheses Test result of Before/After Analysis

After/Before	Criteria	Ranking	N	Mean Rank	Sum of Ranks	Z Score	P Value
Frequency of Purchasing	Cereals, Pulses & Grocery items	Negative Ranks	271	203.11	55041.5	-5.58	.00
		Positive Ranks	139	210.17	29213.5		
		Ties	325				
Shopping Destination	Nearby Vendor shop	Negative Ranks	234	198.61	46475.5	-3.26	.00
		Positive Ranks	162	198.34	32130.5		
		Ties	339				
	Super Market Shopping	Negative Ranks	319	185.58	59201	-13.05	.00
		Positive Ranks	46	165.09	7594		
		Ties	369				
	Shopping Mall	Negative Ranks	302	175.08	52873	-12.95	.00
		Positive Ranks	41	149.34	6123		
		Ties	391				
Payment Mode	Cash Payment	Negative Ranks	325	191	62074	-13.87	.00
		Positive Ranks	44	140.7	6191		
		Ties	368				
	Online-UPI	Negative Ranks	71	154.98	11003.5	-9.70	0.00
		Positive Ranks	260	169.01	43942.5		
		Ties	404				

Change in Purchasing Frequency: The study has evaluated whether there was any significant change in purchasing frequency for Cereals, Pulses, and Grocery items. Respondents generally indicated their purchase frequency for Cereals, Pulses, and Grocery items before and after the pandemic. It is evident from the results that, generally, purchase frequency has reduced after the outbreak of the Coivd-19 pandemic. The most crucial change is visible in reducing people's number of purchases the items daily. It has reduced from 7 percent to 3.8 percent.

Graph No.2: Change in Purchasing Frequency: (Percentage)



Additionally, respondents indicated they were purchasing twice a week, reduced from 14.5 percent to 11.8 percent. The percentage of people indicating they are purchasing twice a month has slightly increased from 14.6 percent to 15.7 percent after the pandemic. Comparatively, more respondents have indicated that they shifted to purchasing once a month after the pandemic. Before the pandemic, 29 percent of respondents said they purchased Cereals, Pulses, and Grocery items monthly. Whereas after Covid-19, the same has gone slightly up to 32 percent. The household following unscheduled purchase frequency was 14.8 percent before the pandemic, which has surged to 18.2 percent after the pandemic. Wilcoxon paired signed rank test result (Z = -5.584 P value = 0.00) indicates a significant difference in purchase frequency after the outbreak of the Covid-19 pandemic. As a result of the lockdown and social restrictions, the government's measures generally reduced household purchasing frequency.

Shopping Destination:

Further, it was evaluated whether there is any significant change in purchasing destination followed by the consumer for purchasing Cereals, Pulses & Grocery items. Customers visit different destinations such as nearby vendor shops, supermarkets, and shopping malls for these items. Respondents were asked how often they visited the specified shopping destination before the pandemic and the change in the shopping selected by the respondents after the pandemic.

Graph No.3: Change in Shopping Destination: (Percentage)

The analysis shows that in terms of visiting nearby vendor shops for shopping destinations, there was not a very significant change. However, it reveals that comparatively, visits to nearby destinations have reduced. The respondents said they rarely visit vendor shops slightly increased from 11.1 percent to 15.5 percent. The percentage of respondents stating they always visit decreased from 30.1 percent to 26.8 percent after the pandemic. It reveals, in general, there was a reduction in the frequency of customers visiting nearby shops.

Furthermore, the change is more evident in the visit to the supermarket. Before the pandemic, 10.7 percent of respondents stated they had never visited the supermarket, whereas, during the pandemic, the same number surged to 19 percent. The respondents' percentage of rarely visited went up to 26.9 percent from 12.4 percent. Furthermore, the respondents stating they were visiting Very often also reduced from 22.4 percent to 15.5 percent. Most importantly, the respondents stating they always visit supermarkets reduced to 8.5 percent from 21.9 percent.

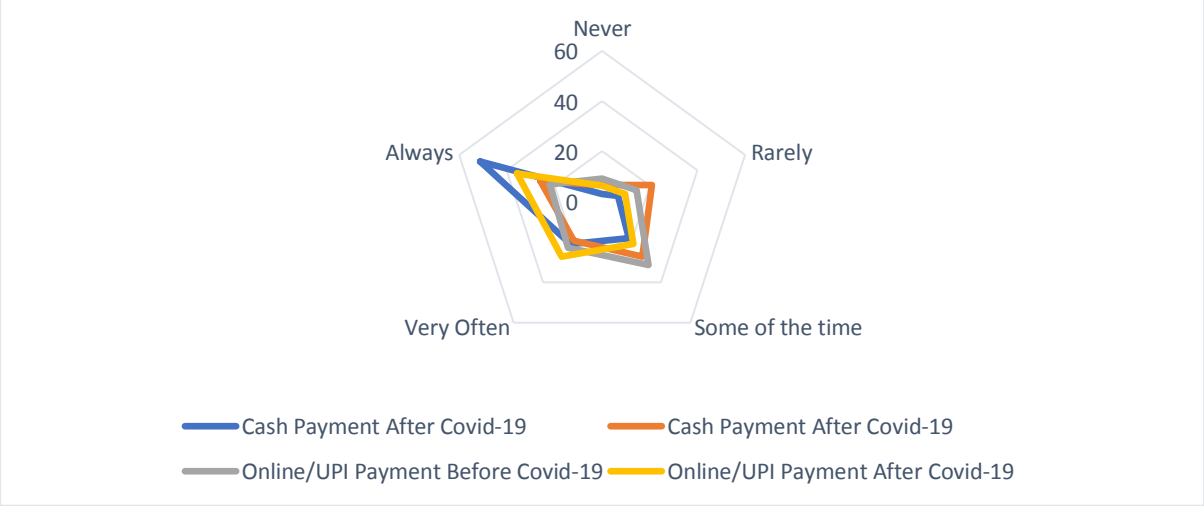
Comparatively, the highest shift is visible in terms of a shopping mall. Out of the total respondents contacted, 22 percent said they had never visited a shopping mall to purchase before Covid-19. The percentage of respondents stating they never visited shopping malls surged to 39.7 percent after Covid-19. Furthermore, before Covid-19, 20.8 percent of respondents said they rarely visited shopping malls. Whereas after Covid-19, the same percentage has increased to 27.8 percent. In addition, there is declainment in the percentage of people visiting the shopping mall. Before Covid-19, 28.7 percent of respondents said they used to visit shopping malls sometimes, and the same percentage has reduced to 19.3 percent after Covid-19. Whereas 15.7 percent mentioned they often visited shopping malls before Covid-19, the same percentage has reduced after Covid-19 , and merely 7.7 percent of respondents said they often visit shopping malls. The number of people visiting shopping malls has also significantly reduced after Covid-19. Here, 12.7 percent of respondents have stated they always

visit shopping malls before Covid-19, whereas those saying they always visit shopping malls reduced to merely 5.60 percent after Covid-19.

Wilcoxon paired signed rank test result for Nearby Vendor shop (Z = -3.26 P value = 0.00), Super Market Shopping (Z = -13.05, P value = 0.00) and Shopping Mall (Z = -12.95, P value = 0.00) indicates that there is significant difference for shopping destination selected by after outbreak of Covid-19 pandemic. The analysis reveals that consumers preferred nearby vendor shops over the shopping mall.

Payment Method: Along with various behavioral changes impacting Covid-19, it is argued that Covid has stimulated the digitalization process. Here the role of Covid is evaluated in adapting digital payment methods.

Graph No.4: Change in Payment Method: (Percentage)



When asked how often they used cast payment, around 51 percent said they used cash before Covid-19. The same percentage has reduced significantly to 25.9 percent after Covid. Further, when asked about how often they used online or UPI payment methods before Covid, 31.5 percent said some of the time, 23.1 percent said very often, and 21.9 percent always said. In contrast, after Covid, people said they always use Online/UPI payment has surged to 35.7 percent, and 27.4 percent said they use online payment very often. Wilcoxon signed paired sign rank test result (Z = -13.87, P value =.00) reveals a significant change in an individual's payment method. The analysis shows that the percentage of people who adopted the online payment method increased significantly after Covid-19. The spread of smartphones and payment apps facilitated the online payment system. Additionally, the Covid-19 pandemic stimulated the process as buyers and sellers wanted to avoid physical contact. UPI and QR code payment assisted in completing the transaction without handling the cash.

Discussion

All around the globe, the Covid-19 pandemic impacted consumer behavior. The Covid-19 pandemic has posed unprecedented difficulties for the whole world. Most countries declared a lockdown to contain the virus, resulting in unemployment, uncertainties, and economic recession. The pandemic brought significant changes in consumer buying behavior. Consumer behavior has considerably diverged from the norm since the first Covid-19 outbreak started in early 2020. There has been an immediate and significant surge in demand due to shop closings and customers' concern for their health. The immediate response to the Covid-19 spread and lockdown was the hoarding demand generated by the household for consumer goods. Rice, Cooking Oil, Sugar, hand wash, tea powder, vegetables, flour, fruits, Cereals, Pulses, and biscuits were the higher preferred items for hoarding. Two-step cluster analysis re-groups the respondents into three significant clusters. The clusters were named Low hoarding tendency, Medium hoarding tendency, and High hoarding tendency. The high hoarding tendency cluster represents the group of individuals with the highest hoarding tendency. The group has shown a higher inclination toward storing the goods. All the respondents in this Cluster (100 percent) have ensured the stock of Rice, Cooking oil, and tea powder; additionally, comparatively high percentage of respondents have stored Hand wash & sanitizer, vegetables, fruits, and flour. The hoarding preferences show the change in lifestyle of a certain section of society, for whom bakery items have become part of their regular consumption basket. Medium hoarding tendency represents the groups of individuals having a comparatively high hoarding tendency for necessity items and a relatively low hoarding tendency for luxurious food items. The group ensured the inventory of necessary food items like Rice, Cooking Oil, Sugar, Handwash, and Sanitizer. The hoarding preferences for the items like Tea Powder, Vegetables, Flour, Fruits, Cereals & Pulses were also evident. Whereas by Medium hoarding tendency group clusters has not shown high hoarding tendency for luxurious items like Biscuits and Bakery products, Soaps/Shampoo/Hair oil/Cosmetics, Floor cleaner, Dry Fruits, Spices, Eggs, Non-Veg and Raw Meat, Staples, Noodles/Pasta and Sauces/Jams. The Cluster with a low hoarding tendency has shown a low hoarding tendency compared to the two prior groups. The group stocked items such as rice cooking oil, sugar, vegetables, hand-wash Cereals, and Pulses. For all other items, a comparatively less percentage of individuals stated that they hoarded the goods in the Covid-19 pandemic.

Further, the Low hoarding tendency group has shown a lesser hoarding tendency for luxurious food items such as bakery products. The study reveals the significant association between the location of the respondents and hoarding habits. Rural India was not spared from the virus's spread, and the lockdown was even imposed in villages as well. It is seen that urban and rural households ensured the inventory by hoarding the necessary items.

In contrast, Urban and Semi-urban areas saw a more intensive hoarding tendency than rural areas. Additionally, the hoarding tendency was associated with income. Therefore, a higher income group indicates a higher preference to hoard and vice versa. Besides, it is noteworthy that hoarding tendency is independent of Covid-19 infection in the family.

Subsequently, a significant change in consumer buying behavior is observed in terms of Purchase frequency, Shopping destination, and Payment method. To avoid infection, the customer reduced the purchasing frequency and increased the purchased quantity per visit. Beyond lowering the purchase frequency, it is evident that consumer visits to the shopping mall also declined, and they prefer shopping from nearby vendors. The most important and positive change was consumer adoption of digital payment methods. As buyers and sellers intend to conduct contactless transactions, they embraced the digital payment method. The Covid-19 pandemic stimulated the use of digital payment.

Conclusion

According to research, the Covid-19 pandemic has altered typical consumer behaviour, established new shopping norms, and compelled consumers to spend more time deliberating over their choices, weigh their needs carefully before making purchases, concentrate only on necessities, and cut back on their frequency of shopping. The results indicate changes in consumer behaviour as a consequence location of the consumer and income of the consumer. It also identifies the change in consumer behaviour regarding purchasing frequency and destination. Consumers reduced their shopping frequency and preferred the local shops more than visiting the supermall during the pandemic. Furthermore, the pandemic has stimulated digitalization, and society is adopting the digital mode of payment.

It is also expected that most habits will return to normal. However, some habits the consumer learns will inevitably continue after the new normal. It surfaced an excellent research opportunity for social scientists to monitor the changes in consumer buying behaviour after the pandemic.

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