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Original Research

Online Food Delivery Service Satisfaction, Food Choices, and Usage Frequency Among UPLB Students Aged 18-24 During the COVID-19 Pandemic

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Abstract

Lockdown measures brought about by the COVID-19 pandemic have notably shifted food purchasing behavior towards online food delivery services (OFDS). This study examined consumer satisfaction with OFDS and their relationship to food choice and frequency of use among 18-24-year-old University of the Philippines Los Baños (UPLB) students. Through a survey of 80 students who used OFDS during the pandemic, our results revealed that while price significantly influences food choice, the quality of online service (E-service quality or ESQ) results in customer satisfaction. Notably, our analysis showed a strong, positive relationship between food choice factors (i.e., mood, convenience, sensory appeal, natural content, and price) and consumer satisfaction factors (i.e., time-saving orientation (TSO), hedonic motivation (HM), price-saving orientation (PSO), convenience motivation (CM), food quality (FQ), and ESQ), which, in turn, correlated with increased usage frequency. These findings highlight the importance of a comprehensive approach in online food service offerings to enhance well-being by addressing the key factors influencing consumers' food choices and satisfaction. Our study suggests that improving factors such as hedonic motivation could encourage frequent use of OFDS, underscoring the need for targeted strategies to cater to young adult preferences in the changing dynamics of food delivery services.

Keywords— *consumer satisfaction, COVID-19, food choice, online food delivery service, young adults*

1 Introduction

Lockdown measures have been implemented throughout the Philippines, obstructing transportation and limiting access to basic needs and services, including public dining [1]. But despite the pandemic's restrictive and limiting effects, technology has found a way to expand online food businesses and offer services by going online and digital, like online food delivery services (OFDS) [2]. This service operates by offering delivery transactions involving the purchase of food items from various food businesses via mobile devices or smartphones [3, 4, 5]. These were some of the most distinct purposes of OFDS that greatly impacted reducing the challenges brought by the quarantine imposed during the COVID-19 pandemic, especially regarding food availability and accessibility [5].

Because of this, consumers have adopted an increased reliance on shopping for food commodities digitally and online [6]. Furthermore, consumers are easily influenced by the situational influences they are experiencing from their environment. Thus, the COVID-19 pandemic has indeed played a role in how consumers plan and use OFDS as their food source [7].

There is no doubt that the OFDS has a wide array of benefits for its consumers. The increased availability and accessibility of ready-to-eat and takeaway foods have changed how people prepare, consume, and, most especially, choose foods. However, despite all its advantages and wide offer of food items, limited studies investigate the consumers' decision-making process regarding the relationship between their food choices and satisfaction with the use of OFDS during the COVID-19 pandemic. Furthermore, the current understanding of those consuming foods through OFDS is limited in supporting how their satisfaction when ordering food through digital platforms can be associated with their continued use of the service.

It is hypothesized in this study that food choice is positively associated with consumer satisfaction with OFDS and that consumer satisfaction with OFDS is positively associated with frequency of use. Thus, this study investigated consumer satisfaction in using OFDS and their relationship to food choice and usage frequency among 18–24-year-old UPLB students during the COVID-19 pandemic by assessing the factors affecting food choice and consumer satisfaction, as well as analyzing the relationship among these factors. The findings of this study elucidated the level of importance people place on certain food choice factors and identified the primary determinant of consumer satisfaction with OFDS. This study hoped to provide insights into the consumer behavior of young adults, revealing their preferences, satisfaction levels, and frequency of utilizing OFDS during the pandemic lockdown. These results may help understand shifts in dietary habits, as influenced by increased reliance on OFDS, which may have significant public health and nutritional consequences. It may also indicate a broader social and cultural shift toward reliance on digital platforms for meeting daily needs, specifically, food purchasing.

However, since few existing studies specifically addressed the relationship between food choice and consumer satisfaction with OFDS, the study's limitations also include the inadequacies of previous research studies that support the present study's findings. Furthermore, the study uses an existing food choice measurement. Thus, food choices are limited to the factors included in the measurement (health, mood, convenience, sensory appeal, natural content, price, weight control, familiarity, and ethical concern). Moreover, the current study solely evaluates the following factors influencing consumers' satisfaction with OFDS: TSO, HM, PSO, CM, ESQ, and FQ. These factors would be discussed thoroughly in the literature review.

2 Review of Related Literature

Studies revealed that demographics contribute to the preference to use OFDS, such that some studies found that it varies according to accessibility [8, 9], while others identified that it depends on the age group and that it is consumers aged 18-24 who are most likely to get their food ordered online [10, 11, 12, 13, 14]. There are mixed findings regarding the association of gender when using

OFDS. Some studies find that males are more likely to use OFDS because of their technical skills, whereas others say that females use OFDS more because they are always expected to provide food for other people [7, 8, 15]. However, another study found no significant difference between the use of OFDS and gender [16]. Socioeconomic status and educational attainment also showed varying results about its association with OFDS use. Some studies found that people with lower household incomes and lower educational attainment were associated with frequent consumption of takeaway foods [8]. In contrast, another study contradicted this by saying that people with high household incomes and higher educational attainment are more likely to use this service because they have more disposable income and a higher ability to adopt new technologies [7, 10].

Over the years, various studies have been conducted to understand people's purchasing practices. One of the most important factors that play an important role in consumers' behavior is their reason for choosing the right food they want in every purchase [17]. Food choice refers to the specific reason that people use to select specific food items. It results from complex factors that vary from person to person, including physical and non-physical impulses from the internal or external environment, thus leading to the conscious and unconscious decision-making process [18]. Various factors could affect food choice, including health, mood, convenience, sensory appeal, natural content, price, weight control, familiarity, and ethical concerns [19].

One study found that price, health, convenience, and sensory appeal were the strongest determinants of food choice [20]. Similarly, price was found to be the most important factor in food selection in countries such as Spain, Greece, Ireland, Portugal, and the Netherlands; sensory appeal was found to be the most important factor in Norway, Germany, and the United Kingdom; and natural content was found to be the most important factor in Poland [21].

Additionally, people's perceptions of food prices changed; for example, one study found that people expected changes in food prices during the pandemic [22]. Sensory appeal was also found to be the most motivating factor, followed by price and weight control, in a study conducted in 2011 [23]. A more recent study performed during the pandemic has also supported the idea that sensory appeal was the most important food choice before and during the pandemic [24]. According to studies, another primary driver of people's food choices is associated with people's mood. A study conducted in France during the COVID-19 pandemic found that the lockdown was related to modification of food choices and an increase in mood as a food choice motive, followed by health, ethical concern, and natural content [25]. This could be related to the COVID-19 pandemic situation, wherein aside from the geographical barriers, the emotional and mental impact caused by social and physical isolation has affected many people [6, 26]. Another study conducted on respondents who took a nutrition course found that besides sensory appeal and price, health is also a common factor considered in meal selection [27].

According to a recent study, throughout the pandemic, a rising number of people have developed unhealthy eating habits in terms of the variety and frequency of food consumed [28]. Using delivery services like OFDS as part of their eating habits and food choice determinants is one noticeable trend included in their unhealthy eating behaviors during the pandemic [29]. These acquired eating habits include increased reliance on cheaper foods and food subsidies given to them, as well as an increase in the purchase of highly processed fast foods, online food shopping, and shopping from convenience stores due to the lockdown.

The continuous emergence of OFDS could also be attributed to the shift in consumer behavior [30]. Since food is a necessity for survival, consumer satisfaction with whatever platform consumers use for OFDS is highly affected by various factors. However, the most significant factor affecting consumers' continued use of OFDS is whether consumers are satisfied with its service [31]. Consumers' satisfaction encompasses what they have experienced through the service and how it influences their current and future expectations [32]. The context involving consumers' satisfaction toward OFDS encompasses all the processes involved when using OFDS, including their interaction with

the platform, the delivery worker, and the actual food consumption [33].

One of the most compelling reasons for individuals to utilize OFDS is its time-saving orientation (TSO) feature [5]. It is one of the consumer satisfaction factors from OFDS, which shows how it can provide food at the most desirable time possible. People with limited time for meal preparation are drawn to OFDS [34, 35, 36]. Previous studies during COVID-19 found similar findings, stating that despite the lockdown measurements, people still choose to use OFDS because they can order food quickly without the need to prepare it at home [33]. Thus, an emphasis on the importance of sticking to the specified delivery time frame should be a priority, as the service's ability to meet customers' expectations, especially when it comes to time, significantly impacts their overall satisfaction and continued use [36].

Another factor that contributes to consumers' satisfaction with OFDS would be hedonic motivation (HM). Hedonic motivations are influenced by people's pain and pleasure, wherein they expect to feel happy after receiving the food they ordered online [37]. It highly affects consumers' purchasing activities because emotions drive them, shaping how consumers perceive the convenience and usefulness of OFDS [3]. However, one study found that consumers use OFDS primarily because of their functionality and not their ability to induce pleasurable emotions [38].

The feature of OFDS that offers better value for consumers' money is the price-saving orientation (PSO), a major element influencing people to order food online. The amount of money consumers can save by adopting OFDS reflects their good impressions of it [3]. This was especially true during the COVID-19 pandemic, as food price was found to be one of the most critical determinants of food selection [39]. Positive opinions of food delivery apps occur because of their good value for money, especially when pricing benefits such as enticing discounts and free delivery charges are offered, which eventually attract and encourage customers to buy more [5, 40]. Contrary to these findings, according to an existing study, pricing has no significant impact on customers' intention to use OFDS since consumers already perceive food costs in OFDS to be lower than in typical meal settings [36].

Another factor influencing consumers' satisfaction with OFDS is convenience motivation (CM), defined by how it can be used at any time and place. Consumers are encouraged to use OFDS regularly since they may pick from a broad variety of food products from various places available on online delivery platforms without leaving their homes and physically visiting restaurants [34, 35]. Another reason for consumers' good attitudes regarding using this service is the lowered danger of contracting the infectious coronavirus, which leads to greater positive behavior among those who use it [33]. However, according to a recent study, CM appears to have a modest influence on consumers' satisfaction compared to other factors because items are readily available even without buying online [41]. This might be explained by the disparities of the COVID-19 pandemic's influence on people's food supply and accessibility in various regions.

Consumers' satisfaction with OFDS is also influenced by its e-service (ESQ) quality. It refers to how a website or application service can deliver systemic performance that satisfies consumers' expectations [42]. Studies found that satisfaction with OFDS can be achieved if the website or application can be easily navigated and is efficient and effective when used [43, 44].

The last factor under consumer satisfaction with OFDS would be food quality (FQ), which is determined by various factors, including food appearance, flavor, menu variety, health effects, and freshness that food from OFDS offers [41, 42]. As a result, meals must be served at the most suitable and appropriate temperature to retain their quality and please the people who purchased them [32]. Furthermore, concerns relating to food quality, especially their packaging, negatively influence consumers' willingness to adopt OFDS [40].

Consequently, consumers who have had positive satisfaction with OFDS will likely have increased loyalty and continued use of this service [35]. The ability to provide high-quality service and performance that meets consumers' expectations satisfies them, which leads to repurchasing,

recommending, and eventually paying more for OFDS [42]. Studies have established that consumers will continue to use OFDS if they perceive it as beneficial. Another study also proves that ESQ and FQ were both significantly associated with consumers' satisfaction, which in turn leads to continuous purchase intention [45]. Meanwhile, HM has also been considered to increase the frequency of OFDS use as it motivates individuals to continue rather than stop doing activities that satisfy them [46]. As a result, understanding why people use OFDS necessitates an analysis of the underlying reasons that influence their decision to utilize the service. The conceptual framework shown in Figure 1 describes the following variables and their relationship with each other.

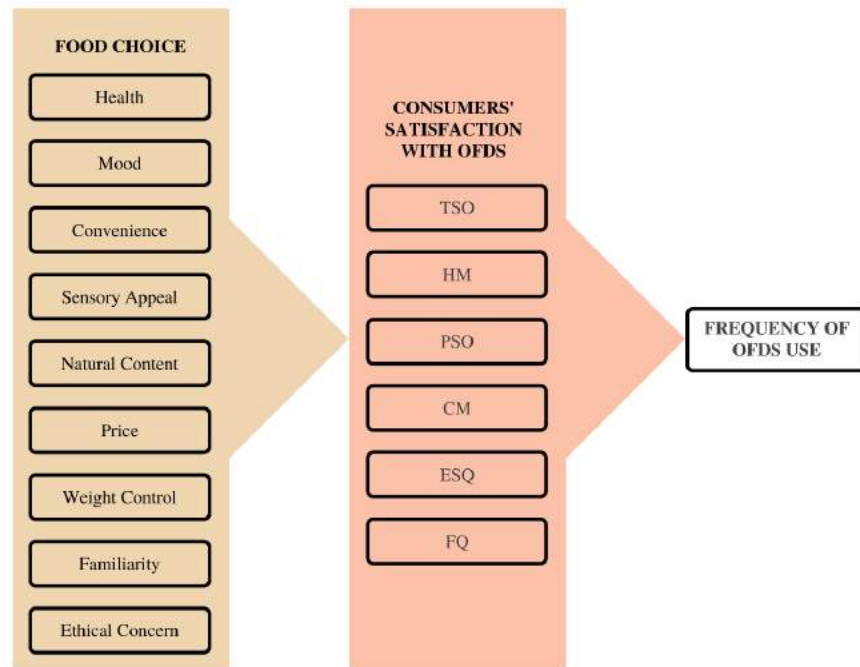


Figure 1.
Conceptual Framework

3 Methodology

The overall methodological approach of the study utilized a cross-sectional research design conducted at the University of the Philippines Los Baños (UPLB) upon approval by the Institute of Human Nutrition and Food. Due to the limitations and health protocols being implemented in the Philippines, the study was conducted through an online survey designed and administered using Google Forms. The criteria for selecting respondents were UPLB undergraduate students aged 18-24 who have visited, used, and ordered through the OFDS at least once during the COVID-19 pandemic. Thus, a non-probability sampling method, specifically purposive sampling, was selected due to the undefined population size and the unavailability of a specific sampling frame. Consequently, no definite sample size could be generated since it would be ambiguous due to the undefined population size.

Data collection was administered through the developed online questionnaire from May 3 to May 22, 2022. The questionnaire was divided into three parts. The first part included the respondents' profile and manner of OFDS use, including age, sex assigned at birth, marital status, level of education, household income, the amount spent on one order in OFDS, frequency of OFDS used, the most common mealtime for ordering in OFDS, and the type of OFDS used. The second part

of the questionnaire consisted of an adopted Food Choice Questionnaire (FCQ) by Steptoe et al. [19]. Just like the original questionnaire, the study used a four-point Likert scale, ranging from not at all important (1), a little important (2), moderately important (3), and very important (4). The FCQ was divided into nine factors: health, mood, convenience, sensory appeal, natural content, price, weight control, familiarity, and ethical concern, as shown in [Supplementary Material Table S1](#). This questionnaire was used to identify the health-related and non-health-related elements that influence people’s food choice behavior. The third part shown in [Supplementary Material Table S2](#), was the Consumers’ Satisfaction Questionnaire (CSQ), which included the compilation of adopted questionnaires from previous related studies and consisted of six sections namely, time-saving orientation (TSO), hedonic motivation (HM), price-saving motivation (PSO), convenience motivation (CM), e-service quality (ESQ), and food quality (FQ) [3, 5, 33, 34, 35, 36, 47, 48]. All six factors were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The purpose of this questionnaire was to explore the factors that influence consumers’ satisfaction with OFDS. Some of the questions used for this study were also adopted and based on existing related literature and studies [49].

Participation was strictly voluntary and exclusive, ensured through informed consent and the screening question given to each respondent via Google Forms. Then, those who consented and met the criteria were directed to the questionnaire proper. Following pre-testing results and revisions of several parts of the questionnaire, the official data collection was performed similarly, yielding 80 respondents. After considering the time constraint and the purpose of the study, the number of respondents in this study is sufficient, as all the chosen respondents are credible and knowledgeable enough to provide the information needed to answer the study’s objectives.

The reliability of the measurement was tested to identify the degree to which there is no bias in ensuring consistent measurement across the variables in the instrument used. The results of the 36-item FCQ and 30-item CSQ questionnaires were subjected to a Cronbach’s alpha test of validity to check the internal consistency and reliability of the adopted questionnaires. A total of 80 respondents aged 18-24 who experienced using OFDS participated in the study. The validity test indicated that both FCQ and CSQ questionnaires are reliable and have high internal consistency, as shown by the values of their Cronbach’s alpha test greater than 0.7 in [Table 1](#).

Table 1. Test of Validity on Measurement Items

	NO. OF ITEM	CRONBACH'S ALPHA
Food Choice Questionnaire	36	0.9196
Consumers' Satisfaction Questionnaire	30	0.9373

Various statistical analyses were used in the study. The respondents’ profile and manner of OFDS use were analyzed through percentage and frequency tables. The average mean and median values for each measurement statement were calculated for the food choice. Then, each food choice factor’s overall mean importance score and median importance rating were derived by averaging the mean values and listing the range of median values of the measurement statements constituting each specific factor. The calculation of the overall mean satisfaction score and median satisfaction rating for each factor of consumer satisfaction was performed similarly. The overall mean values for food choice factors and consumer satisfaction factors were then subjected to Spearman’s correlation analysis to determine the association between food choice variables and factors influencing consumer satisfaction, as well as the relationship between factors influencing consumer satisfaction and the frequency of OFDS use. The following statistical analyses were calculated using Microsoft Excel and RCommander software. Specifically, using the RCommander software for statistical analysis was decided upon consultation with a statistician.

4 Results and Discussion

4.1 Respondent's characteristics

Frequency and percentage tables were used to determine the characteristics of the respondents. As shown in Table 2, the use of OFDS during the COVID-19 pandemic among UPLB students is dominated by female consumers (75%). This claim supports the previous research findings that females are more prevalent in using OFDS when compared to males [15]. Furthermore, most respondents reside in urban areas with better access to food restaurants via OFDS and hence utilize the service more frequently [9]. Regarding household income, most respondents belong to the classes above the low-income class with an income ranging from ₱20,962 - ₱209,620, supporting the findings that people with higher household income utilize the service more due to their higher disposable income [10]. Specifically, most (71.25%) of the respondents spend less than ₱900 on a single order of OFDS.

Table 2. Respondents' Profile and Manner of OFDS Use

VARIABLE	DESCRIPTION	FREQUENCY	PERCENTAGE (%)
Sex	Male	20	25
	Female	60	75
Age	19 years old	8	10
	20 years old	14	17.5
	21 years old	47	58.75
	22 years old	9	11.25
	23 years old	2	2.5
Marital Status	Single	80	100
Living Area	Urban	54	67.5
	Rural	26	32.5
Average monthly household income	Below ₱ 10,481	2	2.5
	₱ 10,481 - ₱ 20,962	9	11.25
	₱ 20,962 - ₱ 41,924	26	32.5
	₱ 41,924 - ₱ 73,367	16	20
	₱ 73,367 - ₱ 125,772	13	16.25
Amount spend on one order on a food delivery app	₱ 125,772 - ₱ 209,620	14	17.5
	less than 900	57	71.25
	900 to 1500	20	25.00
	1501 to 2500	1	1.25
	3501 to 5000	1	1.25
Frequency of OFDS usage during the COVID-19 pandemic	5001 or more	1	1.25
	Several times a day	2	2.50
	Once a day	1	1.25
	Several times a week	18	22.50
	Once a week	16	20.00
	At least once a month	25	31.25
	At least once every three months	16	20.00
Most common mealtime for ordering food from OFDS	Only used once	2	2.50
	Breakfast	4	5.00
	Mid-day snacks	3	3.75
	Lunch	15	18.75
	Afternoon snacks	31	38.75
	Dinner	21	26.25
Most used type of OFDS	Late-night snacks	6	7.50
	Independent Platforms	11	13.75
	Third-party Platforms	69	86.25

Other notable study findings showed that many respondents (31.25%) utilized OFDS at least

once a month during the COVID-19 pandemic and that many (38.75%) used the service to purchase afternoon snacks. The result is in line with other studies about frequency of use and mealtime when ordering on OFDS [49]. Furthermore, most (86.25%) respondents choose third-party platforms such as Food Panda and GrabFood since these platforms offer a wide selection of foods, including food establishments with independent platforms and those with no in-house delivery platform [4, 5].

4.2 Mean and Median Importance Rating of Food Choice Factors

Based on Table 3, price is the strongest priority that young adults consider when choosing food, followed closely by sensory appeal, with the two highest mean importance scores of 3.55 and 3.48, respectively. Such results are consistent with previous findings [20, 21, 23, 24, 27]. Moreover, a more recent study conducted during the COVID-19 pandemic highlighted that price was more important among younger ages, both before and during the pandemic, particularly those aged 18-29 [17]. The similarity of results in terms of the importance of price as a food choice during the COVID-19 pandemic could be attributed to consumers' food spending patterns because of the pandemic's effects on food spending, food prices, and food sufficiency, as well as people's price perceptions as compared to the period before the pandemic [22]. The median importance rating also reveals that the respondents believe that on average, mood and convenience factors are very important. Meanwhile, ethical concern is the least priority among the factors with a mean importance score of 2.29 and a median rating of little (2) to moderate (3) importance for the packaging and country of origin. This might be connected to earlier research findings that show how ethical concerns are given more importance when people become older [17].

Table 3. Ranking of Mean Score and Median Rating of Food Choice Factors

FACTORS ON FOOD CHOICE	MEAN IMPORTANCE SCORE	MEDIAN IMPORTANCE RATING
Price	3.55	4
Sensory Appeal	3.48	3 to 4
Mood	3.30	3 to 4
Convenience	3.15	3 to 4
Familiarity	2.90	2 to 3
Health	2.66	2 to 3
Natural Content	2.44	2 to 3
Weight Control	2.39	2
Ethical Concern	2.29	2 to 3

4.3 Mean and Median Satisfaction Rating of Factors Influencing Consumer Satisfaction with OFDS

The mean score and median rating in Table 4 show that ESQ is the most satisfactory factor when using OFDS for young adult consumers, such that the ease of navigation, efficiency, and effectiveness of the OFDS website or online application significantly influence consumers' satisfaction [42, 44]. Following this, the mean satisfaction score also reveals that TSO, CM, and FQ also appear to be satisfactory, as agreed upon by the respondents. On the other hand, PSO and HM are the two least satisfactory factors with a median satisfaction rating of neither (3) nor agreeable satisfaction (4). Since HM is the least satisfactory factor, consumers do not primarily use OFDS for entertainment and emotional fulfillment but value the service's functionality more [38]. However, more in-depth investigation is needed to determine if the pleasure caused by the satisfaction from the use of OFDS is significantly detached from the pleasure of food itself. PSO is among the least satisfactory factors of OFDS, which can be associated with consumers' expected perceptions of lower food costs in

OFDS than in traditional dining settings [36].

Table 4. Ranking of Mean Score and Median Rating of Consumer Satisfaction Factors

FACTORS ON CONSUMER SATISFACTION	MEAN SATISFACTION SCORE	MEDIAN SATISFACTION RATING
E-service Quality (ESQ)	4.21	4 to 5
Time-saving Orientation (TSO)	4.17	4
Convenience Motivation (CM)	4.13	4 to 5
Food Quality (FQ)	4.05	4
Price-saving Orientation (PSO)	3.79	3 to 4
Hedonic Motivation (HM)	3.54	3 to 4

4.4 Correlation Analysis between Food Choices and Consumer Satisfaction

Given that the study employed non-probability sampling, the direction and strength of the relationship between food choice factors and factors influencing consumer satisfaction were discussed. Using Spearman's correlation analysis, the factors affecting food choices and consumer satisfaction were tested. The summary of the association between food choice factors and each consumer satisfaction factor is summarized in Table 5.

Table 5. Association Between Food Choice Factors and Consumer Satisfaction Factors

CONSUMER SATISFACTION FACTORS	CORRELATION COEFFICIENT								
	FOOD CHOICE FACTORS								
	Health	Mood	Convenience	Sensory Appeal	Natural Content	Price	Weight Control	Familiarity	Ethical Concern
Time-saving Orientation (TSO)	0.0164 ^a	0.3123 ^b	0.4214 ^c	0.3873 ^b	0.0345 ^a	0.2697 ^b	0.1453 ^a	0.2376 ^b	0.0269 ^a
Hedonic Motivation (HM)	0.0785 ^a	0.2624 ^b	0.1198 ^a	0.3737 ^b	0.2293 ^b	0.0078 ^a	0.1323 ^a	0.0331 ^a	0.1159 ^a
Price-saving Orientation (PSO)	0.2850 ^b	0.4958 ^c	0.2536 ^b	0.3629 ^b	0.2960 ^b	0.1849 ^a	0.3390 ^b	0.1492 ^a	0.2358 ^b
Convenience Motivation (CM)	0.1508 ^a	0.2692 ^b	0.2496 ^b	0.2298 ^b	0.1337 ^a	0.2130 ^b	0.0410 ^a	0.0863 ^a	0.0852 ^a
E-service Quality (ESQ)	0.1680 ^a	0.2656 ^b	0.1817 ^a	0.1408 ^a	0.1107 ^a	0.1060 ^a	0.1167 ^a	0.1482 ^a	0.1510 ^a
Food Quality (FQ)	0.0811 ^a	0.2594 ^b	0.2045 ^b	0.0492 ^a	0.1077 ^a	0.1164 ^a	0.0387 ^a	0.0627 ^a	0.0072 ^a

Note: Using Spearman's correlation analysis, the factors affecting food choices and consumer satisfaction were tested. The rule of thumb for the correlation coefficient is that absolute values 0.00-0.20, 0.20-0.40, 0.40-0.60, 0.60-0.80, and 0.80-1.00 are described to have "very weak", "weak", "moderate", "strong", and "very strong" strength of relationship, respectively; ^a = very weak; ^b = weak; ^c = moderate

The distribution of data for the relationship between all food choice and consumer satisfaction factors was found to have a positive monotonic relationship. Specifically, the strength of the relationship between the variables ranges from a very weak to a moderate monotonic relationship. The correlation between the food choice factors, namely, health, sensory appeal, natural content, price, weight control, familiarity, and ethical concern, have a relationship to consumer satisfaction factors that range from a very weak to a weak correlation. Specifically, the strongest 'strength of the relationship between health and consumer satisfaction factors was found in its ties with PSO. Next, its relationship with TSO, HM, PSO, and CM yielded the highest correlation for sensory appeal. The natural content, however, showed the strongest correlation with HM and PSO. Then, price was

found to have the strongest correlation with TSO and CM.

Regarding weight control, the consumer satisfaction with the strongest correlation would be PSO. Familiarity, on the other hand, showed the strongest correlation with TSO. Lastly, ethical concern showed the strongest correlation with PSO.

The remaining food choice factors, mood and convenience, were found to have a relationship with consumer satisfaction factors ranging from weak to moderate, and very weak to moderate, respectively. For mood, its relationship with PSO was found to have the highest correlation, whereas convenience showed the highest correlation with TSO.

4.5 Correlation Analysis between Consumer Satisfaction and Frequency of OFDS Use Using Spearman’s correlation analysis, all factors influencing consumer satisfaction also have a positive monotonic relationship and thus positively affect the frequency of OFDS use, as shown in Table 6, demonstrating that as consumer satisfaction with OFDS increases, so does the frequency of use of the service. The same rule of thumb used in the analysis for correlation coefficient values was applied to the following variables.

Table 6. Association between Consumer Satisfaction Factors and Frequency of OFDS Use

FREQUENCY OF OFDS USE VS CONSUMER SATISFACTION SCORE	CORRELATION COEFFICIENT
Time-saving Orientation (TSO)	0.2598 ^b
Hedonic Motivation (HM)	0.4191 ^c
Price-saving Orientation (PSO)	0.0549 ^a
Convenience Motivation (CM)	0.1278 ^a
E-service Quality (ESQ)	0.3329 ^b
Food Quality (FQ)	0.1625 ^b

Note: Using Spearman’s correlation analysis, the factors affecting food choices and consumer satisfaction were tested. The rule of thumb for the correlation coefficient is that absolute values 0.00-0.20, 0.20-0.40, 0.40-0.60, 0.60-0.80, and 0.80-1.00 are described to have “very weak”, “weak”, “moderate”, “strong”, and “very strong” strength of relationship, respectively; ^a = very weak; ^b = weak; ^c = moderate

The strength of the relationship between consumer satisfaction factors and frequency of use ranges from a very weak to a moderate correlation. The results revealed the strongest relationship was the moderate positive monotonic relationship between the frequency of OFDS use and HM.

4.6 Food Choice and Consumer Satisfaction

The overall distribution of data between food choice and consumer satisfaction with OFDS yielded a positive monotonic relationship. Specifically, the strength of the relationship between food choice and consumer satisfaction ranges from a very weak to moderate relationship. Thus, all food choice factors and factors influencing consumer satisfaction with OFDS have a positive direct relationship, indicating that as the motivation driven by specific food choices increases, so do the factors influencing the satisfaction of consumers with OFDS. However, since many food choice factors influence consumers to choose food on OFDS, it is important to investigate which among the relationships yielded the strongest relationship with the consumer satisfaction factors. For each consumer satisfaction factor, Figure 2 shows the respective food choice factor that produced the strongest relationship concerning each based on the results of their correlation coefficient.

Specifically, among the food choices, mood, convenience, sensory appeal, natural content, and price produced the strongest relationship concerning consumer satisfaction. Furthermore, a trend can be observed in Figure 2 wherein out of the nine food choice factors, mood generated the strongest relationship to five factors of consumer satisfaction. This could be explained by the ability

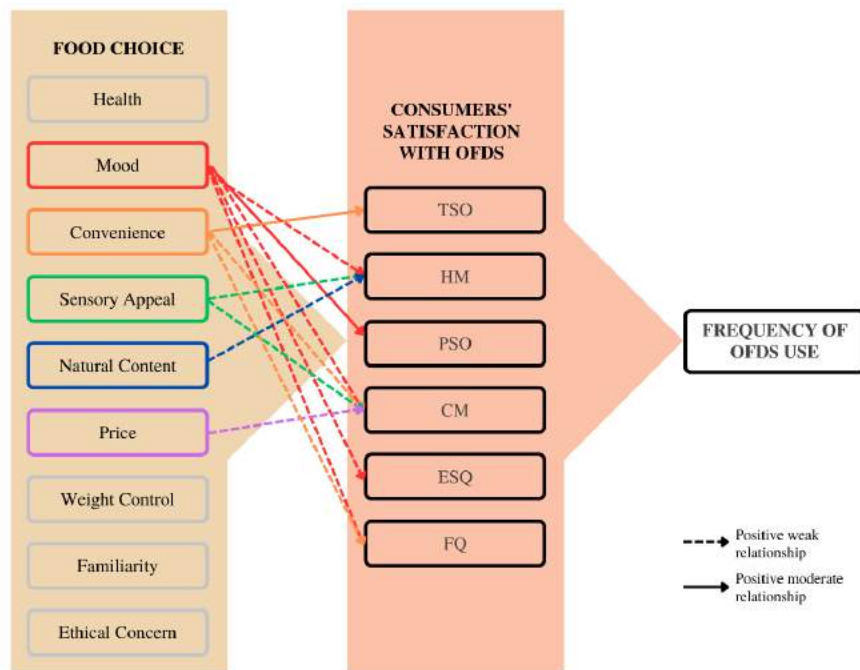


Figure 2. Food Choice Factors with the Highest Strength of Relationship for each Consumers' Satisfaction Factors

of food to help people cope with stress, make them feel good, and cheer them up, compensating for the emotional and mental havoc that the pandemic has inflicted on them [6, 26]. Therefore, if they use the service to satisfy their mood, they will feel most satisfied with the service if OFDS can induce positive responses from their consumers through HM, offer better value for their money with PSO, feel at ease using it anytime and anywhere because of CM, can use the application that offers a quality service performance through ESQ, and provide food that is acceptable to their criteria with its FQ.

Furthermore, the relationship between mood and PSO will produce one of the strongest associations due to their moderate positive relationship. Such results are supported by a previous study showing that mood indeed affects the effectiveness of price promotions through consumers' perceived transaction value, including promotional discounts and other better value for money [47]. Therefore, consumer satisfaction influenced by the PSO of OFDS will increase if consumers choose their foods as motivated primarily by their moods.

Another food choice factor that was found to have the strongest relationship with food choice factors would be convenience. Suppose consumers primarily use the service because of its ease of availability, acquisition, and preparation of food [50]. In that case, they will be most satisfied with the service if the service can stick to the specified time frame posted on their platform (TSO) [33, 36]; can be easily accessed at any time and place (CM); and offers the actual sensory properties and attributes of food that they present to their consumers (FQ). Additionally, the variable that has shown a moderate strength in the relationship between food choice and consumer satisfaction with OFDS is found between convenience and TSO. Thus, consumers' satisfaction with OFDS will increase to a higher extent if the service can meet the shortest timeframe of selecting, purchasing, preparing, and delivering the food they have ordered.

On the other hand, sensory appeal was also found to have the strongest relationship with consumer satisfaction, particularly with HM and CM. As mentioned in previous studies, young adults

are highly influenced by sensory appeal when choosing food because they are more concerned with the consistent sensory quality of food [23, 24]. Therefore, when consumers use the service because of how the food looks in the application, OFDS can satisfy their consumers in a higher magnitude by making sure that the service can accurately meet the actual depiction of food in its service and meet the expectations of its consumers, as well as offering their service at any time and place.

Aside from that, natural content was also found to have the strongest relationship with one of the consumer satisfaction factors, particularly HM. This shows that if a person chooses to order food using OFDS, they expect that the food offered there will be as natural as possible and that all ingredients shown on the platform are like what they are going to receive. Hence, to meet consumers' satisfaction with the service, OFDS must be able to stick with the ingredients mentioned on the platform to induce positive responses from their consumers.

Price is another food choice factor that was found to produce the strongest relationship with consumer satisfaction. When consumers use OFDS because they find the food being sold there cheap, they will feel most satisfied with the service if it is always available and accessible whenever they need it. This could be attributed to the recent findings of one study which explains how consumers can enjoy various cuisines without having to leave their homes and spend money to travel to go to the restaurants [34].

4.7 Consumer Satisfaction and Frequency of OFDS Use

In terms of the relationship between consumers' satisfaction and the frequency of OFDS use, Figure 3 shows that all factors influencing consumers' satisfaction have a positive direct relationship with the frequency of use. Therefore, the more satisfied consumers are with OFDS, the more frequently they will use the service, which is consistent with existing studies [31, 32]. However, among the factors of consumer satisfaction with OFDS, HM has shown the strongest association. This result is supported by previous studies in which people with increased satisfaction with OFDS caused HM to have an increased willingness to continue and engage in OFDS activities since it influences how consumers find the service [3, 46]. Thus, the more satisfied consumers are with how OFDS can make them feel positive emotions after their purchase, the greater the likelihood that they will frequently use the service compared to other factors influencing consumer satisfaction with OFDS.

Consequently, to ensure that consumers are more likely to elicit a positive response after using the service, it is important to take note of the factors affecting their food choices. Since mood, sensory characteristics, and natural content have the strongest relationship with HM (Figure 4), this should be the top priority in assessing the factors affecting the consumers' ability to react positively to the service. If these factors are met after using the service, then there is a greater likelihood that they will feel positive emotions, resulting in satisfaction and continued use of the service [31, 32].

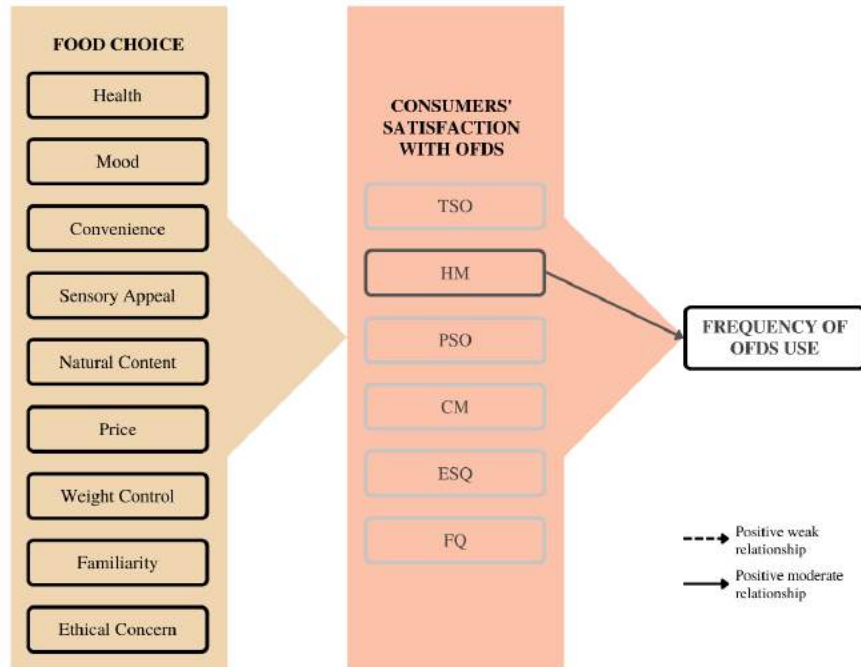


Figure 3. Consumers' Satisfaction Factor with the Highest Strength of Relationship with the Frequency of OFDS Use

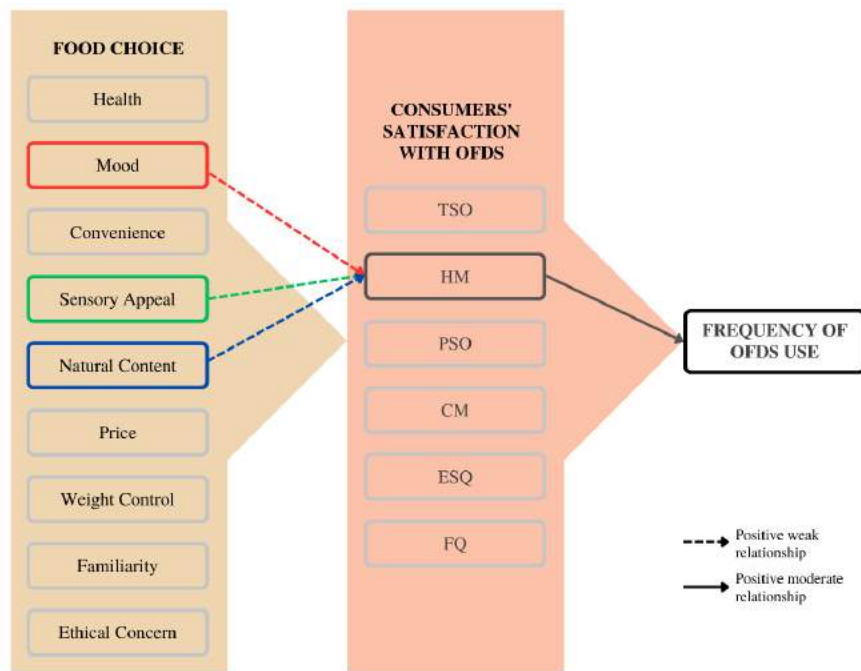


Figure 4. Summary of the Measurement Model

5 Conclusion and Recommendations

This study examined the relationship between food choice factors and consumer satisfaction in using OFDS among young adults during the COVID-19 pandemic. It also investigated the relationship between consumer satisfaction with OFDS and the frequency of OFDS usage. Moreover, the study also identified the most important food choice factor and the most satisfactory factor of consumers with OFDS among young adults during the COVID-19 pandemic. To summarize, the critical findings are that consumers' food choices and consumers' satisfaction with OFDS are positively associated with one another, wherein the increase in the motivating factor of food choice also leads to increased consumer satisfaction with OFDS, as well as positive association of the frequency of OFDS usage with the consumer satisfaction of OFDS. The study also identifies price as the most important factor young adults consider when choosing food. At the same time, ESQ is the most satisfactory factor that consumers experience after using OFDS. Furthermore, the study found that mood, convenience, sensory appeal, natural content, and price to be the motivators of food choice that led to the most vital link between consumer satisfaction and that mood has the strongest relationship to PSO, CM, ESQ, and FQ; convenience to TSO; sensory appeal to HM and CM; natural content to HM, and price to CM. Specifically, the research found that among all variables, there is a relationship between mood and PSO, convenience and TSO, and HM and frequency of OFDS use in terms of consumer satisfaction with OFDS and frequency of use.

As a result, OFDS needs to offer factors that will promote a positive mood, improve and maintain consistent, high-quality sensory characteristics of food products, and offer food composed of organic and natural ingredients to influence consumers to choose their food in the first place. Then, the service should meet these factors to ensure that after the consumers use the service, it will elicit favorable responses, thus increasing their use of the service. Existing and future OFDS businesses should take advantage of the market opportunities by ensuring that OFDS fulfills consumers' expectations and offers the best experience that will promote continuous usage of the service. It is important, therefore, for OFDS businesses to consider the food choices that people decide on before using OFDS, as this can potentially impact the gravity of their satisfaction with the result of the service. At the same time, ensuring that consumers' satisfaction is met after using OFDS will help increase their loyalty and continued use of the service. These findings may help better understand the influence of consumers' individual food choices and fill the gaps in their relation to the factors affecting consumers' satisfaction with OFDS. As traditional dining is now starting to flourish again due to the ease of physical restrictions caused by the pandemic, implications of this study for the OFDS industry suggest improving and innovating their current service by taking into consideration not just what consumers experience after using the service, but also by identifying what drives them to choose food in the first place. Aside from that, implications such as providing nutritional information on the platform may further promote consumers' well-being and improve their meal selections while using the service.

It is recommended that future studies regarding the effect of food choice and consumer satisfaction with OFDS and their frequency of use should be further investigated. Hence, as more individuals utilize OFDS to access a more contemporary and public food environment, there is a greater chance to explore the relationship between consumers' food choice and satisfaction with OFDS and what other food choice factors are associated with how consumers become satisfied with the service. Furthermore, the association of mood with consumers' satisfaction with OFDS can further be investigated as people's mood was found to be the food choice factor with the strongest association with five factors that influence consumer satisfaction. Lastly, given that the study established the relationship between consumer satisfaction with OFDS and frequency of use, future studies may investigate the impact of frequency of OFDS use on the nutritional status of its users by assessing the food quality available on the platform.

Supplementary Material

Statements and Declarations

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Data Availability

Data is available upon request from the author.

Competing Interest

The authors declare no known competing interests and personal relationships that could have appeared to directly or indirectly influence the work reported in this paper.

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Ethical Considerations

The Institute of Human Nutrition and Food, College of Human Ecology, University of the Philippines Los Baños approved the study. Informed consent administered via Google Forms was also obtained from all participants before participating in the study to ensure voluntary participation and confidentiality of the information gathered.

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