

Survey On Ordering and Eating Food Using Online Food Delivery Applications

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Abstract:

The convenience of online food ordering has rapidly grown in popularity in recent years, as technology has made it easier for people to access and purchase food from their favourite restaurants without leaving their homes. This analysis of the survey responses from a sample of consumers indicates the trend and preferences of online food ordering after the COVID-19 pandemic, particularly by younger generations. The survey aimed to collect data on the frequency of online food ordering, the type of food ordered, the level of due diligence conducted by the respondents while ordering food, the impact of online food ordering on overall food consumption, and the perceived advantages and disadvantages of ordering food online. By gathering insights into these areas, the survey aimed to provide a comprehensive overview of the trend of online food ordering and its impact on individual consumers, online food delivery and food industry.

Introduction:

Online food delivery platforms have been gaining immense popularity, particularly during and after the COVID-19 pandemic. Food delivery and online ordering services has rapidly expanded worldwide in the last years as increasing number of people are using these services worldwide [1-3]. It is estimated that the global market of online food delivery (OFD) has an average growth rate of 8.28% from 2022 to 2026 [4]. Simultaneously there has been increasing concerns about the quality and safety about the food delivered online. It is often questioned if the nutritional quality of the food and the hygiene and cleanliness of the kitchen are maintained by the online food delivery chains. Also, OFD has been held responsible for unhealthy diet, health related problems and obesity as people tend towards overconsumption of food (eating bigger portions of food) and ordering more fast food or unhealthy food online [4, 5]. The World Health Organization (WHO) has recommended continuous monitoring and policies so that OFD does not become a threat to achieve United Nations 2030 Sustainable Development Goals (SDGs) for public health and wellbeing, responsible production, and consumption [6]. Public health nutrition programs spread awareness among the people to consider optimal nutrition, improved dietary habits and wellbeing during online food ordering [6, 7]. Studying consumer ideas and behaviour have been important for the food industry as well as for public health organizations to study and hold up this growing trend for online food [1, 3].

In this study, we have analyzed the conception and habits of the consumers and tried to identify the factors which contribute to the growing trend of OFD. Furthermore, our study aimed at investigating the awareness of the people while ordering food online. During this questionnaire, we have indirectly spread health awareness among the people by informing them about nutrient contents, safety and cleanliness, frequency, and quantity of consumption, of the food ordered online.

Methods:

The survey was conducted online and administered through snowball sampling. A total of 287 respondents participated in the survey, consisting of two groups with 54 and 233 participants, referred to as Morsel survey and Survey Monkey respectively. All participants were asked the following questions and statistical analyses were performed based on the answers collected.

Questions asked in the Survey:

- Q1. How many times do you order food using online platforms?
- Q2. Do you order fast food?
- Q3. Do you order Health Food?
- Q4. Have you visited the restaurants from where you order food online to ascertain cleanliness of the kitchen and the staff?
- Q5. When you order Fast food do you check the percentage of fat and Sugar content in the food?
- Q6. When you order Health food do you verify if the contents added to make the food are as per the claims made by the vendors?
- Q7. Your Age?
- Q8. Do you think that you are consuming more food every week by including online food?
- Q9. Do you feel that ordering food via online platforms has a distinct advantage of not having to commute or wait at the restaurant amongst a crowd of people?
- Q10. Does your over all food bills increase due to online ordering?

Statistical analysis:

The chi-square tests were performed on the survey responses and the confidence intervals were estimated to interpret the outcomes. The chi-square test helped to determine statistical significance in the relationship relationships between two categorical variables, such as the type of food ordered and the frequency of online ordering. Confidence intervals provide a range of values that are likely to contain the true population mean with a certain level of confidence. By estimating confidence intervals, it is possible to extrapolate the sample statistics to the larger population, making it possible to generalize the findings of the survey to a wider audience. Statistical correlations between two categorical variables were carried out within individual study populations as well as the two study groups combined. Pie charts were prepared depicting the responses of the questionnaire as percentages. Individual analyses are provided with details for each figure as supplementary information.

We have used MS-Excel for plotting charts and tables and standard statistical techniques for statistical analysis.

Result:

The data on the frequency of ordering food using online platforms, as gathered from two surveys - Morsel Survey and Survey Monkey- demonstrate that the most commonly people ordered food using online platforms “less than three times a week” or “between three to seven times per month”. In total, there were 287 respondents who participated in both surveys. According to the data, the most common frequency of ordering food online is less than three times a month, with 37.63% of respondents selecting this option. The next most common frequency is between 3 and 7 times a month, selected by 29.97% of respondents. The data also shows that a small percentage of respondents’ order food online very frequently. Only 2.09% of respondents order between 30 and 50 times a month, and just 1.74% of respondents order more than 50

times a month. Finally, a small percentage of respondents selected "others" as their answer choice, which may indicate that they order food online at irregular frequencies or have some other specific ordering pattern (Fig 1).

The chi square result indicates that the frequency of food using platforms orders is age-dependent, which is clearly seen in the figure 1. 86% of the orders are placed by respondents under 40 years old. Seventy-one percent of these respondents (<40 years old) order with a maximum frequency of 15 times per month. The data shows that individuals aged between 20- and 30-years old order food the most frequently, with 38 percent individuals in that age range, while individuals above 60 years old order food the least frequently, with only 2 percent of all the respondents (Fig 1). This data presents a trend that younger people are more likely to order food using online platforms than older people.

Obesity and other health-related issues are the most concerning factors associated with dietary habits of adults. Therefore, we were interested in finding out if people are health conscious while ordering online. We asked in our study group if they order fast food and how often they order health food. From 287 respondents who participated in both surveys, the data reveals that most respondents order fast food, with 62.02% of respondents selecting "Yes, sometimes" as their answer choice (fig 2). The data also shows that a significant number of respondents always order fast food, with 22.30% of respondents selecting "Always". On the other hand, a smaller percentage of respondents never order fast food, with 15.68% of respondents selecting "Never" (fig 2).

The combined percentages from both surveys demonstrate that 41.81% of respondents only order health food, 20.91% order health food most of the time, 24.39% order health food on a few occasions, and 12.89% never order health food. Overall, the data suggests that a significant percentage of respondents' order health food to some extent, with nearly 63% of respondents saying they order health food either exclusively or most of the time (figure 2). Overall, the data suggests that a significant number of people order fast food, and that fast food is a popular option for many people. Our statistical analysis also indicates that ordering fast food is dependent on the number of times food is ordered using the platform, the respondents mostly order fast food or health food always or sometimes when they use platforms up to 15 times per month (fig 2 or supplementary figure 2).

It is interesting to note that the percentage of respondents who always order fast food or who always order health food vary between the Morsel survey (25.75%) and the Monkey survey (supplementary fig 2). This may be since the respondents in the two surveys may differ in terms of demographics or other factors that influence their eating habits. Could it also be that the differences in the age group of people participating in the two survey makes a difference in their healthy eating preferences. Indeed, the chi square result indicates that fast food orders are age-dependent, which is clearly observed in the figure 2. 84% of the respondents sometimes or always order fast food, out of which seventy-seven percent are under 40 years of age. Our data shows the distribution of individuals who order fast food based on their age. The data shows that 62% of the total individuals answered "yes" to ordering fast food, while 22% answered "never". Individuals aged between 20 and 30 years old have the highest percentage of individuals who order fast food, with 23% of individuals in that age range answering "yes". Individuals above 60 years old have the lowest percentage of individuals who order fast food, with only 1% of individuals. Consistently, the statistical significance shows that ordering health food is also age-dependent: 56% of respondents who order only or mostly health food and are under 40 years of age. Those older than 40 years order only or mostly in 6% of cases (figure 2 and supplementary figure 2).

Online food ordering is generally more convenient but also offer a wider possibilities of unhealthy food options. The health risks related to online food ordering depends on the dietary and nutritional content of the food as well as safety and hygiene of the food from preparation to delivery. We tried to dig a bit deeper in understanding how health conscious are people while ordering food online. Are people aware of what they are ordering, particularly their ordered food is healthy or not? We asked our study population the following critical questions to find out their health consciousness when ordering online food: regarding nutritional content- 1) if they check the percentage of fat and Sugar content when ordering fast food, and 2) if they verified that the contents added to make the food are as per the claims made by the vendors; regarding food safety: we asked if they visited the restaurants from where you order food online to ascertain cleanliness of the kitchen and the staff (the detailed survey in supplementary figure 3 and 4).

Our data table presents that out of 233 respondents, 151 individuals (64.81% from Morsel Survey and 11.11% from Survey Monkey) always check the percentage of fat and sugar content in the food. In addition, 38 individuals (16.31% from Morsel Survey and 29.63% from Survey Monkey) sometimes check the percentage when it is declared in the menu. Finally, 44 individuals (18.88% from Morsel Survey and 59.26% from Survey Monkey) never check the percentage of fat and sugar content in the food. It is worth noting that the percentage of individuals who always check the percentage of fat and sugar content in the food is higher in the Morsel Survey than in the Survey Monkey survey. Nevertheless, overall, 73.52% of the combined study cohort always or sometimes check the fat and sugar content of the food during online ordering implying health consciousness or specificity of dietary requirements in a large part of this study population. We could not provide sufficient evidence that the interest in nutritional or dietary values are dependent on age of the respondent. (supplementary figure 3). A considerable proportion of individuals who do not check the fat and sugar content in food may prioritize taste, convenience, or price over nutrition.

Additionally, our data shows that that out of 233 respondents, 151 individuals (64.81% from Morsel Survey and 38.89% from Survey Monkey) sometimes verify if the contents added to make the food are as per the claims made by the vendors; 50 individuals (21.46% from Morsel Survey and 3.7% from Survey Monkey) always verify if the contents added to make the food are as per the claims made by the vendors and finally, 32 individuals (13.73% from Morsel Survey and 57.41% from Survey Monkey) never verify if the contents added to make the food are as per the claims made by the vendors (figure 3). The overall combined percentage of those who always verify or sometimes verify is 80.05%, even though percentage of individuals who always verify the contents is higher in the Morsel Survey than in the Survey Monkey survey.

The combined data shows that out of 233 respondents, 141 individuals (60.52% from Morsel Survey and 55.56% from Survey Monkey) have visited the restaurants, while 92 individuals (39.48% from Morsel Survey and 44.44% from Survey Monkey) have not. It is worth noting that the percentage of individuals who have visited the restaurants is slightly higher in the Morsel Survey than in the Survey Monkey survey. However, the overall combined percentage of those who have visited the restaurants is 59.58%. Based on this data, it can be inferred that a significant proportion of individuals who order food online have visited the restaurants to check the cleanliness of the kitchen and staff (figure 4). In addition, Chi square result test shows that visits to the restaurants of food online to ascertain cleanliness of the kitchen and the staff is dependent on ordering health food: 37% people who order mostly or only healthy food visit restaurants whereas 26% donor to ascertain cleanliness (figure 4).

Interestingly, the hygiene-aware choices of food ordering are age-dependent. Our statistical analysis shows that people between the ages of 30 and 40 are more likely to check cleanliness and staff behaviour compared to those in other age groups. On the other hand, people under 20 and over 60 are less likely to check these factors (figure 4). However, there might be other reasons for not checking the cleanliness of the place before ordering which need further investigation, such as convenience or distance of restaurant from their location, trust in online reviews, weather, or lack of time, or other factors. The detailed study and answers of the respondents are provided in supplementary figures 3-4.

Online food ordering often makes it easy to order larger portion sizes than what you would normally eat, which can lead to overconsumption, weight gain and eventually obesity. Our survey also encompassed if online food ordering drive direct or indirect overeating. Our questionnaire shows that out of 233 respondents, a slight majority of 52.26% think they consume more food every week by including online food, while 35.19% think they do not consume more food, and 9.06% believe their total intake remains the same. The remaining 3.48% of respondents are not sure. Based on this data, it can be inferred that a slight majority of the respondents believe they consume more food every week by including online food, but there are still a significant number of respondents who do not think they consume more food. The data may suggest that the availability and ease of online food ordering may lead to some people consuming more food than they otherwise would, but it is not a universal trend among all online food consumers (figure 5).

The chi square result indicates that respondents feel that they are consuming more food every week by including online food according to their age. The graph shows that the highest percentages of increase in consumption correspond to respondents up to 40 years of age-52% feel that consumption is increasing. 49% of those who feel that consumption is increasing are 40 years old or younger. 5% of this age group feel that consumption is the same. 29% of those who feel that consumption is not increasing are 40 years of age or less (figure 5). The answers of individuals along with their age group as well statistical analysis provided in supplementary figure 5.

Despite the health and hygiene concerns, online food ordering platforms are gaining popularity in recent years as shown by our data as well as several others. We tried to analyse, through the opinion of our study group, certain other advantages and disadvantages that might influence the growing trend of online food ordering. When we asked people “if online food increases their overall food consumption”, no universal trend could be established between the two study populations. Nevertheless, out of total 233 respondents, a slight majority of 52.26% think they consume more food every week by including online food while 35.19% think they do not consume more food, 9.06% believe their total intake remains the same. The remaining 3.48% of respondents are not sure (figure 6). Furthermore, 49% of the respondents who think they consume more food weekly by online ordering are 40 years old or younger (figure 6). This is consistent with the chi square result that support indicates that respondents feel that they are consuming more food every week by including online food according to their age (figure 6).

It is worth noting our next finding that a majority of 63.07% of the respondents, from both surveys, feel that ordering food via online platforms has the distinct advantage of not having to commute or wait at the restaurant amongst a crowd of people. This suggests that convenience is a major factor driving the popularity of online food ordering, and it is a key benefit that consumers perceive from a mode of food consumption (figure 6). Furthermore, “age” is the key factor in determining a person's perception of the advantage of ordering food online, with younger generations being more likely to see it as an advantage. 63% respondents who consider that ordering food online platforms has a distinct advantage, 53% are under

40 years of age. Most of the respondents under 30 years old (76 out of 108, or approximately 70%) felt that ordering food online has a distinct advantage. Older generations less likely see advantage of online food ordering as most respondents over 30 years old (51 out of 179, or approximately 29%) felt that ordering food online does not have a distinct advantage.

Our final query was focussed on the general opinion if online food ordering could be financially sustainable choice. We got mixed results from the study cohorts but most respondents from both surveys reported that their overall food bill has either not increased or has only increased by a small percentage due to online ordering. In the Morsel Survey, 118 respondents (50.64%) answered that their overall food bill has not increased due to online ordering. 51 respondents (21.89%) reported a small increase, 18 (7.73%) reported a moderate increase, and 6 (2.58%) reported a significant increase. 40 respondents (17.17%) said they have not tried to verify. In the Survey Monkey, 9 respondents (16.67%) answered that their overall food bill has not increased due to online ordering. 11 respondents (20.37%) reported that they have not tried to verify. 14 respondents (25.93%) reported a small increase, and 14 respondents (25.93%) reported a moderate increase. 6 respondents (11.11%) reported that it has increased significantly. The statistical analyses with chi square results consolidated that the responses were age dependent as 41% of the respondents whose found online ordering financially stable were under 40 years old.

Overall, most respondents from both surveys reported that their overall food bill has either not increased or has only increased by a small percentage due to online ordering. Options such as ordering less expensive food, avoiding emotional eating, and ordering the required portions of food could further reduce the unnecessary costs related to online food ordering.

Discussion:

Our survey indicates a trend that younger people (less than 40 years old) order online food more frequently than others. This trend could be due to several factors which include that younger people are more likely to use technology and therefore be comfortable with online ordering platforms. Additionally, younger people may be more likely to live in urban areas, where online food ordering is more common and accessible. Overall, these findings could have implications for the food industry and for online ordering platforms. Companies may want to target younger customers in their marketing and advertising and consider developing new features that are particularly appealing to younger people. Conversely, companies may need to take steps to make their platforms more accessible and user-friendly for older customers who may be less familiar with technology. The lockdown during COVID-19 pandemic has remarkable impact on the changes in lifestyle, also on eating habits. Our surveys were performed shortly after the pandemic lockdown times and this data is important for further deeper studies on the effects of the pandemic.

The widespread practice of online food ordering can lead to several potential risks associated with consuming more food, including increased portion sizes, overconsumption of food, convenient unhealthy options, inaccurate nutritional information, and hygiene. Online food ordering can also make it easier to indulge in emotional eating, as customers may order food for comfort or as a reward, rather than for sustenance. Our study spreads health awareness and makes people aware of the important considerations before online food ordering, including verification of the nutritional contents of the food, checking the cleanliness of the kitchen and delivery. It is important to be mindful of portion sizes and to make informed choices about what you are eating, whether ordering food online or not. Practicing self-control, being

aware of your food choices, making informed choices and being mindful of portion sizes can help improve experiences with online food ordering.

Conclusion:

Our results also tend that the adoption of online ordering for food is increasing, as most of the respondents (181 out of 287, or approximately 63%) felt that it has a distinct advantage. Younger generation, under 40 years of age, tend to order more food online. Taking certain precautions can enhance the popularity of the online food ordering and ensure their dietary qualities. The findings of this study present the trends and preferences as well as the quality and standards of the online food delivery which is relevant for the individual consumers, food industry and online delivery platforms.

Appendix:

Analysis of Survey Results:

Q1. How many times do you order food using online platforms? Answer Choice	Morsel Survey	Survey Monkey	%age 1	% age 2	Combined
Less than three times a month	78	30	33.48	55.56	37.63
Between 3 and 7 times a month	77	9	33.05	16.67	29.97
Between 8 and 15 times a month	39	4	16.74	7.41	14.98
Between 15 and 30 times a month	19	8	8.15	14.81	9.41
Between 30 and 50 times a month	5	1	2.15	1.85	2.09
More than 50 times a month	5	0	2.15	0	1.74
Others	10	2	4.29	3.7	4.18
	233	54			287

Table 1: Frequency of Ordering

Q2 .Do you order fast food? Answer Choice	Morsel Survey	Survey Monkey	% age 1	% age 2	Combined
Yes	145	33	62.23	61.11	62.02
Sometimes					
Never	28	17	12.02	31.48	15.68
Always	60	4	25.75	7.41	22.3

	233	54	100	100	100

Table 2: Do you order Fast Food

Q3. Do you order Health Food?

Answer Choice	Morsel Survey	Survey Monkey	% age 1	% age 2	Combined
I only order Health Food	116	4	49.79	7.41	41.81
I order Health Food a majority of times	51	9	21.89	16.67	20.91
I order Health food on a few occasions	45	25	19.31	46.3	24.39
I never order Health food	21	16	9.01	29.63	12.89
	233	54	100	100.01	100

Table 3: Do you order health food ?

Q4. Have you visited the restaurants from where you order food online in order to ascertain cleanliness of the kitchen and the staff?

Answer Choice	Morsel Survey	Survey Monkey	% age 1	% age 2	Combined
Yes	141	30	60.52	55.56	59.58
No	92	24	39.48	44.44	40.42
	233	54	100	100	100

Table 4: Have you visited restaurants -(Q4)

Q5: When you order Fast food do you check the percentage of fat and Sugar content in the food?

Answer Choice	Morsel Survey	Survey Monkey	Percentage 1	Percentage 2	Combined
Never	44	32	18.88	59.26	26.48
Always	151	6	64.81	11.11	54.7
Sometimes when it Is declared in the menu	38	16	16.31	29.63	18.82
	233	54	100	100	100

Table 5: Do you check the percent of fat and sugar (Q5)

Q6: When you order Health food do you verify if the contents added to make the food are as per the claims made by the vendors?

Answer Choice	Morsel Survey	Survey Monkey	Percentage 1	Percentage 2	Combined
Never	32	31	13.73	57.41	21.95
Sometimes	151	21	64.81	38.89	59.93
Always	50	2	21.46	3.7	18.12
	233	54	100	100	100

Table 6: Verify if claims made are correct (Q6)

Q7 : Your Age

Answer Choice	Morsel Survey	Survey Monkey	Percentage 1	Percentage 2	Combined
Less than 20 years old	41	12	17.6	22.22	18.47
Between 20 and 30 old	101	7	43.35	12.96	37.63
Between 30 and 40 old	74	13	31.76	24.07	30.31
Between 40 and 50 years old	14	4	6.01	7.41	6.27
Between 50 and 60 years old	1	16	0.43	29.63	5.92
Above 60 years old	2	2	0.86	3.7	1.39

Table 7 : Your Age

Q8: Do you think that you are consuming more food every week by including online food?

Answer Choice	Morsel Survey	Survey Monkey	% age 1	% age 2	Combined
Yes	136	14	58.37	25.93	52.26
No	77	24	33.05	44.44	35.19
Total intake remains the same	14	12	6.01	22.22	9.06
Not sure	6	4	2.58	7.41	3.48

	233	54	100.01	100	99.99
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Table 8: Are you consuming more food ?

Q9: Do you feel that ordering food via online platforms has a distinct advantage of not having to commute or wait at the restaurant amongst a crowd of people?

Answer Choice	Morsel Survey	Survey Monkey	Percentage 1	Percentage 2	Combined
No	92	14	39.48	25.93	36.93
Yes	141	40	60.52	74.07	63.07
	233	54	100	100	100

Table 9: Online ordering is an advantage ?

Q10: Does your over all food bill increase due to online ordering?

Answer Choice	Morsel Survey	Survey Monkey	% age 1	% age 2	Combined
No, it has not increased	118	9	50.64	16.67	44.25
Have not made an attempt to verify	40	11	17.17	20.37	17.77
It has increased by a small percentage	51	14	21.89	25.93	22.65
It has increased by a moderate percentage	18	14	7.73	25.93	11.15
It has increased significantly	6	6	2.58	11.11	4.18
	233	54	100.01	100.01	100

Table 10 : Does your overall bill increase ?

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