Analyses of Consumer Behavior on Online Food Ordering - In reference to COVID-19

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Abstract: **Consumer behavior can be defined as "the study of individuals, groups or organizations and the processes they use to select, secure, use and dispose of products, services, experiences or ideas to satisfy the needs and the impacts that these processes have on the consumer and society" The COVID-19 has brought massive disruption and adversely affected the customers. Indeed, the customers you knew just before COVID-19 outbreak are not the same people today. The preferences of customers have been shifted accordingly during this pandemic- about where, what and how they make their purchases. So in this paper I have tried to analyze the changes in consumer behavior in terms of food preferences, frequency of order food online, mode of payment, awareness about safety measures during COVID-19 and compare it with the behavior prior to COVID-19 pandemic.**

Keywords: **Frequency of order, Food preferences, Mode of payment, Safety measures.**

1. Introduction

The pandemic from the outbreak of coronavirus has swept the world by storm. With the epicentre of the spread moving from Wuhan in China to Europe, the UK and other countries' governments are doing their best to manage the pandemic and minimise the number of deaths whereas producers are trying to save their balance sheets. This pandemic has adversely affected the customers; the normal preferences and their online ordering behavior have been changed, the impact on customers was obvious from the beginning. As the virus first started to circulate, the shift in customer preferences is quite obvious. Almost overnight, physical stores were shunned. Customer demand shifted from discretionary items to those perceived as essentials. Consumers started giving priority to health and supply chain safety over cost and convenience. In this situation of the pandemic, consumers are worried about the health of their families, whether they can buy for their basic needs, and the loss of freedoms we all took for granted. Those common concerns are manifesting themselves in different ways, as consumers adopt new behaviors. Consumer behavior can be defined as "the study of individuals, groups or organizations and the processes they use to select, secure, use and dispose of products, services, experiences or ideas to satisfy the needs and the impacts that these processes have on the consumer and society." (Hawkins, Best, & Coney, 2001).

Though there is no formal definition of consumer behavior, Consumer behavior is simply defined as "the study of psychological, social and physical actions when people buy, use and dispose products, ideas, services and practices" (Peter & Olson, 2008)

In accordance with (Solomon, 2006) "consumer behavior is defined as the process of decision making and physical activity involved in acquiring, evaluating, using, and disposing of goods and services to satisfy needs and want".

Similarly, (Belch & Belch, 2001) quoted that consumer behavior is "the process and activities of people engage when searching for selecting, purchasing, using, evaluating and disposing of products and services as if satisfy their need and desires".

A. Relevance of Study

Amid concerns of social distancing and hygiene, a lot of people are unsure of ordering in food, to avoid the risk of exposure to COVID-19. There is currently no evidence of coronavirus being transmitted through food, states World Health Organization (WHO). Online food delivery, the silver lining to the economic gloom set in by the coronavirus pandemic, is likely to take a massive blow in Delhi after news of a pizza delivery agent testing COVID-19 positive in south Delhi went viral and raised alarm bells in the minds of the already terrified people. People who are getting food packages delivered.

B. Statement of Problem

As the Covid-19 pandemic continues to spread across the globe we are seeing differences in consumer behaviors across markets. This section provides the basic detail of the impact of COVID-19 on the consumer behavior towards online food ordering. How much consumer behavior and their pattern for the ordering of food has been changed during corona virus crises. What are the main issues and problems consumers are facing during COVID-19 outbreak? Do the consumers aware about measures taken by the online food service providers like transparent communication, temperature tracker from cook boy to delivery boy and the satisfaction level of consumer amid COVID-19?.

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C. Objective of the Study

To identify the factors affecting the behavior of the consumer towards online food ordering during COVID-19 pandemic.

To identify the changes in consumer's preferences and behavior in online food ordering during COVID-19 outbreak.

D. Organization of the Report

The report has been organized into chapters. Section 2 deals with literature review. Extensive survey has been done and a number of articles, reports and publications have been referred. In section 3 Research methodology has been explained with a brief explanation about research questions, sample population, questionnaire design and data collection. In section 4 data analysis has been done using SPSS, R Software, key findings have also been mentioned. In section 5 Suggestion has been drawn out with regard to the response received from respondents. At the end Conclusion has been given in section 6.

2. Literature Review

Looking the aspect with the contingent lens of COVID-19 situation is a new voyage in the research domain. Though no proper journal publications has been done, but some printed media articles gives some evidences for further enquiry. The changing world era with social distancing, one the face of this it could be hypothesized that the future of online food industry is in trouble. "Food hygiene and good food safety practices" can prevent the transmission of the COVID-19 virus through food. Importantly, "coronaviruses are thermolabile, which means that they are susceptible to normal cooking temperatures (70°C)." Essentially, if you're ordering cooked food, you don't need to worry about the transmission of the infection through food. However, you can take precautions while receiving the food from the delivery person. This could include maintaining a distance, handing out cash in envelopes, or using online payment to minimize human contact. (WHO, Food and Agriculture Organisation of United Nations, 2020)

So why is that online food industry in trouble? The natural answer is changing consumer perceptions. There is some evidence that Covid 19 spreads by touching the surface so usage of paper currency is expected to decline with promotion of digital currency. As a report cited some takeaways as follows "The Covid-19 pandemic has fanned public concerns that the coronavirus could be transmitted by cash.

Experts said currency notes can be a hotbed for the deadly virus and have the potential to transfer infection" (LiveMInt, 2020) Covid-19 is a zoonotic disease (Mackenzie & Smith, 2020) so dilemma for consumer would be eating non vegetarian food or not is persistent. Lacking research on this parameter, we got some evidences from top level health experts that it is just a myth. No Covid19 from non-veg food. (Director, 2020) so we will get back to these myth and perceptions in my study.

As I mentioned the domain is not yet enquired much so we don't have much formal evidence, but a major report cited some evidences. The report is much through china's perspective though significant.

A report cited that "As the coronavirus pandemic spread across India, customers are wary whether the food they order from online delivery platforms like Swiggy and Zomato is safe or not. Health of delivery partner, consumers and hygiene condition are the main concern. The food aggregators have started spreading awareness about the measures for safety and hygiene process of the food. They are informing customers about the best practices being followed in order to win back their trust. A report said that Rebel Foods is using a temperature tracker on its app to make the customers aware of the body temperature of all the stakeholders from the cook to the delivery boy. Swiggy rolled out safety badges for those who comply with highest standards of hygiene. The badges will be given to restaurants following best practices and that have features like temperature control, masks, sanitation after 4 hours and safe packaging. Platforms like Swiggy and Zomato offer their customers services like no-contact delivery. The feature makes sure that you do not come in contact with the delivery partner (TIMES, Covid-19 pandemic: Safety measures food delivery apps are taking to win back customers' trust, 2020).

3. Research Methodology

The present study is carried out to analyze the consumer behavior on online food ordering amid COVID-19, it's a problem related to preferences of consumer related to vegetarian and non-vegetarian food and their satisfaction level towards services provided by the online food delivery service providers during COVID-19 and prior to COVID-19.

A. Nature of the Study

This paper is a cross sectional study.

B. Data Collection

This term paper has been done on both primary and secondary information.

C. Organization of the Report

1) Primary Source

Primary data for this research is collected through questionnaire. For the survey, a questionnaire has been made on Google form and circulated on different social media platforms, i.e. whatsapp, Instagram, facebook and LinkedIn in order to collect information from different segment of people. . It considers the questions about demographic, preferences toward online food ordering, awareness related to safety measures and their satisfaction level, belief and attitude towards the services provided by food delivery service providers during COVID-19 outbreak.

2) Secondary Source

Secondary data has been collected through visiting the

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websites, collecting different articles, reports, journal and interviews of experts for the purpose of the literature review and to gain the knowledge within the topic.

D. Research Questions

The questionnaire was made in very simple form where each and every question is easy from the respondent point of views. This was the only set of data that used for analysis part. Based on literature review and objective of this research a number of problems were identified and one set of questionnaire containing 30 questions were designed based on the facts that are to be analyzed. The questionnaire covered most of the factors which are related to the consumer behavior on ordering food online. The questions were mostly close ended questions. The research question begins with research problem and issues someone would like to know more about or a situation that needs to be changed or addressed. I have designed the questions according to my objective of this research.

Following are the research questions and realm that are subject to deal with:
- Questions related to the demographic of the respondents.
- Questions related to the change in preferences of consumers in online food ordering due to COVID-19 pandemic.
- Questions related to the satisfaction level of consumers towards different services related to online food ordering prior to the COVID-19 outbreak and amid COVID-19 outbreak.
- Questions related to awareness of COVID-19 for the safety measures
- Questions related to impact of COVID-19 on beliefs and attitude of consumers.

E. Research Hypothesis

- There would be a significant fall in satisfaction of consumer on online food ordering during Covid 19 relative to Pre Covid 19.
- There would be a significant fall in food order decision during covid 19.
- Post covid 19, People will not prefer to order food online.
- Transition from cash to digit transaction is significant during Covid 19.
- Transition from non-vegetarian food to vegetarian food is significant during covid 19.

F. Population and Sample Size

1) Target Population

Target Population is cell Phone users primarily an urban youth[1] generation as availability of online food during Covid 19 is possible in Urban area and mainly popular among youth. Though there are diversity in population in terms of age. I considered only those who made at least one order before pandemic. This is quite obvious that if somebody is not making an order before COVID, his perception won't matter much in analyzing the impact of COVID19 on consumer preference.

2) Sample Size

The sample size is of 250 respondents.

3) Tools of analyses used

- For descriptive statistics I would be using SPSS packages. We with bifurcate this part in two sections. First one will include whole sample and second one will have those people who made online ordering at least once.
- I will use proportional t-test by using R Software for impact of pandemic on future online ordering behavior.
- Logistic regression for assessing the factors that influences online purchase during Pandemic.
- Transition from one category to different for rest of the hypothesis, I will use cross tabulation.

4. Analyses and Interpretation of Result

This Section is divided into 4 sections with multiple subsections. In each section data is analyzed and key finding is listed.

A. Descriptive Statistics

This section provide the detail analyses of consumer satisfaction and perception in terms of availability of restaurants, quality of food, Price, Hygiene Process, Discounts and Offers and overall services provided by food aggregators before covid-19 and during covid-19.

Hypothesis: There would be a significant fall in satisfaction of consumer on online food ordering during Covid-19 relative to Pre Covid-19.
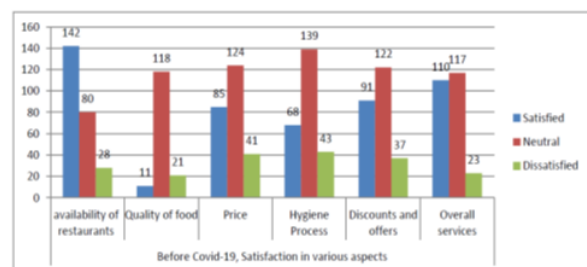

Fig. 1. Satisfaction level of consumer on different aspect before covid-19

Fig. 2. Satisfaction level of consumer on different aspect during covid-19

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Considering whole data set, 88.8% of the population is either satisfied or neutral with the availability of restaurants prior to COVID-19 outbreak, out of which 31% of the people are dissatisfied with the availability of restaurants during COVID-19 pandemic. it can be seen that out of the total population, 91.6 % of the population are either satisfied or neutral with the quality of food before COVID-19, pandemic out of which 22.7% of the people are dissatisfied with the quality of food during COVID-19 pandemic. 83.6% are either satisfied or neutral with the price food offering online before covid-19 outbreak, out of which 21.5% are dissatisfied with the price of food offering online during covid-19 pandemic. it can be seen that 82.8% of the whole population is either satisfied or neutral with the hygiene process of food delivery services before COVID-19 outbreak, out of which 25% are dissatisfied with the hygiene process of online food ordering during covid-19 pandemic. 85.2% of the population is either satisfied or neutral with the discounts and offers provided by the online food ordering platform before COVID-19, out of which 21.6% are dissatisfied with the discounts and offers during COVID-19.it shows 90.8% of the population is either satisfied or neutral with the overall services provided by the online food ordering platforms, out of which 19% of those people are dissatisfied with the overall services during COVID-19.

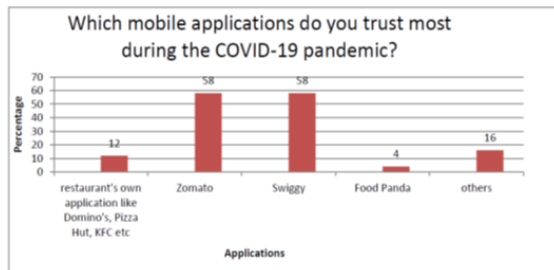Hence there is no sufficient evidence that satisfaction level falls so much.

Fig. 3. Trusted application for online food ordering during covid-19 pandemic

In this analysis, it is found that zomato and swiggy platform are most trusted aggregators for ordering food online during pandemic time. This happens because of awareness spread at large scale through mass media advertisement regarding safety measures like tamper proof packaging, safety badges to restaurant, contact less delivery and temperature tracker of stakeholder.

B. Ordering Decision Post Covid-19

As one of hypotheses suggests that Post covid-19, People will not prefer to order food online. So I did proportional t test for this hypothesis. I used 4 specifications which would be discussed briefly below.

Table 1
Response of online ordering post covid-19

Do you like to use online ordering post covid19	No. of respondent
YES	116
NO	54
CAN'T SAY	80
TOTAL	250

- *Specification 1:*

H0: Proportion of saying Can't say $\geq$ Proportion of saying Yes

HA: Proportion of saying Can't say < Proportion of saying Yes.

Given below the result and we reject the Null hypothesis at 5% level of significance and conclude that respondent will use online food ordering services Post covid-19.

```
> prop.test(c(80,116),c(250,250),alternative="less")

        2-sample test for equality of proportions with continuity correction

data:  c(80, 116) out of c(250, 250)
X-squared = 10.28, df = 1, p-value = 0.0006725
alternative hypothesis: less
95 percent confidence interval:
 -1.00000000 -0.06896182
sample estimates:
prop 1 prop 2
 0.320  0.464
```

Fig. 4. R output of t-test for specification 1

- *Specification 2:*

H0: Proportion of saying No $\geq$ Proportion of saying can't say

HA: Proportion of saying No < Proportion of saying can't say

Given below the result and we reject the Null hypothesis at 5% level of significance and conclude that respondent can't say that online food ordering services Post covid-19. Screenshot of output is provided below:

```
> prop.test(c(54,80),c(250,250),alternative="less")

        2-sample test for equality of proportions with continuity correction

data:  c(54, 80) out of c(250, 250)
X-squared = 6.3718, df = 1, p-value = 0.005797
alternative hypothesis: less
95 percent confidence interval:
 -1.00000000 -0.03528852
sample estimates:
prop 1 prop 2
 0.216  0.320
> prop.test(c(54,116),c(250,250),alternative="less")

        2-sample test for equality of proportions with continuity correction

data:  c(54, 116) out of c(250, 250)
X-squared = 33.164, df = 1, p-value = 4.235e-09
alternative hypothesis: less
95 percent confidence interval:
 -1.0000000 -0.1767379
sample estimates:
prop 1 prop 2
 0.216  0.464
```

Fig. 5. R output of t-test for specification 2 and 3

- *Specification 3:*

H0: Proportion of saying No $\geq$ Proportion of saying Yes
HA: Proportion of saying No < Proportion of saying Yes
Given above the result and we reject the Null hypothesis at 5% level of significance and conclude that respondent will get involve in online food ordering services Post covid-19.

Screenshot of code is provided above:

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- *Specification 4:*

H0: Proportion of saying No + Can't say ≥ Proportion of saying Yes

HA: Proportion of saying No+ Can't say < Proportion of saying Yes

Given below the result and we do not reject the Null hypothesis at 5% level of significance and conclude that respondent will not get involve in online food ordering services Post covid-19. Screenshot of output is provided below.

```
> prop.test(c(134,116),c(250,250),alternative="less")

        2-sample test for equality of proportions with continuity correction

data:  c(134, 116) out of c(250, 250)
X-squared = 2.312, df = 1, p-value = 0.9358
alternative hypothesis: less
95 percent confidence interval:
 -1.0000000  0.1493692
sample estimates:
prop 1 prop 2
 0.536  0.464
```

Fig. 6. R output of t-test for specification 4

Until now I have got mixed evidence that Post Covid-19, people will not get involve in online ordering. This might be due to sampling bias or data of people.

C. Factor Influences online food ordering during pandemic

In this section, the outcomes of logistic regression[2] are presented.

I am considering logistic regression for finding the factors that might influence online food ordering decisions. Taking dependent variable as online order made during pandemic.

$$MADE\_ORDER\_DURING = \begin{cases} 0 \ ORDER \ NOT \ MADE \ DURING \ PANDEMIC \\ 1 \qquad ORDER \ MADE \ DURING \ PANDEMIC \end{cases}$$

Logistic equation given below

$$\log\left(\frac{p}{1-p}\right) = b_o + b_1 monthly\_income + b_2 \, residents$$
$$+ b_3 feel\_safe\_ordering\_during$$
$$+ b_4 during\_satisfaction\_availability$$
$$+ b_5 during\_satisfaction\_hygiene$$
$$+ b_6 during\_satisfaction\_discounts$$

p is the probability that an individual will do online food ordering during pandemic.

In Section A of Appendix, the coding of included independent variable is presented[3].

The descriptive statistics of these variables are presented in the Section B of Appendix.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Step 1[a]	monthly_income	.307	.182	2.845	1	.092	1.360	.951	1.943
	residents	1.447	.409	12.530	1	.000	4.251	1.908	9.473
	feel_safe_ordering_during	1.174	.248	22.471	1	.000	3.234	1.991	5.255
	during_Satisfaction_availability	-.036	.335	.012	1	.915	.965	.501	1.859
	during_Satisfaction_hygiene	1.589	.379	17.590	1	.000	4.897	2.331	10.288
	during_Satisfaction_discounts	-1.199	.414	8.393	1	.004	.301	.134	.678
	Constant	-2.196	.370	35.310	1	.000	.111		

Fig. 7. SPSS output of Logistic Regression

- First, note that only variable *during_satisfaction_availability* is not significant though the sign is positive. Rest variables are significant at 10% level of significance. This was an unexpected result as increase in availability satisfaction of consumer would imply an increase in likelihood of making an online order during pandemic. This shows the positive relation in availability and ordering, but not significant. Insignificance might be due to sampling bias. A large sample can give better indication in this regard.
- I will focus column 7 i.e. Exp(B) for interpretation of Logistic regression table[4].
- The table show if monthly income is high with higher income strata, the odd of making an online order will increase by 1.360. Higher income leads to change in food preferences like western or continental food which is not possible to cook at home so companies should dig this more.
- If a customer is living on rent, the odd of making an online order will increase by 4.251. This is quite obvious as rental residents have infrastructural constraints for cooking themselves. so companies involving in this business should target rental residents
- If a person is feeling safe while ordering food, the odd of making an online order will increase by 3.234. so companies should spread awareness regarding safety.
- Companies should focus on hygiene factors as well; the odd of making an online order from this will increase by 4.897. Companies should update people regarding their step in improving hygiene[5].
- Companies should work on discount structures so that they can get attractive deals, the odd of making an online order from this will increase by 0.301. If customers get more discount coupon or offers that will incentivize them to order more.
- Next classification table is presented, this gives the overall percent of cases that are correctly predicted by the model is 86.4 which shows robustness of our regression.

Classification Table[a]

			Predicted		
			made_order_during		Percentage Correct
	Observed		0	1	
Step 1	made_order_during	0	192	8	96.0
		1	26	24	48.0
	Overall Percentage				86.4

a. The cut value is .500

Fig. 8. SPSS output of classification Table

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Table 2
Cross Tabulation between Frequency of ordering before COVID-19 and during COVID-19

Before Covid-19, Frequency of ordering food online * During Covid-19, Frequency of ordering food online								
		During_COVID-19						Total
Count		Daily	Not did it so far	Once a week	Once in a month	Twice in a month	Twice in a week	
Before COVID-19	Daily	3	6	1	0	1	1	12
	Once in a month	0	61	1	8	0	1	71
	Once in a week	0	53	6	5	1	1	66
	Twice in a month	0	36	1	2	1	2	42
	Twice in a week	1	44	3	4	3	4	59
Total		4	200	12	19	6	9	250

Table 3
Cross Table Analysis of Transition from non-vegetarian food to vegetarian food

Food preference, Before COVID-19* Food preferences, During COVID-19					
Count		During COVID-19			Total
		Both	Non Vegetarian	Vegetarian	
Before COVID-19	Both Vegetarian and Non Vegetarian	47	3	37	87
	Non Vegetarian	5	5	11	21
	Vegetarian	2	0	140	142
Total		54	8	188	250

Table 4
Cross Tabulation analyses of Mode of Payment between before covid-19 and during covid-19

Before Covid-19, Payment mode * During covid19, Payment mode						
		During COVID-19				Total
		Cash to credit card	Cash to debit card	Cash to internet transaction(Phone pay, Gpay, other wallet)	Will not change	
Before COVID-19	Debit card	1	5	2	12	20
	Internet Transaction(Phone pay, Gpay etc.)	1	3	85	85	174
	Cash	2	6	23	18	49
	credit card	1	0	1	5	7
Total		5	14	111	120	250

This model is significant and Good Fit as per the omnibus test of model presented in section C of Appendix.

D. Cross Tabulation Analyses

This section comprises with 3 subsections. They are discussed below:

1) Hypothesis: There would be significant fall in food order decision during COVID-19. (Referring Table 2)

- Considering whole data set, the population who order food online daily before COVID-19 outbreak has been reduced from 4.8% to 1.6% during COVID-19 pandemic,
- Whereas the population who order food online once in a week and twice in a week before covid-19 has been reduced during covid-19 pandemic from 26.4% to 4.8% and 23.6% to 3.6% respectively.
- The population who order food online once in a month and twice in a month before covid-19 has also been reduced during covid-19 from 28.4% to 7.6% and 16.8% to 2.4% respectively.
- There is fall in the frequency of ordering food online during COVID-19 pandemic, 80% of the total population has not ordered food online during covid-19.

2) Hypothesis: Transition from non-vegetarian food to vegetarian food is significant during COVID-19. (Referring Table 3)

Considering whole dataset table, the preference for vegetarian food among consumers has been increased from 56.8% to 75.2% during covid-19 and the preference for non-vegetarian food has been reduced from 8.4% to 3.2% and the preferences of those who prefer both food has been reduced from 34.8% to 21.6% during COVID-19. Hence we can say that Transition from non-vegetarian food to vegetarian food is significant during covid 19.

3) H0: Transition from Cash to Digital payment is significant during pandemic. (Referring Table 4)

Considering whole data set, about 20 percent of people were using cash before COVID 19 out of which about 65% responded that they will change their mode from cash to digital during COVID. Considering those who made at least one order, about 2% responded that they will not change their mode from cash to digital during COVID. Hence Transition from cash to digit transaction is significant during Covid-19.

5. Suggestion

The section B of Data Analyses part shows that still companies have hope of retaining market as can't say people are in the sample are dominating the major effect on profitability, hence companies have to influence them.

The section C of Data Analysis part shows that variables like discount factor, availability and hygiene measure will increase the probability of ordering food more. So this gives a potential spectrum to work in concerned realm. Companies should target rental residents by allowing special discount

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offers. Since probability food ordering by higher income wealth quintile, so they should target those people more by taking customized orders from them. It was also evident that working on hygiene would also increase the chances of food ordering so company should keep aware public regarding its measures via YouTube or social media influencing. Recently we have witnessed about the pizza delivery boy had tested positive for covid-19 in Delhi, because of one delivery boy, More than 72 families had been quarantined. So there is a lot of myth and misconception regarding online ordering is there. Better communication with public will help in increasing profitability. A detailed strategy for Do's is presented at the end of this section.

The section D of Data Analyses part shows that transition from non-vegetarian food to vegetarian and transition to cashless mode of payment is quite significant, so companies have to work on this as well. Cash back if someone is using digital mode is a classic example. Companies have to target vegetarians too as growing trends demand that. In such a case, combination meal can possibly increase profitability.

A. Do's for Company

1) At Restaurant level

- *Use of AI:* To earn the trust of customers, restaurants should adapt all the advancement in technology, especially artificial intelligence like AI based sensitive camera to verify those critical safety measures. It will help restaurants with quality control. This AI technology can be used to verify more than just the correct number of ingredients. The camera can also detect those all-important safety measures. Did the employee wash their hands? Did they clean the surfaces? Are they wearing gloves? Are they wearing a mask? Are they sneezing or coughing during cooking food? Is there any hand sanitization station available in kitchen area or not? This AI based sensitive camera will also track the body temperature of each employee in the restaurant. So this kind of camera will bring transparency between customers and restaurants which helps in gaining trust of customers. Delivery partners should also ensure that all listed Restaurants should have two different sanitization tunnels at entry and exit point to disinfectant the delivery boy.
- *Infrastructural Development:* Offer contact-free door opening if possible. Restaurants and businesses have pneumatically-operated doors with a push switch both inside and out. Encourage its use among staff and push the button with a knee or elbow instead of your hand. If possible, keep the front door propped open.
- *Organizational Changes:* Schedule staffing density to levels that allow a minimum of six feet of distance between all employees at all times. If possible, hold meetings remotely when possible.
- *Switch to no contact payment methods:* All of orders must accept no cash or on-site credit card orders. Avoid cash as much as possible.
- *Packaging food at restaurant:* To ensure the safety and gain the trust of consumers during this uncertain time, companies should change their packaging process from normal plastic package to sealed tamper-proof package. As Zomato is already doing this in limited cities. Once the restaurant seal the package before it is dispatched, the only way to break the seal is by cutting off the top-end strip. There is no other way to access the food inside, making the tamper-proof packaging trustworthy. And if consumers find the safety seal open, then they are advised not to accept the delivery.
- *Bag container of delivery partner:* The food bag container of delivery partner should be lashed with UVC germicidal lamps to disinfect the surface of sealed tamper-proof package. UVC germicidal lamps used for food safety in many applications. Scientists have found that simple and inexpensive ultraviolet light technology can kill bacteria and viruses from the surface of food package. UVC light, which cannot penetrate opaque, solid objects, can be effective in sanitizing surfaces. UVC light in the range of 254 nanometer specifically, is proven to quickly eliminate harmful germs including many bacteria and viruses.

2) At delivery point

This is one of the most critical points where human interaction or touch between delivery boy and the consumer takes place. So to end the spread of corona virus, Contact-less delivery and some important procedure must be followed by the delivery boy as well as the delivery partner.

- Food delivery partners should allot limited numbers of orders i.e.15 to 20 orders per delivery person per day.
- Food delivery aggregators must track the body temperature of delivery boy and provide the information about his health status to customers.
- Delivery boy should change gloves after every 3rd order.
- Customer should be informed through notification or call about arrival of food package.
- Delivery boy should sanitize his hand before taking out the food package from the bag container which is lashed with UV germicidal lamps and kept it at distance of 3 meter away from door.
- Once the customer will collected the order the driver will leave.

6. Conclusion

In this report, I analyzed changing perceptions of consumers toward online ordering during COVID 19 Pandemic. Growing trend of e-commerce for few decades gave a rosy path to online catering industry as well, but this unprecedented event was a draconian one. Many companies witnessed a fall in sales. I also analyzed factor affecting online decisions and concluded with some suggestions companies can work with.

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Table 5
Statistics of variables used in logistic regression model

		Made order during pandemic	monthly income	residents type	Feel safe ordering during pandemic	Satisfaction availability restaurants during pandemic	Satisfaction hygiene during pandemic	Satisfaction discounts during pandemic
N	Valid	250	250	250	250	250	250	250
	Missing	0	0	0	0	0	0	0
Mean		.2000	.8840	.4040	-.4760	-.2000	-.1880	-.1560
Median		.0000	.0000	.0000	-1.0000	.0000	.0000	.0000
Mode		.00	.00	.00	-1.00	.00	.00	.00
Std. Deviation		.40080	1.09331	.49168	.73456	.67067	.68302	.61740

The results sighted in this report are based on 250 data, respondent dominated by youth. So there might be population selection bias, but these results are indicative as accessibility of mobile phone and usage is dominated in these strata only. It is also worth to note that the factors on which logistic regression, I run, the independent variable in that specification is based on literature review presented in section 3, it is not that factors that are affecting ordering decision don't change but since this pandemic was a shock and due to inertia i.e. it takes time to adapt things give us a logical backing for employing those factors as it is. This study is based on Indian context; the responses are based on 1 month of lockdown, for further studies, it would be worth to notice for 6 month reactions of people and comparing with this study. Rest it is still mumbo jumbo that how this pandemic will hit the online catering industry post COVID-19.

7. Superscript Notes

1. I am defining youth as 18-30-year-old people for this study.
2. Statistics for Business and Economics (11th Edition) by David R. Anderson, Dennis J. Sweeney, Thomas A. Williams (z-lib.org).
3. In questionnaire I asked a lot of questions related to age, sex, profession and food preferences etc. we don't use those variables as these were turning to be statistical insignificant and causing over fitting of model. So my concern would be with those variables which are statistical significant or what we feel more important than others.
4. Probability is the probability an event happens. For example, there might be an 80% chance of rain today. Odds (more technically the odds of success) are defined as probability of success/probability of failure. So the odds of a success (80% chance of rain) has an accompanying odds of failure (20% chance it doesn't rain); as an equation (the "odds ratio"), that's .8/.2=4. Log odds are the logarithm of the odds. Ln (4) = 1.38629436 ≅ 1.386.
5. Zomato is doing thing through YouTube ad's.

Appendix

A. Below Coding are used for converting qualitative independent variable to dummy variable

1. $RESIDENTS = \begin{cases} 0 & OWN \\ 1 & RENTAL \end{cases}$

2. $MONTHLY\_INCOME = \begin{cases} 0 & BELOW\ RS.\ 10,000 \\ 1 & RS.\ 10,001 - 25,000 \\ 2 & RS.\ 25,001 - 50,000 \\ 3 & ABOVE\ RS.\ 50,001 \end{cases}$

3. $FEEL\_SAFE\_ORDERING\_DURING = \begin{cases} -1 & NO \\ 0 & CAN'T SAY \\ 1 & YES \end{cases}$

4. $DURING\_SATISFACTION\_AVAILABILITY = \begin{cases} -1 & DISSATISFIED \\ 0 & NEUTRAL \\ 1 & SATISFIED \end{cases}$

5. $DURING\_SATISFACTION\_HYGIENE = \begin{cases} -1 & DISSATISFIED \\ 0 & NEUTRAL \\ 1 & SATISFIED \end{cases}$

6. $DURING\_SATISFACTION\_DISCOUNTS = \begin{cases} -1 & DISSATISFIED \\ 0 & NEUTRAL \\ 1 & SATISFIED \end{cases}$

B. The descriptive statistics i.e. mean, median, mode and standard deviation of variables used in logistic regression model are given in table 5. This table provides the nature of data of variables. (Referring Table 5)

C. SPSS output of Omnibus Tests of Model Coefficient provide overall goodness of fit measures and chi-square

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	77.144	6	.000
	Block	77.144	6	.000
	Model	77.144	6	.000

Fig. 9. SPSS output of Omnibus tests of Model Coefficients

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