



A Study on the impact of Corona pandemic on restaurant industry and the role of Online Food Delivery apps in the sustainability of the business

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ABSTRACT

Purpose: The purpose of the study is to determine the impact of the COVID-19 pandemic on the business of restaurants and the role of Online Food Delivery apps in the sustainability of business during and post lockdown. The research aims to understand the interdependency among the online and offline food delivery business.

Methodology: The primary data is collected by surveying restaurateurs on their perception of the impact of the COVID-19 pandemic on business and the role of Online Food Delivery apps in their business during the outbreak of the Corona pandemic. One sample t-test is used for perception analysis of restaurateurs from Mumbai, Pune and Thane concerning various aspects of online Food Delivery during the lockdown.

Findings: The findings of the research suggest that the restaurant business has suffered the brunt of the COVID-19 pandemic and Online Food Delivery apps have played an important role in the sustainability of the restaurant business by allowing it to operate with limited staff and compensate for the loss of dine-in and offline orders. Online Food Delivery apps have allowed restaurant business to increase their sales volume and thereby profits.

Keywords: COVID-19 pandemic, Restaurant business, Online Food Delivery apps

INTRODUCTION

The COVID-19 pandemic has posed challenges for businesses worldwide. It has forced entrepreneurs and businessmen to brainstorm and seek new ways of reaching their customers. The pandemic has changed the lifestyle of customers and they are now expecting to receive products delivered at their doorstep. The new ways of life and business have forced upcoming as well as well-established businesses to consider the online business model for better connectivity with their customers. As the world adapts to the technological era, the pandemic has invigorated the use of technology to adapt the business to customer needs in the pandemic. As the population accustoms to the pandemic safety requirements and protecting themselves from the deadly virus, the

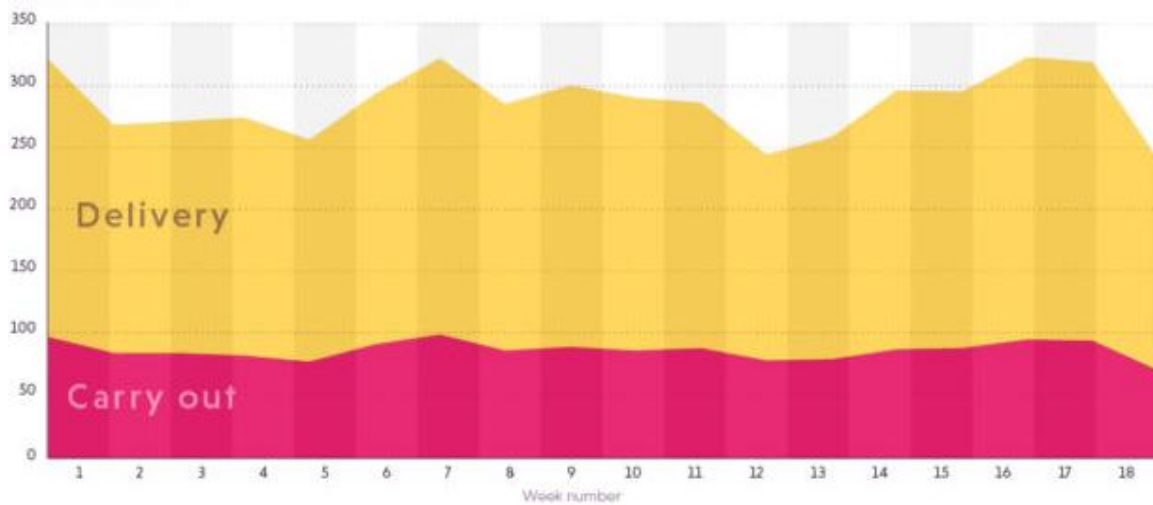
emergence of new requirements is witnessed along with the basic and comfort requirements. Businesses are required to defy their traditional ways of operating and need to think creatively to reach out to their customers.

Restaurant businesses have faced difficult times during the pandemic owing to closing down the business, especially dine-in facilities to meet strict social distancing requirements. The restaurant business has witnessed a decline in its profits owing to equivalent spending on Cost of Goods Sold (COGS). The other problem posed against the restaurant business is limited staff as in the initial lockdown period the business operations had come to a halt and with no source of income, most of the labourers migrated to their native during the pandemic and have not returned even after the lockdown lifted. This has compelled the restaurant business to resume business with limited staff. Online Food Delivery apps have proved to a blessing to the restaurant business to rebound after the lockdown by providing assistance in form of promotion, handling delivery operations and providing restaurants with delivery staff. Online Food Delivery apps have supported businesses to operate and have also helped them to reach customers.

Restaurants were allowed to strictly operate to only deliver orders. The businesses were not able to operate the dining facilities and were thus losing out on their customers. Online Food Delivery apps allowed restaurant businesses to deliver orders beyond their capacity by facilitating the delivery aspect of the business. Online Food Delivery apps have also provided customers with a medium to order food online when they are expected to stay within their homes as per the rules and safety standards. Online Food Delivery apps have not only provided businesses with an opportunity to sustain their business but also to customers to satisfy their food cravings or munching habits while staying at home.

Statistics

As per the report published by Zomato, only 17% of the restaurant resumed their operation after the restriction of lockdown have been lifted. Considering the remaining 83% of restaurants that are shut down the business, 10% have been compelled to permanently shut down. In the opinion of 60% of restaurateurs, the business will be operating at less than half of its business-level witnessed before the pandemic outbreak (Rao 2020). In countries worst hit by the COVID-19 virus, that is, US, UK and Canada are witnessing an increase in the volume of delivery orders (MIQ,2020). The image below shows the volume of delivery orders compare to carry-out orders.



Source: Retrieved from <https://www.wearemiq.com/blog/the-impact-of-covid-19-on-eating-restaurants-and-fast-food-chains/>

RESEARCH OBJECTIVES

- To study the impact of the COVID-19 pandemic on the business of restaurants.
- To study the role of Online Food Delivery apps in the sustainability of restaurant business during COVID-19 pandemic.
- To study the role of Online Food Delivery apps in sales volume and profitability of the restaurant business during COVID-19 pandemic.

REVIEW OF LITERATURE

Charlene Li, Miranda Miroso and Phil Bremer in the research paper titled "*Review of Online Food Delivery Platforms and their impact on Sustainability*" aims at understanding the positive and negative impact of Online Food Delivery apps on restaurant sustainability. The study focuses on the social, economic and environmental impact of online food delivery and advises to curb the negative consequences and promote the positive consequences of the Online Food Delivery business.

Jungkeun Kim and Jacob C. Lee in their research appear titled "*Effect of COVID-19 on preferences for private dining facilities in restaurants*" aims at understanding the customer perception towards private dining facilities post-outbreak of the pandemic. The study also investigates the impact of customer perception of the threat posed by the pandemic virus and its impact on the assessment of the private dining facilities. The research aims at providing suggestions to the restaurant business to face against the Novel Corona Virus by understanding customer perception of the virus and its probable impact on business. The findings of the study suggest that customers who perceive the virus to be highly risky prefer critically evaluate private dining facilities and have a strong preference for the same.

Yank Yang, Hongbo Liu and Xiang Chen in the research paper titled "*COVID-19 and restaurant demand: early effects of pandemic and stay-at-home orders*" studies the effect of the COVID-19 virus at the

commencement stage and its repercussions on online food ordering. The study further aims at investigating the impact of COVID-19 on the restaurant business from an economic standpoint. The findings of the research indicated an increase in the number of online orders with an increase in the number of cases. However, the research claimed that an increase in stay-at home orders was accompanied by a reduction in the overall demand.

RESEARCH METHODOLOGY

The research has used primary and secondary data for the study. Various news articles and research appear to have been studied as a part of secondary data. The research objectives are formulated with a thorough understanding of the various aspects of the restaurant business affected during the COVID-19 pandemic.

For the purpose of primary data collection, the survey method is used. A questionnaire is designed to study restaurateur's perception with respect to various aspects of the restaurant business affected by the outbreak of the COVID-19 pandemic and the assisting role of Online Food Delivery apps in the business. The survey responses are collected from the cities of Mumbai, Thane and Pune as these cities are the worst hit by the pandemic virus in Maharashtra state. 263 respondents filled the survey out of which 250 responses were found appropriate for further data analysis.

Frequency analysis has been used for descriptive analysis and one sample t-test has been used for interpreting the perception of restaurateurs.

SCOPE OF STUDY

The scope of the study is limited to Mumbai, Thane and Pune city. The research restaurant's perception towards the role of Online Food Delivery apps during COVID-19 lockdown. The research focuses on restaurants operating through Online Food Delivery apps during the COVID-19 pandemic and not on restaurants operating independently of Online Food Delivery apps. The research focuses on businesses of restaurants only and not on any other types of business. Further, the research emphasizes on the role of Online Food Delivery apps post outbreak of the pandemic.

LIMITATIONS OF STUDY

The research area has been limited to the cities of Mumbai, Thane and Pune as these cities are the most affected by the Corona pandemic. The study focuses on only the restaurant business that operates through Online Food Delivery apps post outbreak of the pandemic.

DATA ANALYSIS

Table 1.1: City Categorization of Restaurants surveyed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mumbai	149	59.6	59.6	59.6
	Thane	55	22.0	22.0	81.6

	Pune	46	18.4	18.4	100.0
	Total	250	100.0	100.0	

Findings and Interpretation

It can be observed from the above table (Table 1.1) that out of the 250 restaurants, 149 restaurants surveyed are from Mumbai, 55 restaurants are from Thane and 46 restaurants are from Pune. Thus, out of the total 100%, 59.6% of restaurants surveyed are from Mumbai, 22% are from Thane and 18.4% are from Pune.

Graph 1.1: City Categorization of Sample

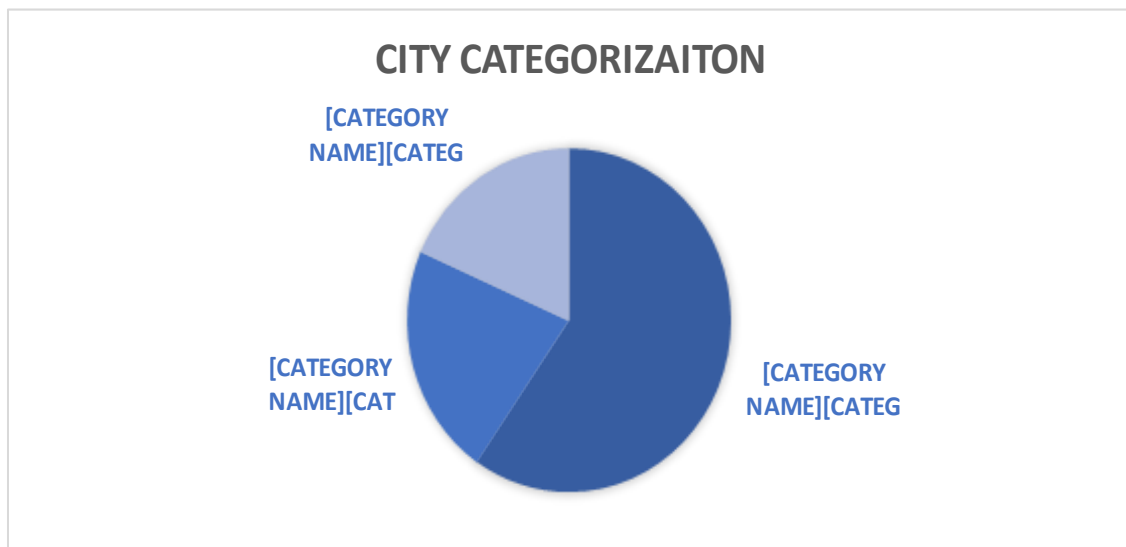


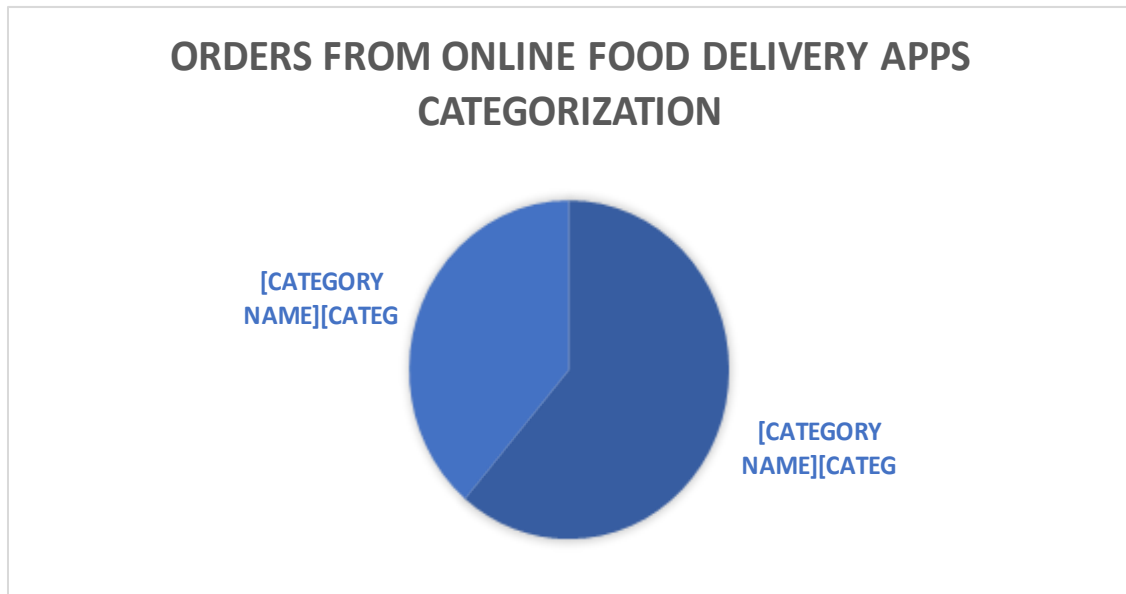
Table 1.2: Orders from Online Food Delivery apps categorization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Zomato	153	61.2	61.0	61.0
	Swiggy	97	38.8	38.8	100.0
	Total	250	100.0	100.0	

Findings and Interpretation

It can be observed from the above table (Table 1.2) that out of the 250 restaurants, 153 restaurateurs stated that out of the two popular Online Food Delivery apps they received more orders from Zomato Online Food Delivery app and 97 restaurants stated that they received more orders from Swiggy Online Food Delivery app. Thus, out of the total 100%, 61.2% of restaurateurs responded that they received more orders from Zomato and 38.8% received more orders from Swiggy Online Food Delivery apps compared to other Online Food Delivery apps.

Graph 1.1: Orders from Online Food Delivery apps categorization



One Sample t-test

The responses have been collected on 5-point Likert Scale with 5 indicating strong agreement and 1 indicating strong disagreement.

Perception on COVID-19 effect on business

Objective:

To identify positive (favourable) or negative (unfavourable) perception towards the effect of Corona Pandemic on business.

H0: There is **no significant difference** in the average perception of restaurateurs towards the effect of Corona Pandemic on business. ($\mu = 3$)

H1: There is a **significant difference** between the average perception of restaurateurs towards the effect of Corona Pandemic on business. ($\mu \neq 3$)

As the data is primary, the confidence level is assumed at 95% and so the significance level α is at 5% or 0.05.

As hypothesis is non directional (two-sided), so the level of significance is divided by 2, thus $5/2 = 2.5\%$ or 0.025.

$\alpha : 0.05$ (non-directional : $0.05 / 2 = 0.025$)

Table 1.3: One sample t-test

Parameter (variable)	Hypothesis	P-value	Dec ($\alpha/2 - 0.025$)
Business has suffered	H0(Suffer) $\mu = 3$ H1(Suffer) $\mu \neq 3$	0.000	$p < \alpha = 0.025$, Reject H0
Decrease in sales volume	H0(Volume) $\mu = 3$ H1(Volume) $\mu \neq 3$	0.000	$p < \alpha = 0.025$, Reject H0
Reduction in profits	H0(Profits) $\mu = 3$ H1(Profits) $\mu \neq 3$	0.011	$p < \alpha = 0.025$, Reject H0
Difficulty to operate business with limited staff	H0(Operate) $\mu = 3$ H1(Operate) $\mu \neq 3$	0.007	$p < \alpha = 0.025$, Reject H0
Difficulty in procuring raw materials	H0(Procure) $\mu = 3$ H1(Procure) $\mu \neq 3$	0.020	$p < \alpha = 0.025$, Reject H0

From the above table (Table 1.3) it is evident that for all the factors, that is business suffering as a result post outbreak of Corona pandemic, decrease in sales volume, reduction in profit level, difficulty to operate the business with limited staff and difficulty in procuring raw materials, the p-value lower than $\alpha/2$, and thus providing sufficient evidence to reject null hypothesis indicating a significant difference in the perception towards this factors at 5% level of significance.

To further identify positive or negative perception with respect to the above factors the one sample statistics table will be referred to.

Table 1.4: One-Sample Statistics

Factors under study	N	Mean	Rank	Positive or negative perception	Interpretation
Business has suffered	250	4.899	1	Positive	Restaurateurs agree that their business has suffered post COVID-19 pandemic.
Decrease in sales volume	250	4.5442	2	Positive	Restaurateurs agree that a decrease in sales volume has been witnessed post COVID-19 pandemic.
Reduction in profits	250	4.0007	4	Positive	Restaurateurs agree that there has been a decrease in profits post COVID-19 pandemic.
Difficulty to operate business with limited staff	250	4.2020	3	Positive	Restaurateurs strongly agree that it is difficult to operate business post COVID-19 pandemic owing to limited staff.
Difficulty in procuring raw materials	250	3.9465	5	Positive	Restaurateurs agree that they have faced difficulty in procuring raw materials post COVID-19 pandemic

It can be observed from the above table (Table 1.4) that, restaurateurs have a positive perception towards all the factors. Considering restaurateur perception in the sequence of ranking restaurateurs strongly believe that their business has suffered post outbreak of COVID-19 pandemic and there has been a decrease in the volume of sales post pandemic. The restaurants have faced difficulty in operating business with limited staff as most of their staff have migrated to their natives or as it was difficult to afford surplus staff during the lockdown period. The businesses have witnessed a marginal decrease in its profits in the post pandemic period and has faced difficulty in procuring raw materials for smooth operations.

Perception on Role of Online Food Delivery apps in sustainability of business

Objective:

To identify positive (favourable) or negative (unfavourable) perception towards the role of Online Food Delivery apps in the sustainability of the restaurant business.

H0: There is **no significant difference** in the average perception of restaurateurs towards the role of Online Food Delivery apps in the sustainability of the restaurant business. ($\mu = 3$)

H1: There is a **significant difference** between the average perception of restaurateurs towards the role of Online Food Delivery apps in the sustainability of the restaurant business. ($\mu \neq 3$)

As the data is primary, the confidence level is assumed at 95% and so the significance level α is at 5% or 0.05.

As the hypothesis is non-directional (two-sided), so the level of significance is divided by 2, thus $5/2 = 2.5\%$ or 0.025.

$\alpha : 0.05$ (non-directional : $0.05 / 2 = 0.025$)

Table 1.5: One sample t-test

Parameter (variable)	Hypothesis	P-value	Dec ($\alpha/2 - 0.025$)
Critical for continuation	H0(Critical) $\mu = 3$ H1(Critical) $\mu \neq 3$	0.000	$p < \alpha = 0.025$, Reject H0
Allowed to operate business with limited staff	H0(Allow) $\mu = 3$ H1(Allow) $\mu \neq 3$	0.002	$p < \alpha = 0.025$, Reject H0
Cut down costs	H0(Cut costs) $\mu = 3$ H1(Cut costs) $\mu \neq 3$	0.010	$p < \alpha = 0.025$, Reject H0
High volume of sales	H0(High volume) $\mu = 3$ H1(High volume) $\mu \neq 3$	0.000	$p < \alpha = 0.025$, Reject H0
Online order increased post pandemic	H0(Online increase) $\mu = 3$ H1(Online increase) $\mu \neq 3$	0.000	$p < \alpha = 0.025$, Reject H0
Compensated decrease of	H0(Offline decrease) $\mu = 3$	0.000	$p < \alpha = 0.025$, Reject H0

offline orders	H1(Offline decrease) $\mu \neq 3$		
Increased overall volume compared to pre-pandemic	H0(Overall) $\mu = 3$ H1(Overall) $\mu \neq 3$	0.034	$p > \alpha = 0.025$, Accept H0
Online orders more than direct delivery and take-aways	H0(Overall) $\mu = 3$ H1(Overall) $\mu \neq 3$	0.014	$p < \alpha = 0.025$, Reject H0
Safety promotion builds customer trust	H0(Safety) $\mu = 3$ H1(Safety) $\mu \neq$	0.000	$p < \alpha = 0.025$, Reject H0
Offline customer convinced to opt online ordering	H0(Offline to Online) $\mu = 3$ H1(Offline to Online) $\mu \neq$	0.000	$p < \alpha = 0.025$, Reject H0

From the above table (Table 1.5) it is evident that an increase in the overall volume of business has a p-value greater than α , thus accepting the null hypothesis, which suggests that there is no significant difference in the average perception of restaurants with respect to increase in overall of business. For all the other factors, that is being Online Food Delivery apps proving critical to restaurant business during the pandemic, OFD apps facilitate to go about with business with limited staff availability, cutting down costs, the high volume of sales, the number of online orders has increased post pandemic, decrease in offline orders compensated by an increase in online orders, promotion of safety and hygiene practices having built customer trust and offline customers are more comfortable to order online has the p-value lower than $\alpha/2$, and thus providing sufficient evidence to reject null hypothesis indicating a significant difference in the perception towards this factors at 5% level of significance.

To further identify positive or negative perception with respect to the factors showing a significant difference in perception, the one sample statistics table will be referred to.

Table 1.6: One-Sample Statistics

Factors under study	N	Mean	Rank	Positive or negative perception	Interpretation
Critical for continuation	250	4.8890	2	Positive	Restaurateurs agree that being on OFD apps proved critical post COVID-19 pandemic.
Allowed to operate business with limited staff	250	4.4332	7	Positive	Restaurateurs agree that being on OFD apps has helped to operate with limited staff during COVID-19 pandemic.
Cut down costs	250	4.3250	8	Positive	Restaurateurs agree that being on OFD apps has helped to reduce costs during COVID-19 pandemic.
High volume of	250	4.4465	6	Positive	Restaurateurs agree that being on OFD apps has assisted in

sales					increasing sales during COVID-19 pandemic.
Online order increased post pandemic	250	4.5637	5	Positive	Restaurateurs agree that number of online orders received during COVID-19 pandemic has increased.
Compensated decrease of offline orders	250	4.9451	1	Positive	Restaurateurs agree that the decrease in offline orders is compensated by online orders during COVID-19 pandemic.
Online orders more than direct delivery and take-aways	250	4.0002	9	Positive	Restaurateurs agree that more of online orders are received during COVID-19 pandemic compared to direct delivery and take-away orders.
Safety promotion builds customer trust	250	4.7190	4	Positive	Restaurateurs agree that being on OFD apps has assisted in increasing sales during COVID-19 pandemic.
Offline customer convinced to opt online ordering	250	4.8165	3	Positive	Restaurateurs agree that more and more offline customers are shifting online during COVID-19 pandemic.

It can be observed from the above table (Table 1.6) that, respondents have a positive perception towards all the above factors. Considering restaurateur perception in the sequence of ranking restaurateurs strongly believe that being on online food delivery apps has allowed compensating for the loss of offline orders during the pandemic and has proved to be critical for sustainability. More and more offline customers are placing orders online and the promotion of safety and hygiene practices by the Online Food Delivery apps has helped in gaining customer trust towards the online ordering system. The restaurateurs agree that the volume of online orders has increased post outbreak of pandemic and has contributed to the high volume of sales. Being on Online Food Delivery apps has allowed operating with limited staff during the lockdown period and has also facilitated bring down costs. Restaurants have witnessed more of online orders during the pandemic compared to direct delivery and take-away orders.

FINDINGS

Restaurants from Mumbai, Thane and Pune were surveyed for the purpose of studying restaurateur perception. 61.2% of restaurateurs responded that they received more orders from Zomato and 38.8% received more orders from Swiggy Online Food Delivery apps compared to other Online Food Delivery apps.

Restaurateurs strongly believe that their business has suffered post outbreak of COVID-19 pandemic and there has been a decrease in the volume of sales post pandemic. The restaurants have faced difficulty in operating business with limited staff as most of their staff have migrated to their natives or as it was difficult to afford

surplus staff during the lockdown period. The business has witnessed a marginal decrease in their profits in the post pandemic period and has faced difficulty in procuring raw materials for smooth operations.

Online food delivery apps have allowed restaurants to compensate for the loss of offline orders during the pandemic and has proved to be critical for sustainability. More and more offline customers are placing orders online and the promotion of safety and hygiene practices by the Online Food Delivery apps has helped in gaining customer trust towards the online ordering system. The restaurateurs agree that the volume of online orders has increased post outbreak of pandemic and has contributed to the high volume of sales. Being on Online Food Delivery apps has allowed operating with limited staff during the lockdown period and has also facilitated bring down costs.

CONCLUSION

The findings of the study suggest that restaurant businesses had come to a halt post outbreak of the COVID-19 pandemic and were able to resume their business only through direct delivery, take-away orders and online ordering facility. The restaurant business has suffered in terms of profit and sales volume post pandemic.

The restaurant businesses that have existence on the Online Food Delivery apps are of the opinion that they were able to get back on track smoothly with the support of online food delivery facilities. Initially, the restaurants were not allowed to operate their dining facilities when strict lockdown rules of operation applied to all the businesses. Owing to the promotion of hygiene and social distancing practiced by the restaurants, customers are convinced that online ordering is much safer than offline dining to satiate their cravings. Most of the restaurants received online orders from Zomato and Swiggy Online Food Delivery app respectively.

Online Food Delivery apps have allowed restaurants to operate with limited staff by providing their delivery staff for additional assistance. Online food ordering has increased the sales volume for the business and thereby stabilized the profitability by compensating for the loss of offline orders.

RECOMMENDATIONS

In the current scenario of economic slowdown and uncertainty, online food delivery business and restaurant business are collectively moving ahead as a promising Brick-and-Click model. Online food ordering has not only offered sustainability to the restaurant business but has also facilitated customers to quench their desire for outside food cravings. Online food delivery apps and restaurants are interdependent during the pandemic time and need to work in collaboration with each other to move ahead.

Individuals are working from home and are avoiding stepping out unless necessary in the pandemic. The pandemic is also providing opportunities for people to stay at home and get products and services delivered at their doorstep. This has led to people being more lethargic and seek convenience while shopping and ordering. Online shopping and food ordering are posing lucrative business opportunities in the current scenario. Restaurants operating only offline may experience the brunt of the pandemic situation for neglecting the online aspect of service. The Online Food Delivery apps need to spread their outreach to various restaurants to provide



better service and variety to their customers. The assistance of Online Food Delivery apps can allow restaurants to focus on core business functions of their restaurants employing limited staff and also by saving on costs.

FUTURE SCOPE OF STUDY

Researchers in the future can focus on the impact of the Brick-and-click model business in the food industry. Future researches can focus on the long-term impact of COVID-19 on the restaurant business and customer perception towards dining facilities and preference for online ordering. The research can focus on the change in customer perception towards online food ordering and also on the change in restaurateur's perception towards Online Food Ordering facilities post pandemic. Researchers can focus on also a comparative study on private online food ordering facilities of the restaurants and Online Food Delivery apps.

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