

Use of Food Delivery Applications, Perception of Healthy Food Options and Food Safety among Undergraduates in University Of Ibadan

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ABSTRACT

Food delivery apps provide convenient access to meals, but concerns exist regarding vendor hygiene, limited meal variety, and poor nutritional quality. Students often rely on repetitive, carbohydrate-heavy meals, raising health and safety issues, while limited awareness of healthy options hinders informed choices. Therefore, this study examined the use of food delivery applications, perceptions of healthy food options, and food safety among undergraduates at the University of Ibadan

The descriptive survey design was adopted, with 200 students selected through multistage sampling from four departments in the Faculty of Education. Data were collected using a structured questionnaire on app usage, healthy food perception, and food safety, rated on a four-point Likert scale. Reliability coefficients of 0.76.. Data were analyzed using descriptive and inferential statistics of Pearson Product Moment Correlation and t-test.

Findings revealed that while food delivery applications offer convenience, students remain concerned about food safety and nutrition. Affordability and accessibility strongly influenced their choices, and students who prioritize healthy eating demonstrated higher food safety awareness. Female students reported slightly higher app usage than males. The study recommends stricter hygiene monitoring of vendors, increased promotion of healthy meal options, and initiatives encouraging home-cooked meals, such as cooking workshops and access to affordable fresh foods.

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Introduction

Food safety deals with the practical measures and scientific discipline taken to make certain that food products are safe for consumption of mankind, free from contamination and do not pose any risk to public health. It encompasses a range of practices, processes, and regulations designed to prevent foodborne illnesses and hazards arising from chemical, physical and biological agents that may be present in food. The ultimate goal of food safety is to prevent consumers from the inauspicious health effects of consuming unsafe or contaminated food (Ehuwa and Jaiswal, 2021). Food safety is a very critical aspect of daily life that often goes unnoticed until a crisis occurs. It encompasses a set of practices, procedures, and regulations aimed at ensuring that the public or the individuals are consuming foods that are safe for consumption, free from contamination, and poses no harm to human health. Food safety is a global concern, as food is a fundamental necessity, and unsafe food can lead to a wide range of health issues, from mild food poisoning to severe diseases, and even fatalities (Jackson, 1999).

Food safety measures are essential to safeguard public health. The food that is contaminated can lead to outbreaks of foodborne illnesses, affecting individuals and communities. Ensuring food safety reduces the burden on healthcare systems and prevents suffering. Access to enough safe and nutritious food is key to sustaining life and promoting good health. Unsafe food containing harmful bacteria, viruses, parasites or chemical substances can cause more than 200 different diseases, ranging from diarrhea to cancers. Around the world, an estimated 600 million – almost 1 in 10 people – fall ill after eating contaminated food each year, resulting in the loss of 33 million healthy life years (Global Burden of Disease Study, 2017).

A food delivery application is a mobile or web-based platform that allows users to order food and have it delivered to their location (Freeman and

Kelly, 2020). These apps typically partner with local restaurants and food providers to offer a wide range of cuisine options (Maimaiti et al., 2018). Food delivery apps revolution is the way people order and enjoy food by offering a convenient and seamless experience. These food delivery apps allow users to browse menus, place orders, and track deliveries all from their smartphones. With features like real-time updates and secure payment gateways, food delivery apps prioritize convenience and efficiency making it easier than ever for users to satisfy their cravings without leaving their homes (Choudhary, 2024). Food delivery applications have emerged as a significant player in the global food market. These platforms bridge the gap between consumers and food service providers, enabling users to order meals from various restaurants through their smartphones. Major players such as Uber Eats, Jumia Food, and Bolt Food have become household names, particularly among young adults and students who value time-saving solutions and convenience (Hirschberg, Rajko, Schumacher and Wrulich, 2017).

The growth of food delivery applications can be attributed to several factors, including technological advancements, increased smartphone penetration, and changing consumer preferences (Kapoor and Vij, 2018). For university students, these apps are more than just a means to obtain food; they are integral to their lifestyle, allowing them to manage their time better and enjoy a variety of cuisines without leaving their dormitories or study area (GlobalData, 2023). Meanwhile, the use of food delivery apps may significantly transform how people access meals, impacting their perceptions and choices regarding healthy food options in various ways. One of which could lead to unhealthy dietary patterns. It is essential to understand how these technological advancements influence students' dietary habits and health perceptions. As young adults are at a critical stage in developing lifelong eating habits,



their choices can significantly impact their long-term health (Shaojing et al., 2019).

Perceptions of healthy eating were generally based on food choice. Fruits and vegetables were consistently recognized as part of healthy eating. Characteristics of food such as naturalness, and fat, sugar and salt contents were also important in people's perceptions of healthy eating. Eating healthy means following a healthy eating pattern that includes a variety of nutritious foods and drinks. It also means getting the number of calories that is right for an individual (not eating too much or too little). A healthy diet is a diet that maintains or improves overall health. A healthy diet provides the body with essential nutrition: fluid, macronutrients such as protein, micronutrients such as vitamins, and adequate fiber and food energy. Historically, a healthy diet was defined as a diet comprising more than 55% of carbohydrates, less than 30% of fat and about 15% of proteins. (Matarese and Pories, 2014).

Students' perception of healthy food options is generally positive, with most considering nutrient-dense foods like fresh fruits, vegetables, whole grains, lean proteins, and low-fat dairy products as healthy (Smith, 2020). However, some students may have misconceptions about healthy food, viewing it as boring, tasteless, or expensive (Van Langeveld et al. 2016). Taste is a significant factor influencing students' food choices, with many prioritizing flavor over nutritional value (Ganchrow, Mennella and Doty, 2003). Convenience also plays a crucial role, as students often opt for quick and easily accessible food options. The cost of healthy food is another significant barrier, with many students considering it expensive. Peer influence and social pressure to eat unhealthy food also contribute to students' food choices (LaCaille, Dauner, Krambee and Pedersen, 2011). Furthermore, students' busy schedules and limited access to healthy food options on campus or in their surroundings may hinder their ability to

make healthy choices (Maria et al., 2024). To promote healthy eating habits among students, it is essential to address these barriers by providing education on nutrition, making healthy food options accessible and affordable, and encouraging healthy eating habits at home and in schools.

Unhealthy dietary patterns are highly prevalent in Nigeria most especially among young adults Western countries, and they have been associated with depression, hypertension, heart disease, cancer, type 2 diabetes, and obesity (Iyanda, 2021). Many dietary interventions have been developed to promote healthier dietary behaviour, yet most do not achieve the intended dietary change (Breugelmans et al., 2007). Human behaviour regarding food is associated with a large number of interrelated factors (Koster, 2009), including those of a psychological and social nature. This constitutes an inseparable act of human survival and encompasses two functions, maintain the level of nutrients necessary for the body and provide the pleasure that is derived from the act of eating through the release of serotonin and dopamine (Lent, 2004). Human beings need a varied diet so that it is balanced and healthy (Ogden, 2002), since unhealthy eating behaviour is an important risk factor for health and mortality. There is not a consensus on organic farming being an important part of a healthful diet. Nevertheless, organic farming's importance is increasing in the dietary patterns of some citizens in the countries studied and is considered important for the health of their population (Danner and Menapace, 2020).

Furthermore, foods that make us ill are considered unsafe. Foodborne illnesses occur because foods become contaminated, or unsafe. Tiny microbes, unseen by the human eye, are the main cause of contamination. Microbes include bacteria, viruses, fungi, and parasites. Microbes live on all surfaces and are impossible to eliminate. Microbes need food to survive, just like us. Some microbes are beneficial, others simply make food unpleasant to



eat, while others cause illness. Food safety guidelines help reduce the risk of foodborne illness caused by microbial contamination.

In addition, eating a healthy diet is not about strict limitations, staying unrealistically thin, or depriving oneself of the foods one loves. Rather, it is about feeling great, having more energy, improving your health, and boosting your mood. Throughout the human developmental trajectory, all actions and thoughts are mediated by emotions. For example, eating can be motivated by positive (e.g., happiness) and negative (e.g., anger, depression) emotions, coupled with the desire to nourish (Jackson, Cooper, Mintz and Albino, 2003). Emotional influence on food choices showed that negative emotions and depression have an influence on food (Gibson, 2006).

The use of food delivery applications has revolutionised access to meals, impacting perceptions of healthy food options and food safety. While these apps offer convenience and a broad selection of cuisines, they also present challenges. Healthy eating may not have to be overly complicated and food delivery apps may provide access to nutritious options alongside more indulgent ones. Nutritional information and customizable orders help users make informed choices. However, frequent use of these apps can lead to a reliance on restaurant meals, which may not always prioritize health. Balancing convenience with conscious choices, focusing on overall dietary patterns, and opting for less processed, real food can significantly improve health outcomes and perceptions of food safety.

The rapid rise of food delivery applications has revolutionised the way undergraduates at the University of Ibadan access meals. However, this convenience comes with significant concerns about the safety and nutritional quality of the food being consumed. The primary issue revolves around the lack of transparency in food preparation. Students often have no knowledge of how the food is

cooked, the quality of ingredients used, or the safety of the water employed in the cooking process. Additionally, there is little information available on whether proper hygiene practices are followed by food vendors, raising serious questions about the safety of the meals delivered. Another pressing problem is the limited variety of food options available on these applications. Many students tend to order the same types of meals repeatedly, which are often high in carbohydrates and low in essential nutrients. This repetitive consumption pattern can lead to an imbalanced diet, depriving students of a rich variety of vitamins, minerals, and proteins necessary for their overall health and well-being. This not only impacts their physical health but can also affect their academic performance and overall quality of life. Furthermore, there is a lack of awareness and emphasis on healthy food options within these apps. The convenience of ordering fast food or highly processed meals overshadows the availability of healthier alternatives. This problem is exacerbated by the absence of nutritional information and guidance within the applications, making it difficult for students to make informed choices about their diet. In conclusion, while food delivery applications provide a convenient solution for meal access, the potential risks associated with food safety, limited food variety, and poor nutritional quality pose significant concerns. Therefore, this study investigated the use of food delivery applications, perception of healthy food options and food safety among undergraduates in University of Ibadan.

Methodology

The descriptive research design of survey type was adopted for this study. This was considered suitable because it does not attempt to manipulate variables but describes the variables and their relationship as they occur naturally. The design specifies the nature of a given phenomenon and gives a picture of the situation of a population. The design is also appropriate to collect information on people's



actions, knowledge, awareness, perception, attitude and values which are related to the scope of this study. The population for this study comprises all undergraduates in University of Ibadan, Oyo state. The sample for this study was two hundred (200) respondents. The multistage sampling procedure was adopted to select the respondents.

Stage one: Purposive sampling technique was used to select faculty of Education as students from this faculty are basically trained to become teachers and whatever they are taught can easily get to the larger society through their students.

Stage two: Simple random sampling technique was used to select four departments from the faculty which are Health Education, Art and Social Sciences, Counseling and Human Development Studies and Human Kinetics

Stage three: Purposive sampling technique was used to select 50 undergraduates in each of the selected departments because all undergraduates share similar characteristics.

The research instrument for this study was a self-developed questionnaire designed according to the variables tested in the hypotheses. The questionnaire was divided into sections.

Section A: Use of Food Delivery Application Scale (UFDAS)

This scale was designed to measure the variables that could determine the use of food delivery applications. The scale is made up of seven (7) items which were rated on a four point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). All the items on this scale were close ended items.

Section B: Perception of Healthy Food Options Scale (PHFOS)

This scale is designed to measure the contribution of the factors to the perception of healthy food options among Undergraduates. The scale is made up of six (6) items which were rated on a four point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). All the items on this scale were close ended items.

Section C: Food Safety Scale (FSS)

This scale is designed to measure the contribution of the factors that could determine food safety among Undergraduates. The scale is made up of seven (7) items which were rated on a four point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). All the items on this scale were close ended items.

The Cronbach Alpha was used to obtain the reliability of the instrument which was done among twenty (20) undergraduates from the department of Physical and Health Education Obafemi Awolowo University, Ile-Ife who were not part of the actual respondents but share similar characteristics with the actual respondents. Use of Food Delivery Application Scale, Perception of Healthy Food Options Scale and Food Safety Scale ($\alpha=0.77$)

Descriptive statistics of percentage, mean, bar and pie charts were used to provide answers to the research questions while influential statistics of Pearson moment correlation and t-test were used to test the hypotheses at 0.05 level of significance.

Results

Research question one: What is the prevalence of the use of food delivery application among undergraduates in University of Ibadan?

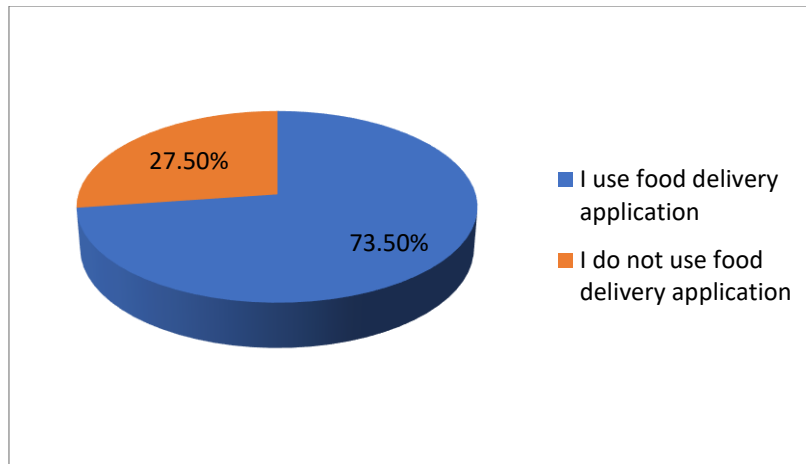


Fig.4.1: Chart showing the prevalence of food delivery application use among undergraduates in University of Ibadan

The chart above shows the prevalence of food delivery application use among undergraduates in the University of Ibadan. The chart revealed that 73.50% of the respondents do make use of food delivery application while 27.50% do not. This revealed a very high prevalence of food delivery

application use among undergraduates in the University of Ibadan.

Research question two: What are the reasons why undergraduates in the University of Ibadan make use of food delivery applications?

Table 4:1: Prevalence of the use of food delivery application among undergraduates in University of Ibadan

S/N	Statement	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)	Mean
1.	I order food online because it is more convenient than cooking	33 (16.5%)	58 (29.0%)	65 (32.5%)	44 (22.0%)	2.60
2.	I use food delivery application because I do not enjoy cooking	15 (7.5%)	27 (13.5%)	84 (42.0%)	74 (37.0%)	3.08
3.	I prefer using food delivery application over physically going to restaurant	33 (16.5%)	55 (27.5%)	65 (32.5%)	47 (23.5%)	2.63
4.	Delivery fee discourage me from ordering food online frequently	38 (19.0%)	56 (28%)	75 (37.5%)	31 (15.5%)	2.49
5.	Food delivery application make it hard to maintain healthy eating habit	31 (15.5%)	58 (29.0%)	73 (36.5%)	38 (19.0%)	2.59
6.	I feel that food delivery application provides easy access to varieties of meal	41 (20.5)	99 (49.5%)	45 (22.5%)	15 (7.5%)	2.17
7.	I believe that food delivery applications encourage unhealthy eating habit	36 (18.0%)	61 (30.5%)	55 (27.5%)	48 (24.0%)	2.57

Table 4.1 shows the reasons for the use of food delivery application among undergraduates in University of Ibadan. On if they order food online because it is more convenient than cooking, the mean score of (2.60) indicates a moderate level of

convenience. 33 students strongly agreed, 58 students agree, 65 disagree, while 44 students strongly disagree. Similarly, when asked if they use food delivery application, the mean score was 3.08, with 15 strongly agreeing, 27 agree, 84 disagree, while 74 strongly disagree. On preference for using



food delivery application over physically going to restaurant, with a mean score of 2.63, 33 students strongly agree, 55 students agree, 65 students disagree, while 47 students strongly disagree. On if delivery fee discourage the students from ordering food online, 38 students strongly agree, 56 students agree, 75 students disagree, while 31 students strongly disagree. Similarly when asked if food delivery application make it hard to maintain healthy eating habit, 31 students strongly agree, 58 students agree, 73 students disagree, while 38 students strongly disagree. This showed a mean score of 2.59. On whether food delivery application

provides easy access to varieties of meal, the mean score was 2.17. 41 students strongly agree, 99 students agree, 45 students disagree, while 15 students strongly disagree. Lastly, on whether they believe that food delivery applications encourage unhealthy eating habits, it showed a mean score of 2.57. 36 students strongly agree, 61 students agree, 55 students disagree, while 48 students strongly disagree.

Research question three: What is the perception of healthy food options among undergraduates in the University of Ibadan?

Table 4:2: Perception of healthy food options among undergraduates in the University of Ibadan

S/N	Statement	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)	Mean
1.	I believe food on delivery apps provide sufficient healthy food options.	37 (18.5%)	66 (33.0%)	82 (41.0%)	15 (7.5%)	2.37
2.	The price of healthy meals on delivery apps affects my decision to order them.	40 (20.0%)	81 (40.5%)	59 (29.5%)	20 (10.0%)	2.29
3.	I think delivery apps prioritize taste over nutritional value in their meals.	39 (19.5%)	82 (41.0%)	63 (31.5%)	16 (8.0%)	2.28
4.	I feel that advertising on food delivery apps influences my perception of what is healthy.	15 (7.5%)	88 (44%)	74 (37%)	23 (11.5%)	2.52
5.	I think delivery apps offer limited healthy food options.	24 (12%)	68 (34.0%)	75 (37.5%)	33 (16.5%)	2.58
6.	I feel more confident about the healthiness of the food I prepare myself.	114 (57.0)	64 (32%)	13 (6.5%)	9 (4.5%)	1.58

Table 4.2 showed the perception of healthy food options among undergraduates in University of Ibadan. On if they are concerned about the hygiene of the kitchens preparing food for delivery, the mean score of (2.37) indicated a moderate level of hygiene. 37 students strongly agreed, 66 students agree, 82 disagree, while 15 students strongly disagreed. Similarly, when asked if they think food delivery apps should provide more information

about how meals are prepared, the mean score was 2.29, with 40 strongly agreeing, 81 agree, 59 disagree, while 20 strongly disagree. When asked if they think the packaging of delivered food might affect its safety, with a mean score of 2.28, 39 students strongly agree, 82 students agree, 63 students disagree, while 16 students strongly disagree. On if the reputation of restaurants on delivery apps influences their trust in food safety, 15 students strongly agree, 88 students agree, 74



students disagree, while 23 students strongly disagree. This showed a mean score of 2.52. When they were asked if they believe food found on these delivery apps is as safe as home-cooked food, with a mean score of 2.58, 24 students strongly agree, 68 students agree, 75 students disagree, while 33 students strongly disagree. Lastly, when they were asked if they avoid ordering food online because of concerns about food safety,

It revealed a mean score of 1.58. 114 students strongly agree, 64 students agree, 13 students disagree, while 9 students strongly disagree.

Research question three: What is the level of food safety among undergraduates in the University of Ibadan?

Table 4:3: Level of food safety among undergraduates in the University of Ibadan

S/N	Statement	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)	Mean
1.	I am concerned about the hygiene of the kitchens preparing food for delivery.	97 (48.5%)	95 (47.5%)	7 (3.5%)	1 (0.5%)	1.56
2.	I think food delivery apps should provide more information about how meals are prepared.	68 (34%)	105 (52.5%)	22 (11.0%)	5 (2.5%)	1.82
3.	I think the packaging of delivered food might affect its safety.	53 (26.5%)	97 (48.5%)	38 (19%)	12 (6%)	2.04
4.	The reputation of restaurants on delivery apps influences my trust in food safety.	64 (32.0%)	104 (52.0%)	26 (13%)	6 (3%)	1.87
5.	I believe food found on these delivery apps is as safe as home-cooked food.	26 (13%)	58 (29.0%)	87 (43.5%)	29 (14.5%)	2.59
6.	I avoid ordering food online because of concerns about food safety	50 (25%)	77 (38.5%)	64 (32%)	9 (4.5%)	2.16
7.	I believe that home-cooked meals are safer than food delivered through food delivery apps	121 (60.5%)	62 (31%)	15 (7.5%)	2 (1%)	1.49

Table 4.3 showed the level of food safety among undergraduates in the University of Ibadan. If they are concerned about the hygiene of the kitchens preparing food for delivery, the mean score of 1.56 indicates a moderate level of hygiene. 97 students strongly agree, 95 students agree, 7 disagree, while 1 student strongly disagrees. Similarly, when asked if they think food delivery apps should provide more information about how meals are prepared, the mean score was 1.82, with 68 strongly agreeing, 105 agree, 22 disagree, while 5 strongly disagree. When asked if they think the packaging of delivered food might affect its safety, with a mean score of 2.04, 53 students strongly agree, 97

students agree, 38 students disagree, while 12 students strongly disagree. On if the reputation of restaurants on delivery apps influences their trust in food safety, with a mean score of 1.87, 64 students strongly agree, 104 students agree, 26 students disagree, while 6 students strongly disagree. When they were asked if they believe food found on these delivery apps is as safe as home-cooked food, with a mean score of 2.59, 26 students strongly agree, 58 students agree, 87 students disagree, while 29 students strongly disagree. When they were asked if they avoid ordering food online because of concerns about food safety, it showed a mean score of 2.16. 50 students strongly agree, 77 students



agree, 64 students disagree, while 9 students strongly disagree. Lastly, when they were asked if they believe that home-cooked meals are safer than food delivered through food delivery apps, 121 students strongly agree, 62 students agree, 15 students disagree, while 2 students strongly disagree, showing a mean score of 1.49.

Hypothesis 1: There will be no significant relationships between the use of food delivery application and food safety among undergraduates in University of Ibadan

Table 4.4: Correlation matrix showing the relationship between the use of food delivery application and food safety among undergraduates in University of Ibadan.

	Food Delivery Applications	Perception of Food Safety
Food Delivery Applications	1	
Perception of Food Safety	.056	1

Table 4.4 showed a low positive relationship between food delivery applications and perception of food safety among the respondents ($r= 0.056$, $p<0.05$).

Hypothesis 2: There will be no significant relationship between perception of healthy food options and food safety among undergraduates in University of Ibadan.

Table 4.5: Correlation matrix showing the relationship between perception of healthy food options and food safety among undergraduates in University of Ibadan.

	Healthy Food Options	Food Safety
Healthy Food Options	1	
Food Safety	.416	1

Table 4.5 showed a high positive relationship between healthy food options and food safety among the respondents ($r= 0.416$, $p<0.05$).

Hypothesis 3: There will be no significant gender difference in the use of food delivery applications among undergraduates in University of Ibadan.

Table 4.6: Summary of independent sample t-test on the use of food delivery applications among undergraduates in University of Ibadan

Variable	Gender	N	Mean	Std. Dev	Df	T	Sig.	Remark
Use of Food Delivery	Male	71	17.5915	4.22434	198	1.360	0.700	Sig.
	Female	129	18.4496	4.29564				



Table 4.6 showed that there was no significant gender difference in the use of food delivery applications among undergraduates in University of Ibadan. ($df= 198$; $N= 200$, $t= 1.360$, $P>.05$). From the table, respondents who are female had a higher mean score of (18.4496) while respondents who are male had a mean score of (17.5915). Hence, the result was confirmed not to be significant. This means that respondents who are female use food delivery applications. Since the results implied that there was no significant gender difference in the use of food delivery applications among undergraduates in University of Ibadan, therefore, the null hypothesis was therefore accepted.

Discussion of Findings

The study revealed that a majority of respondents (36.5%) rarely use food delivery applications, while only 11% reported using them often. This indicates that while food delivery services are available, they are not a primary means of accessing food for most students. This finding is consistent with Fakfare (2021), who identified convenience, delivery experience, and cost as major factors influencing the use of food delivery services. The reluctance to use food delivery applications frequently could be linked to the high cost of delivery fees, as 47% of respondents either agreed or strongly agreed that delivery charges discouraged them from ordering food online.

The empirical study by Suhartanto et al. (2019) also supports this finding, highlighting that perceived value and food quality significantly influence the adoption of food delivery applications. Given that a considerable proportion of the respondents in this study disagreed with the notion that food delivery applications are more convenient than cooking (54.5%), it suggests that many undergraduates prefer home-cooked meals, possibly due to cost-effectiveness and personal control over food preparation.

Regarding perception of healthy food options among undergraduates, the study found that students have varying perceptions regarding healthy food options in food delivery services. A significant number of respondents (41%) expressed concerns about the hygiene of kitchens preparing food for delivery. Similarly, 60% of respondents believed that food delivery apps should provide more information about how meals are prepared, aligning with Al-Amin (2021), who found that food safety concerns play a crucial role in shaping consumers' trust in food delivery services.

Additionally, a considerable percentage of students (49%) believed that food delivery applications provide easy access to a variety of meals, reinforcing the findings of Goldberg (2020), who emphasized the role of online platforms in diversifying food choices. However, concerns remain about the safety and health implications of these meals. Research by Hsu et al. (2016) similarly indicated that while food variety is a key attraction, food safety remains a significant barrier to continued usage.

Concerning level of food safety awareness among undergraduate, food safety concerns were prominent among respondents, with 81% agreeing that food safety should be prioritized in food delivery services. The study found a significant positive relationship ($r = 0.416$, $p < 0.05$) between perception of healthy food options and food safety, suggesting that students who prioritize healthy eating also tend to be more cautious about food safety. This is in agreement with Piochi et al (2022), who noted that consumer awareness of food quality influences their risk perception and trust in food sources.

Furthermore, respondents largely preferred home-cooked meals, with 92% agreeing that home-cooked meals are safer than food ordered through food delivery applications. This supports previous research by Dastile (2017), which indicated that consumers tend to trust their own food preparation



methods over external sources, particularly when food safety regulations are not stringent.

Shim et al. (2015) also found that consumers take risk-reducing actions when they perceive a food safety issue, which explains why many undergraduates in this study avoid ordering food online due to safety concerns. This aligns with the significant number of students (60%) who reported avoiding online food delivery due to concerns about food safety.

As regards gender differences in the use of food delivery applications, the study found no significant gender difference in the use of food delivery applications among undergraduates, with female respondents reporting a higher mean score (18.45) than male respondents (17.59). This is against the finding of Ray et al. (2019), which found that gender influences food delivery application usage, with women showing a higher tendency to use these services due to convenience and time-saving benefits.

However, the difference in usage was not extremely large, suggesting that other factors such as food safety perceptions and economic constraints may also play a role in determining the adoption of food delivery services.

The findings of this study align with previous empirical studies, highlighting concerns about food safety, hygiene, and cost as key barriers to the widespread adoption of food delivery applications among undergraduates. While food delivery applications provide convenience and variety, many students remain skeptical about their safety and nutritional value. These concerns are supported by existing literature, which emphasizes the importance of transparency, food quality assurance, and consumer trust in shaping online food consumption behavior.

Conclusion

The study concluded that while food delivery applications offer convenience, many students are

concerned about the safety and nutritional quality of the food they consume.

It was concluded that affordability and accessibility play significant roles in shaping students' food choices. Additionally, students who prioritize healthy eating also tend to be more conscious of food safety. The study further revealed that female students were more likely to use food delivery applications than their male counterparts.

Recommendations

Based on the findings, the following recommendations are proposed:

1. Improved Food Safety Regulations: Universities should work with food vendors and food delivery services to ensure strict hygiene and food safety measures. Regular inspections and compliance monitoring should be enforced.
2. Increased Awareness and Education: Awareness programs should be introduced to educate students on the importance of healthy eating and food safety. Campaigns promoting the benefits of nutritious meals should be implemented within the university community.
3. Enhanced Availability of Healthy Meals: More vendors providing healthy food should be encouraged to list their meals on food delivery applications. Additionally, on-campus food vendors should be encouraged to prioritize nutritious meal options.
4. Encouraging Home-Cooked Meals: Students should be encouraged to prepare meals at home when possible. Initiatives such as cooking workshops and access to affordable fresh food options can support this effort.

References

- Al Amin, M., Arefin, M. S., Alam, M. R., Ahammad, T., and Hoque, M. R. (2021). Using mobile food delivery applications during COVID-19 pandemic: An extended model of planned behavior. *Journal of Food Production Marketing*, 27, 105–126.



- Breugelmans, E., Campo, K., and Gijsbrechts, E. (2007). Shelf sequence and proximity effects on online grocery choices. *Marketing Letters*, 18(1–2), 117–133.
- Choudhary, P. (2024). Consumer acceptance of AI-driven personalization in food-delivery platforms. *International Journal of Human–Computer Interaction*. Advance online publication
- Coumans, J. M. J., Bolman, C. A. W., Lechner, L., and Oenema, A. (2021). An exploration of perceptions and preferences for healthy eating in Dutch consumers: A qualitative pilot study. *Pilot and Feasibility Studies*, 7, Article 20. <https://doi.org/10.1186/s40814-020-00735-6>
- Dastile, L. S., Francis, J., and Muchenje, V. (2017). Consumers' social representations of meat safety in two selected restaurants of Raymond Mhlaba Municipality in the Eastern Cape, *South Africa. Sustainability*, 9(10), 1651. <https://doi.org/10.3390/su9101651>
- Ehuwa, O., Jaiswal, A. K., and Jaiswal, S. (2021). Salmonella, food safety and food handling practices. *Foods*, 10(5), 907. <https://doi.org/10.3390/foods10050907>
- Freeman, L. R., and Kelly, S. (2020). The impact of food delivery services on the dietary habits of consumers. *Journal of Nutrition Education and Behaviour*, 52(2), 126–133
- Ganchrow, J. R., Mennella, J. A., and Doty, R. L. (2003). The ontogeny of human flavor perception. In R. L. Doty (Ed.), *Handbook of Olfaction and Gustation* (2nd ed., pp. 823–946). Marcel Dekker.
- Gibson, E. L. (2006). Emotional influences on food choice: Sensory, physiological and psychological pathways. *Physiology & Behaviour*, 89(1), 53–61.
- Global Burden of Disease Collaborators. (2017). Global, regional, and national comparative risk assessment of dietary risks, 1990–2017. *The Lancet*, 393(10184), 1958–1972
- GlobalData. (2023). Online food delivery market analysis. GlobalData. Retrieved from <https://www.globaldata.com/store/report/online-food-delivery-market-analysis/>
- Goldberg, D. M., Khan, S., Zaman, N., and Abrahams, A. S. (2020). Text mining approaches for postmarket food safety surveillance using online media. *Risk Analysis*, 12, 1–20.
- Hirschberg, C., Rajko, A., Schumacher, T., and Wrulich, M. (2017). *The changing market for food delivery (McKinsey report)*. McKinsey & Company
- Hsu, S.-Y., Chang, C.-C., and Lin, T. T. (2016). An analysis of purchase intentions toward organic food on health consciousness and food safety with/under structural equation modeling. *Journal of British Food*, 118, 200–216. <https://doi.org/10.1108/BFJ-11-2014-0376>
- Jackson, B., Cooper, M. L., Mintz, L. B., and Albino, A. (2003). Motivations to eat: Scale development and validation. *Journal of Research in Personality*, 37(3), 297–318.
- Jackson, L. S. (Ed.). (1999). *Impact of processing on food safety*. Springer.
- Kapoor, A. P., and Vij, M. (2018). Technology at the dinner table: Ordering food online through mobile apps. *Journal of Retailing and Consumer Services*, 43, 342–351.
- Koster, E. P. (2009). Diversity in the determinants of food choice: A psychological perspective. *Food Quality and Preference*, 20(2), 70–82. <https://doi.org/10.1016/j.foodqual.2007.11.002>
- LaCaille, L. J., Dauner, K. N., Krambeer, R. J., and Pedersen, J. (2011). Psychosocial and environmental determinants of eating behaviors, physical activity, and weight change among college students: A qualitative analysis. *Journal of American College Health*, 59, 531–538.
- Lent, R. W. (2004). Toward a unifying theoretical and practical perspective on well-being and psychosocial adjustment. *Journal of Counseling Psychology*, 51(4), 482–509.
- Maimaiti, M., Zhao, X., Jia, M., Ru, Y., and Zhu, S. (2018). How we eat determines what we become: Opportunities and challenges



brought by food delivery industry in a changing world in China. *European Journal of Clinical Nutrition*, 72(9), 1282–1286.

Maria, A., Gonzalez, R., and Patel, S. (2024). Mobile-first food-safety education for university students: A pilot programme evaluation. *Journal of Public Health Education*. Advance online publication.

Matarese, L. E., and Pories, W. J. (2014). Adult weight loss diets: Metabolic effects and outcomes. *Nutrition in Clinical Practice*, 29(6), 759–767. <https://doi.org/10.1177/0884533614550251>

Ogden, J. (2002). *Health Psychology: A Textbook* (3rd ed.). Open University Press.

Piochi, M., Fontefrancesco, M. F., and Torri, L. (2022). Understanding Italian consumers' perception of safety in animal food products. *Foods*, 11, 3739.

Ray, A., Dhir, A., Bala, P. K., and Kaur, P. (2019). Why do people use food delivery apps? A uses and gratification theory perspective. *Journal of Retailing and Consumer Services*, 51, 221–230.

Shaojing, X., Li, Y., and Chen, P. (2019). Determinants of consumers' preference for food delivery apps in China. *Journal of Retailing and Consumer Services*, 49, 386–394

Shim, M., and You, M. (2015). Cognitive and affective risk perceptions toward food safety outbreaks: Mediating the relation between news use and food consumption intention. *Asian Journal of Communication*, 25(1), 48–64. <https://doi.org/10.1080/01292986.2014.989242>

Smith, A. (2020). Understanding consumer behaviour in online meal-ordering: Implications for nutrition policy. *Public Health Nutrition*, 23(14), 2536–2544.

Suhartanto, D., Dean, D., Leo, G., and Triyuni, N. N. (2019). Millennial experience with online food home delivery: A lesson from Indonesia. *Interdisciplinary Journal of Information, Knowledge, and Management*, 14, 277–294. <https://doi.org/10.28945/4386>

Van Langeveld, A. W. B., Teo, P. S., and Hendriks, A. E. J. (2016). Effects of taste education and healthy food exposure in school-aged children. *Appetite*, 107, 537–545.

<https://doi.org/10.1016/j.appet.2016.08.11>

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