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THE CASE STUDY OF ONLINE FOOD DELIVERY PLATFORMS IN RELATION TO CONSUMER'S HEALTH CONDITIONS AND HOME CONVENIENCE IN ANAND, GUJARAT, WESTERN INDIA

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Abstract:

Online food delivery platform has been emerged as an easy to access food delivery and receiving methods from variety of restaurants and food joints at the comfort of home. It has been providing convenience at home facilities to food lovers. But at the same it has been seen as health hazards for the consumers for such foods. The present paper has tried to find out the rising health concerns among the consumers of the online food delivery platforms and has also tried to find out the importance of it in present business environment. Total n= 168 respondents purposively considered for survey who had been using online food ordering platforms. The study involves purposive and convenience sampling methods. MS Excel sheet was used for analysis of data and preparing charts for better illustration. It was found that online food delivery platforms have raised some nominal health related issues among 10 percent of OFD (online food delivery) platform users, but for the old age people it has been emerged as an easy to get food support system. Further it was noticed that at least 15 percent customers complaints about food frauds and food adulteration which was matter of serious concerned. The paper will have serious implications on society, and it would provide road map for further research in the area.

Introduction

E-commerce platform like Zomato, Swiggy, KFC, Dominos and others such online service providers have made the life of human beings easy to live but have raised many serious health related warnings among human beings. The growing number of food distribution apps and online platforms has transformed the scope of food service industry (Ramesh et al.2021). The busy life style and intense use of new mobile technology have encouraged people to use online platforms (Belanche et al. 2020). The COVID-19 pandemic played a significant role in changing people's habits due to the lockdown situation during that time and led to the rise of OFD platforms (Lin C et al. 2024). The popularity of OFD apps have been increasing among busy workers and students because of their perception that OFD will deliver fresh and healthy food at their doorstep (Jewel et al. 2021). The most important issue out of all these issues are gaining weight and loosing natural immunity are the common problems and threats that has been increased due to eating junk foods and other contaminated food items. The easy to access platform has made lazy to human beings and they have decreased their physical works. Remote control-based artificial intelligence (AI) services have contributed to the sedentary lifestyle. OFDS is the process of food-delivery from various restaurants, which customers order via a website or mobile app (Pigato et al., 2017). One of the most important developments driving the explosive growth of the e-commerce market is the proliferation of smartphones and tablets. Mobile commerce is an extension of e-commerce where transactions are conducted via mobile devices. Food delivery providers can be classified as restaurant-to-consumer delivery or platform-to-consumer delivery operations. These third-party platforms vary from country to country, and include, for example, Alime in China, Uber Eats in the US, Just Eat in the UK, and Swiggy and Zomato in India (Lee, Charlene et al., 2020). Restaurant-to-consumer delivery providers prepare and deliver food specified by providers such as McDonald's, KFC, Pizza Hut, and Domino's. Orders can be placed directly through the restaurant's online platform or through a third-party platform. Third-party platforms also provide online delivery services from partner restaurants that do not necessarily provide delivery services themselves, a process defined as platform-to-consumer delivery. Online food delivery can potentially promote a sedentary lifestyle that is detrimental to health and it is a matter of serious concern that food delivery apps may have a negative impact on health (Stephens, J. et al., 2020). The OFD market has grown significantly in recent years as consumers increasingly turn to e-commerce platforms to purchase various product categories, including food products (Cho et al., 2018). A study in Beijing, China found that a higher frequency of online delivery food consumption was associated with a non-medical major, a preference for high-fat and high-sugar foods, physical inactivity, and a surprisingly high BMI, with 11.6% of surveyed students being overweight or obese (Jiang, Y.H. et al., 2019).

There are not many studies on the role of online food delivery on the health conditions and benefits of older people. Previous studies have mainly focused on issues such as OFD platform performance and customer satisfaction (Gilitwala and Nag, 2019; Segezzi and Mangiaracina, 2020), consumers' attitudes and behaviour (Pigatto et al., 2017; Hwang and Cho, 2019; Yeo et al., 2021), vehicle routing problems (Liu et al., 2020; Correa et al., 2019), technology adoption

and acceptance in OFD apps (Gundeen et al., 2020; Pigatto et al., 2017; Roh and Park, 2019), and rider issues related to salary and health (Bates et al., 2020; Correa et al., 2019; Kougianou and Mendonca, 2021). (Zaneta et al., 2021; Hong et al., 2021; Mehroliya et al., 2021), such as Swiggy, DoorDash, Uber Eats, and Zomato. Similarly, attitudes, subjective norms, delivery, behavioural control, hygiene and social isolation positively affect the consumers' (Al Amin et al., 2021; Gani et al., 2021; Tran, 2021; Sharma et al., 2021; Yeo et al., 2021; Hopkins and Potcovaru, 2021) and also showed the continuance intention to use food delivery apps. Studies have also found that food delivery apps features, convenience, ease of use, food variety and price saving (Van Doorn, 2020; Pigatto et al., 2017; Dirsehan and Cankat, 2021; Pal et al., 2021; Kumar et al., 2021; Bao and Zhu, 2022; Shah et al., 2021) also affect the continued intention to use the FDA. But most of these research were conducted either before COVID-19 or during the pandemic and none of these studies discussed on the role of online food delivery (OFD) on health conditions of consumers. Only few researchers have taken the health issues of consumers seriously such as Jiang, Y.H et.al. in 2019 and Stephens, J. et.al in 2020.

The scope of this research is wide in the sense that very little research has been done so far on the impact of OFD platforms in relation to consumers' health conditions and elderly and physically challenged people. This study becomes significant to fill this gap and provide further research opportunities in this area.

This research aims to achieve the objectives which are critically concerned with respect to service needs, health conditions, food fraud and exploring the pros and cons of OFD platforms. The *general objective of* this research was to analyse the impact of online food service platform on the health conditions of the consumers and the food accessibility benefits for some stakeholders like old age or physical challenged people.
Specific Objectives has three folds,

The specific objectives were,

> R1 Analysis of online food delivery platforms in supporting food services needs of consumers.
> R2 To find out the impacts on health conditions of online food consumers
> R3 To analyse the opportunities for OFD platforms to satisfy the need of stakeholders and overcoming with food frauds.

Research Design And Methodology
Both qualitative and quantitative methods have been used in this study to achieve the overall aim and objective of research.

Study Area
The study was conducted during the October 2023 to Oct. 2024 and was limited to Anand (Gujarat) in India. Target population were online food service app users and were consists of both male and female users. The area of research was limited to online and offline questionnaire circulated to various respondents located at Anand City in India.

The reason for selecting the Anand because of availability of all international and national food outlets like McDonald's, KFC (Kentucky Fried Chicken), Subway, Domino's, Pizza Hut, Starbucks, Barbecue Nations, one star to five star hotels and online service. The place has various OFD providers like Zomato, KFC, Dominos and others.

First of all, these online food apps users were divided into three major categories,

  I)   Buyer (who placed the orders)
  II) Consumer (who consumed the food)
  III) Both- Buyer who is also consumer.

Sampling Design

The study used purposive and convenient sampling techniques to achieve the research objective and specific objectives within a short period of time. The participants were selected based on their availability, proximity, OFD usage and ease of access. Total data from 179 respondents were collected through both online and offline mode and only data of 168 respondents were found suitable for analysis.

Data Collection And Analysis

Questionnaire were designed and primary data was collected through both online and offline methods. In total three sets of questionnaires were prepared to achieve the three specific objectives and one general objective of this research. Data were analysed through Ms Excel software. Descriptive statistics such as percentage and frequencies were computed and presented by using charts, graphs and table. Apart from primary data, secondary data was also collected through review of various literatures available on the topic of research. Data was also collected through observation and informal discussion from the users of OFD platforms.

Results And Discussion

Demographic Variables Of Respondents

For the purpose of research the demographic characteristics of respondents were taken into consideration as per their socio-economic conditions such as sex, level of education, age groups and income levels. Table1 shows that 85.7 percent of respondents were male where as participations of female respondents were 14.3 percent. Most of the respondents were above high school in teem of their education level and belongs to middle class to upper middle class in respect of theirs annual income and 90.4 percent of respondents were in between the age groups of 21 to 50 years of age. Whereas 65.6 percent of respondents were married.

Table-1 Demographic Variables of the Population (n=168)

Variables		Frequency	Percent	Variables		Frequency	Percent
Sex	Male	144	85.70		Middle Class (5 to 8 lakhs)	92	55.1
	Female	24	14.30	Income levels (In Rupees₹ Annually)	Upper Middle Class (8 lakhs to 15 lakhs)	64	38.3
	Graduate	80	47.60		Upper Class (>15 lakhs	12	6.6
Education levels	Undergraduate	56	33.40		21-40	64	38

	High School	32	19		41-50	88	52.4.
Marital status	Married	110	65.6	Age categories (in year)	51-60	15	9.1
	Single	58	34.4		>61	01	0.5

(source: Own survey'2023-24)

Application of Online Food Delivery (OFD)

To find out the usage and need to OFD platforms a well structured questionnaire were designed and data were collected and accordingly pie chart were prepared to analyse the data. To find out the frequency of usage of OFD apps and to achieve the general objective and specific objectives of the research objective 1,

R1- Analysis Of Online Food Delivery Platforms In Supporting Food Services Needs Of Consumers.

Four research questions were asked and for which results have been discussed.

R1Q.1.How Frequently You Place The Order Through OFD App?
### **Fig. 1 Frequency of Orders Through OFD**
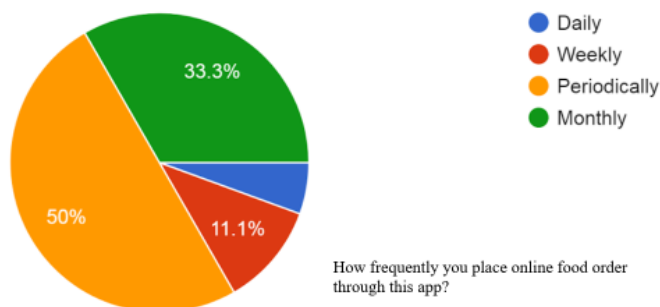
(Source: Own Survey '2024)

Fig. 1 shows that 83.3 percent of people when combined together were using the OFD app frequently on weekly and periodicals basis. Only 5.6 percent people were using it for daily basis which also indicated that a quite good number of people were using OFD(Online Food Delivery) on daily basis.

### *R1Q 2. Why Did You Place Online Food Order?*

Fig 2 shows that 52.6 percent of people had been placing the orders because of getting comfort of home and 31.6 percent people were using OFD app because of multiple choices of restaurant, food joints and of course for getting variety in food items. Whereas 10.5 percent people were using OFD platforms due to shortage of time because of busy work and life schedule.

Fig. 2 Purpose of Placing the Orders
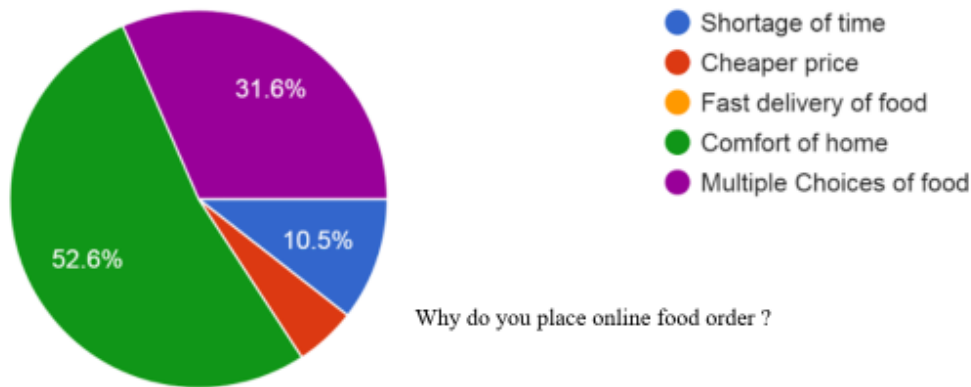
(Source: Own Survey '2024)

### R1Q.3. Don't You Like To Go To Restaurant/Fast Food Joints For Having Food?

Fig.3 indicated that 55percent of people were interested in going to restaurant for having their food and only 25 percent people were not showing that much interest in going to restaurant. Which means a good percentage of people were still interested in getting food through OFD mode.

Fig.3 Willingness To Visit Restaurants
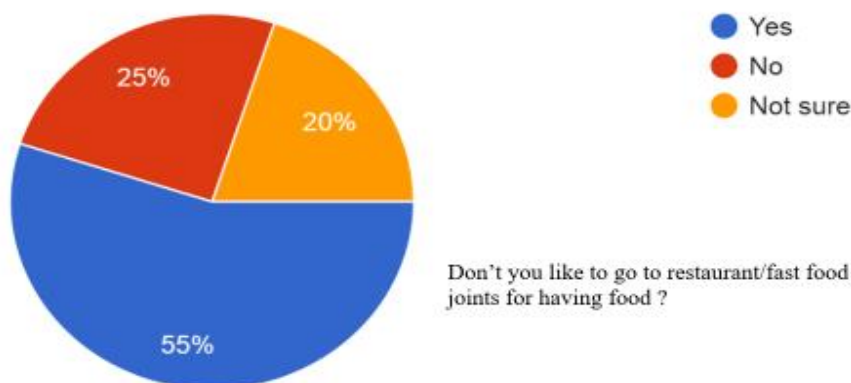
(Source: Own Survey '2024)

R1Q.4. How Does Online Food Ordering App Help You?

Fig 4 shows that 42.1 percent people were using the OFD platforms because of feeling relaxed and 36.8 percent of people were using it to save their time from busy work and life schedules. Only 10.5 percent of people were believing that it helps in saving their energy.

Fig 4 How Does OFD Help?
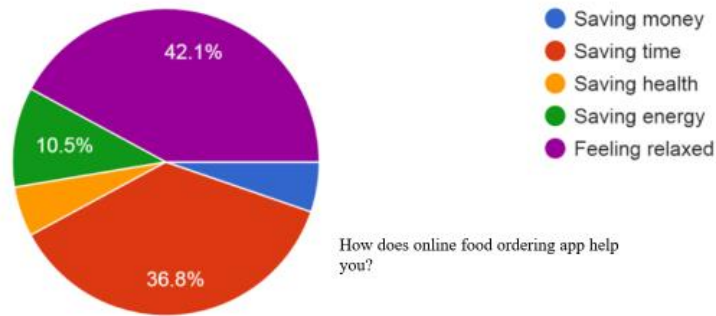
(Source: Own Survey '2024)

Table 2 R1- Analysis Of Online Food Delivery Platforms In Supporting Food Services Needs Of Consumers.

Variables	Degree of Agreement (in percentage %)	Inference (Relationship with R1 Objective)
R1Q.1.How frequently you place the order through OFD app?	83.6	Good number of users placing orders on monthly and periodically basis.
R1Q 2. Why did you place online food order?	84.2	Comfort of home and choices of restaurant and food joints
R1Q.3. Don't you like to go to restaurant/fast food joints for having food ?	55	Interested in going to restaurant for having food
R1Q.4. How does online food ordering app helps you?	78.9	Feeling relaxed and saving time

(Source: own research '2023-2024)

Table 2 shows that OFD platforms are helping consumers and its users in many ways and most of the respondents were satisfied with receiving food services from it. Table 2 shows the significant relationship with respect to our research variables and objective R1.

Impact of Online Food Delivery on Health Conditions
To asses the impact of OFD on health conditions of users six questionnaire were designed and data were collected to achieve the second specific objective of the research.

R2 To Find Out The Impacts On Health Conditions Of Online Food Consumers.

R2 Q.1. Did You Feel Any Change In Your Health Conditions After Consuming Food That You Ordered Online Through OFD App?
Fig. 5. Shows that 15 percent users of this app who were also consumers had been noticing some changes in their health conditions. But most surprisingly thing was 50 percent people were not sure that whether the food that they received and consumed by placing the order through the OFD platforms had been giving impact on their body or not. 35 percent people straight forward said that they did not notice any change in health conditions of any member of their family including them.

Fig.5 Change In Health Conditions
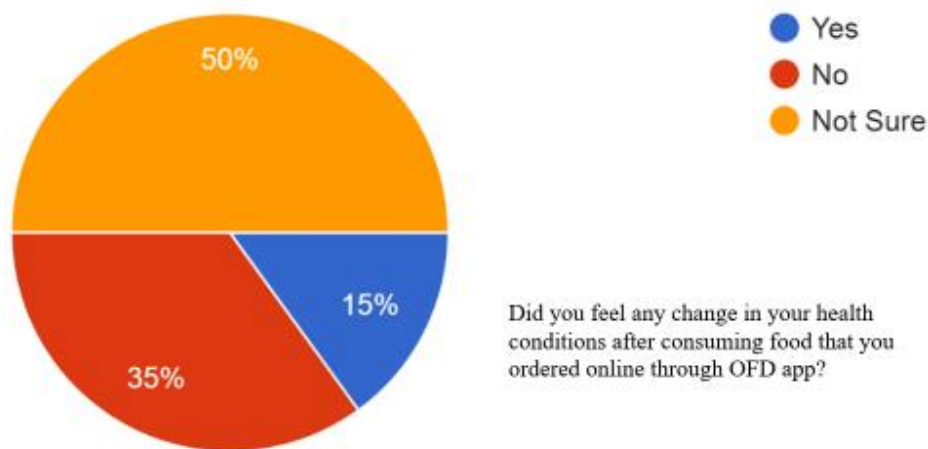
(Source: Own Survey '2024)

R2Q.2 Did You Gain Any Weight Due To Consumption Of Food By Ordering Through OFD App?
Fig.6 indicated that 10 percent of users and consumers in the family had gained the weight after receiving food through OFD platforms. 50 percent of people did not gain any weight and 40 percent people were not even sure that whether they would have gained any weight due ordering food online for consumption at home convenient.

Fig.6 Gaining Weight
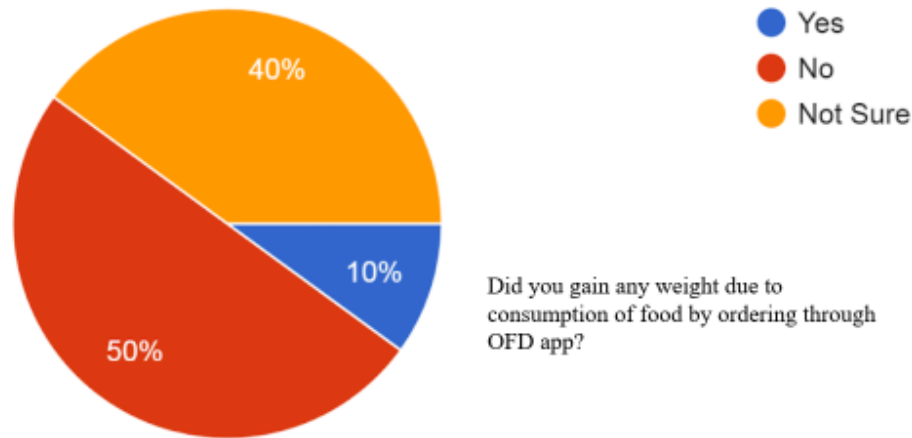
(Source: Own Survey '2024)

R2Q.3. Did You Loss Any Weight Due To Consumption Of Food By Ordering Through Ofd App?

Fig 7 shows that 5 percent of people said that they lose their weight due to OFD platforms because now they are eating limited quantity of food but when they go to restaurant, they eat a lot because of temptation of food. Although 50 percent people said no, and 45 percent people were not even sure for it.

Fig.7 Weight Loss

(Source: Own Survey '2024)
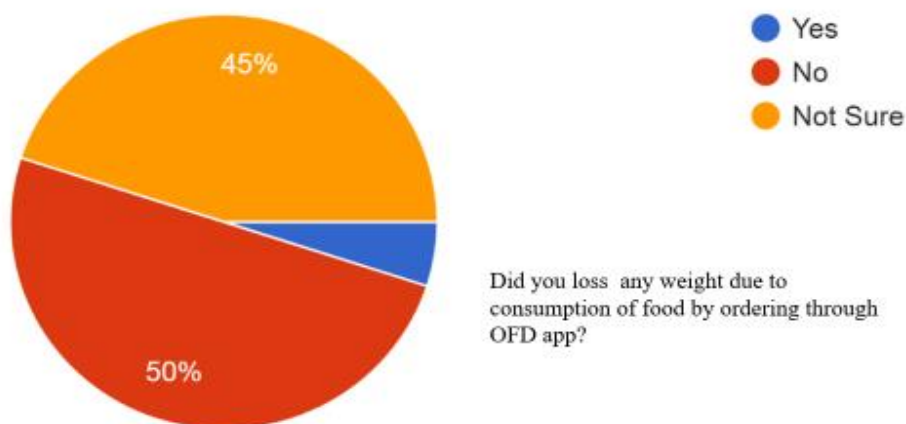
R2Q.4. Did You Suffer With Any Disease After Using Online Food Delivery (Ofd)App?

Fig. 8 shows that 10 percent respondents and their family members who consumed the food had suffered with some disease. Whereas 75 percent respondents had no such type of problems and 15 percent were not sure.

Fig.8 Suffered With Disease

(Source: Own Survey '2024)

### R2Q.5. Do You Agree That Online Food Delivery Apps Gives Negative Impacts On Our Health Conditions?

Fig.9 indicated that in terms of degree of agreement with respect to negative impact of OFD platforms on our health conditions,47.6 percent respondents were completely agreeing with it. And 23.8 percent were disagreed whereas 28.6 percent respondents were neutral in regard to their response.

Fig. 9 Does OFD Give Negative Impact On Health Condition
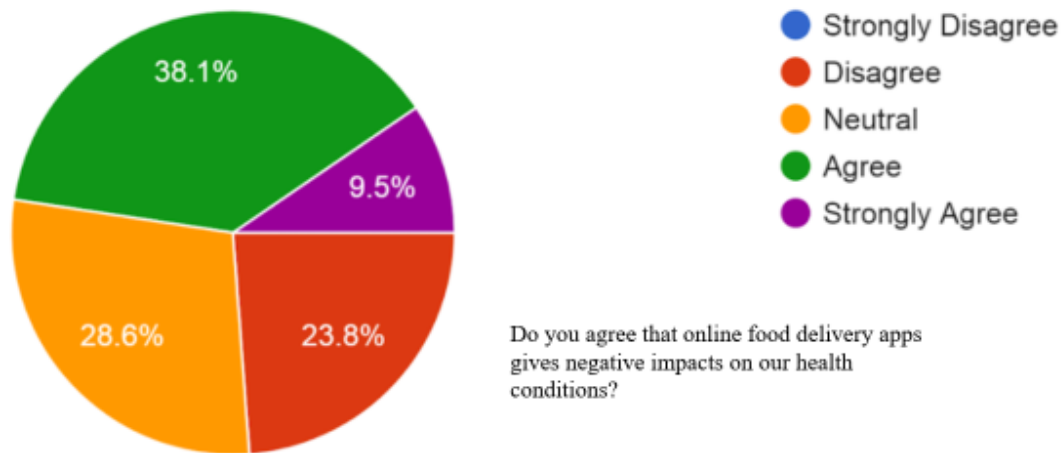
(Source: Own Survey '2024)

R.2Q.6. Do You Agree That Online Food App Gives Positive Impact On Our Health Conditions?

Fig.10 shows that only 19 percent of people think that OFD platforms gives positive impact on health and most of the respondents were disagree with it. When discussed it was found the reason for provided for positive impact was consuming food at pollution free environment of home in limited quantity. Monitoring of senior family member was there on overeating.

Fig. 10 Does OFD Give Positive Impact On Health Condition
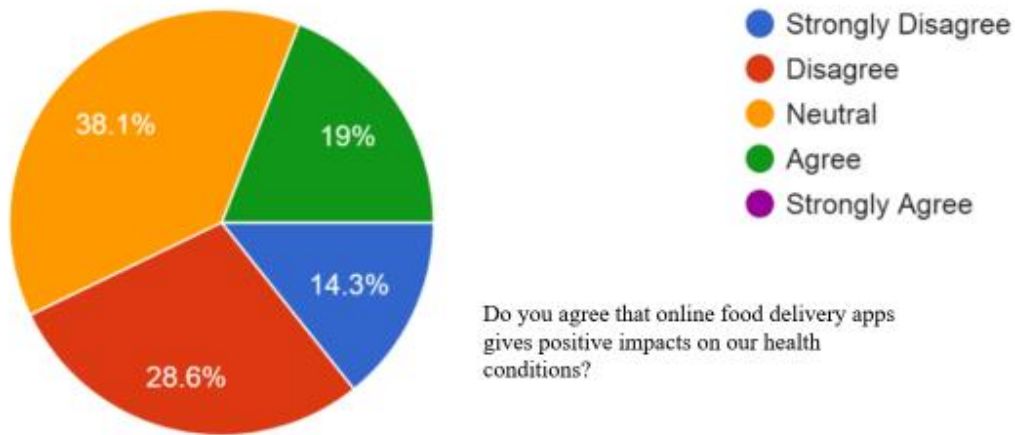
(Source: Own Survey '2024)

Table 3 R2 To Find Out The Impacts On Health Conditions Of Online Food Consumers.

Variables	Degree of Agreement (in percentage %)	Inference (Relationship with R2 Objective)
R2 Q.1. Did you feel any change in your health conditions after consuming food that you ordered online through OFD app?	15	Maximum number of consumer did not feel any changes in health condition.
R2Q.2 Did you gain any weight due to consumption of food by ordering through OFD app?	10	Quite high percentage of people did not gain any weight due to OFD food items.
R2Q.3. Did you loss any weight due to consumption of food by ordering through OFD app?	5	No weight loss in maximum consumer
R2Q.4. Did you suffer with any disease after using online food delivery (OFD)app?	10	Only 10 percent of people who suffered with disease

		but they were also not sure with the reason (OFD)
R2Q.5. Do you agree that online food delivery apps gives negative impacts on our health conditions?	47.6	Degree of agreement is below 50 percent in regard to negative impact of OFD app on health.
R.2Q.6. Do you agree that online food app gives positive impact on our health conditions?	19	Almost 42 percent customer were not agree with this that OFD gives positive impact on health and 38 percent not sure.

(Source: own research '2023-2024)

Table 3 shows negative relationship with our research variables and objective R2, which means there is only nominal and marginal negative impact on health status of consumers. But again, the response obtained against variables R2Q5 and R2Q6 with respect to our research variables and objective R2 does not show any agreeable positive impact.

### *Opportunities For OFD Platforms And Food Frauds*
To find out the opportunities for OFD platforms, benefits and unexpected chances of food fraud specific objectives set and for which questionnaire designed and forwarded to respondents.

R3 To Analyse The Opportunities For OFD Platforms To Satisfy The Need Of Stakeholders And Overcoming With Food Frauds.
To achieve the objective of this research total six questions were designed and forwarded to the respondents for data collection.

R3Q.1. Do You Agree That Online Food Delivery Platforms Increase The Changes Of Food Frauds And Food Adulteration?
Fig.11 shows that 47.65respondents were agree with it that OFD will lead to food frauds and food adulteration which would be very dangerous for the health of human beings.28.5 percent respondents were completely disagree with it and 23.8 percent were neutral.

Fig.11 Chances Of Food Frauds And Food Adulteration
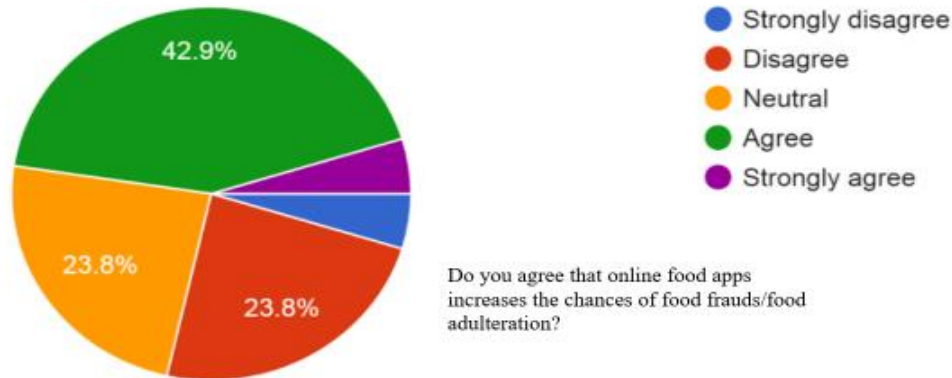
(Source: Own Survey '2024)

R3Q.2. Have You Ever Realised The Food Frauds In The Orders That You Received Through Online Apps?

Fig. 12 show the result of counter question asked to respondents in order to check the status of food frauds and food adulteration. In response to the question 20 percent of respondents said that they were the victim of food frauds and adulteration. And to support their view they said they suffered with loose motion and stomach upset. Sometimes quantity of food in portion wise was less and sometimes the food that they received was different from the order which they placed through OFD. The food was different in colour, texture, quantity, taste and accompaniments. 55 percent people were disagree as they had no issue and 25 percent respondents were not sure.

Fig. 12 Realisation Of Food Frauds In Order Received
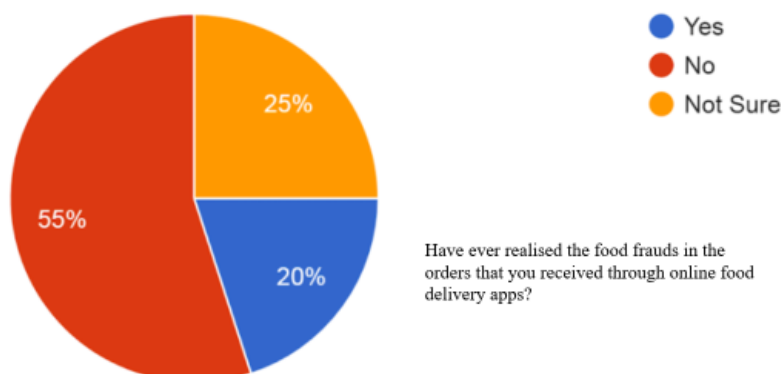
(Source: Own Survey '2024)

R3Q.3. Have You Ever Claimed For Food Frauds?

Fig.13 shows the result of second countered question asked to record the response and it was found that only 15.8 percent people raised their grievances and complaints to claim the food frauds and adulteration. 68.4 percent of respondents did not claim for it and 15.8 percent respondents were not sure of getting any response in regard to claim.

Fig.13 Claimed Against Food Frauds
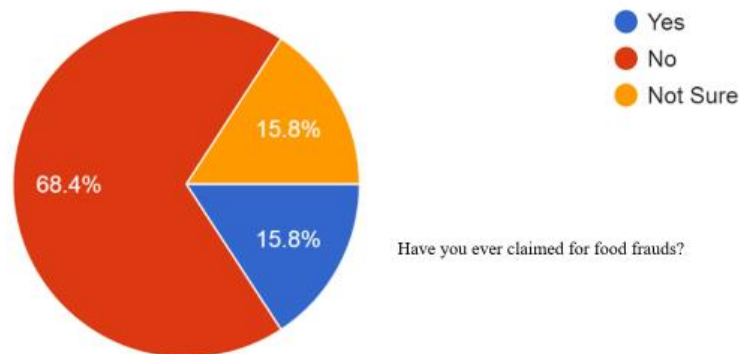
(Source: Own Survey '2024)

### R3Q.4. Was Support Service Provided In Regard To Dealing With Food Frauds Satisfactory?

Fig. 14 indicates that 42.1 percent respondents were not satisfied with the support team service in regard to resolving the issues related to food frauds and food adulteration. 15.8 percent respondents were satisfied which means hundred percent claims settled by support team(for reason refer fig 13 for it).

Fig. 14 Support Service In Regard To Food Frauds
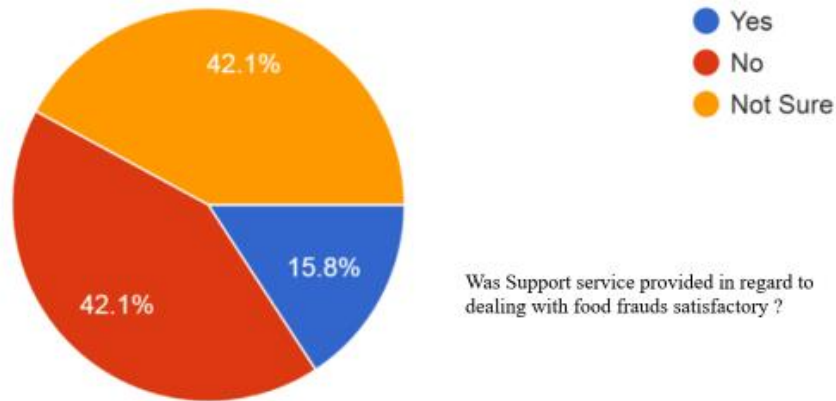
(Source: Own Survey '2024)

R3Q.5. Do You Agree That Online Food App Helps Old Age People In Getting Food Delivered At Their Doorstep?

Fig. 15 shows that 66.7. percent respondents were completely agreeing with it that OFD platforms helps old age people in getting their food at their doorstep. Therefore, it could be said that OFD could be boon for old age people in enjoying different cuisine or cuisines of their choices from various restaurants and food joints

Fig. 15 OFD For Old Age People
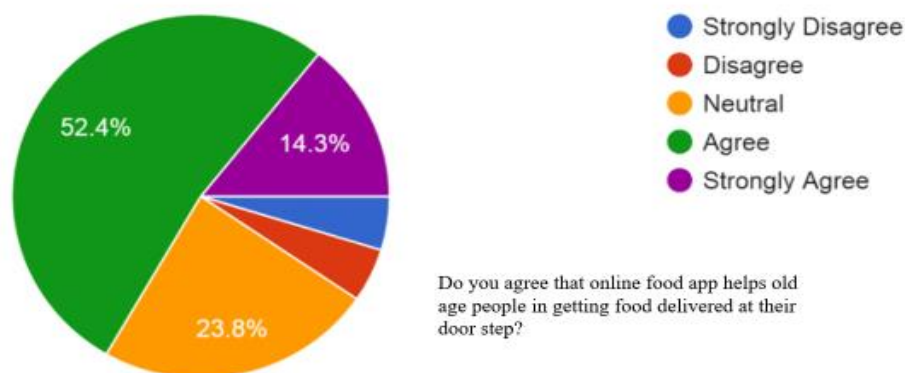
(Source: Own Survey '2024)

R3Q.6. Do You Agree That Online Food Delivery Platforms Are Good For Old Age And Physically Challenged People?

Fig 16 shows that 52.4 percent people were completely agree with it that OFD platforms would help old age and physically challenged people in various ways.

Fig. 16 OFD Good For Old Age And Physically Challenged Persons
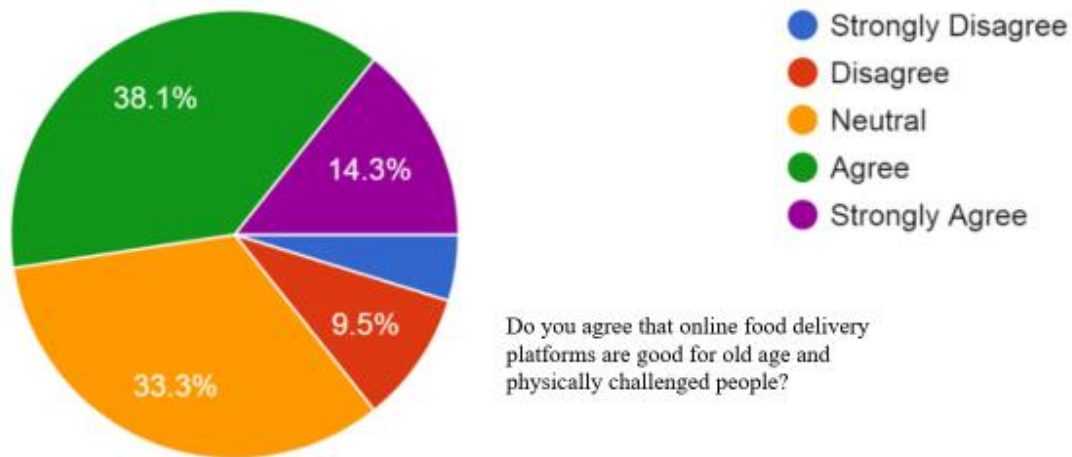
(Source: Own Survey '2024)

Table 4 R3 To Analyse The Opportunities For OFD Platforms To Satisfy The Need Of Stakeholders And Overcoming With Food Frauds.

Variables	Degree of Agreement (in percentage %)	Inference (Relationship with R3 Objective
R3Q.1. Do you agree that online food delivery platforms increase the changes of food frauds and food adulteration?	47.75	Quite a good number of people are agree that OFD increases the chances of food frauds and food adulteration.
R3Q.2. Have you ever realised the food frauds in the orders that you received through online apps?	20	Only marginal percentage of consumer realized the food frauds. But maximum number did not realize it.

R3Q.3. Have you ever claimed for food frauds?	15.8	Those who realized the food frauds out of that only 15 percent people claim it.
R3Q.4. Was Support Service provided in regard to dealing with food frauds satisfactory ?	15.8	Consumer who claimed for food frauds also received satisfactory services from OFD providers.
R3Q.5. Do you agree that online food app helps old age people in getting food delivered at their door step?	66.7	Quite a good number (67 percent) people agree with supporting role of OFD on relation to old age people.
R3Q.6. Do you agree that online food delivery platforms are good for old age and physically challenged people?	52.4	More than 50 percent respondent said OFD is good and helpful for physically challenged people

(Source: own research '2023-2024)

Table 4 shows the mixed relationship with the research variable objective R3. Consumers have mixed opinions regarding food fraud and food adulteration, but they view OFD platforms as an important supportive service to meet the various physical needs of consumers, especially in terms of delivering food at the doorsteps of elderly people, physically challenged people and other stakeholders who do not have time to visit restaurants due to busy life and work schedules. Customers were also satisfied with the after sales services and support.

Conclusion
The study found that online food delivery (OFD) platforms has been playing a vital role in food supply chain. And it has been providing a comfort of home kind of convenient services to the busy customers as well as old age people. Online Food Delivery had given significant impact on the health conditions of the people particularly in gaining weight and also had been a reason of stomach upset among a marginal percentage of customers. Food frauds and food adulteration would be remained as an important issue to be tackled in future and for which attention need to be paid by researchers. This research has been successful in achieving its objectives, but there are many dimensions which are yet to be achieved. This research will have industrial and societal impact and will provide a roadmap for operators of online food delivery platforms as well as precautionary measures for users and consumers of OFD foods.

Limitations Of Study
The research was limited to a certain geographical area, sample size and literature review. Therefore, any generalized view may not be correct due to differences in size, objectives, varying perceptions and differences in the field and iterature followed.

Direction For Future Research

Further research should be conducted towards investigating online food delivery platforms and its impact on the health conditions of OFD food consumers and also the role of OFD platforms in the lives of elderly aged people and physically disabled people. Food quality, food fraud and food adulteration can be other key areas that can be explored in relation to OFD platforms which will make the study more meaningful, and the relationships can be explored more effectively.

Acknowledgement

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