A Gender-Based Comparative Evaluation of O2O Food Delivery Characteristics : A Requirements Prioritization Approach

Vaibhav Agarwal [1]
Rajendra Sahu [2]
Ashutosh Pandey [3]

Abstract

This article intended to assess enablers and deterrents to online-to-offline (O2O) food delivery (OFD) use from users' and non-users' perspectives at the sub-dimension level. The study aimed to parallelly evaluate these sub-dimensions for both genders and provide a self-comparison of preferences. An online survey was conducted to obtain users' preferences. Two hundred valid responses were analyzed using the simple ranking method of the requirements prioritization approach for ordinal data analysis. The findings revealed that females required comprehensive product details, ease of interface use, convenience in transactions, and overall hygiene at all stages. Privacy violation was reported as the most significant risk perceived by females. Male OFD users asked for safe food packaging and a good delivery experience but perceived the product performance failure as a severe risk. The inability to access food quality online was the top reason to avoid OFD use. The findings will help OFD operators and food-tech start-ups improve their operations by addressing specific issues. The article is unique as it followed an approach different from just establishing linear relations by analyzing ordinal data using the requirements prioritization technique.

Keywords : **online food delivery, requirements prioritization, food e-commerce, gender, consumer preferences**

Paper Submission Date : May 15, 2022 ; Paper sent back for Revision : October 20, 2022 ; Paper Acceptance Date : November 30, 2022 ; Paper Published Online : January 15, 2023

Online-to-offline (O2O) is an e-commerce model where a customer can search, book, or purchase products and services online that are either delivered physically to the customer or consumed later at an offline location (Roh & Park, 2019). O2O is fundamental to the aggregator business model integrating services with products in e-services, such as transportation (Uber, Ola), space (Airbnb, WeWork), food delivery (Zomato, Swiggy), house cleaning (Amazon House Service, Urban Company) to name a few (Roh & Park, 2019). Hence, O2O e-commerce is playing a significant role in transforming economies like India, China, and South Korea by opening new marketing avenues, creating employment opportunities at various levels, and enhancing customer access, experience, and convenience (Kang & Namkung, 2019; Kapoor & Vij, 2018; Kurup & Jain, 2018; Shashikala & Suresh, 2017; Sur, 2018; Xu & Huang, 2019).

[1] *Research Scholar (Corresponding Author),* Department of Management Studies, ABV – Indian Institute of Information Technology and Management, Morena Link Road, Gwalior - 474 015, Madhya Pradesh.
(Email : vaibhavagarwal3107@gmail.com) ; ORCID iD : https://orcid.org/0000-0001-8045-072X
[2] *Professor,* Department of Management Studies, ABV – Indian Institute of Information Technology and Management, Morena Link Road, Gwalior - 474 015, Madhya Pradesh. (Email : rsahu@iiitm.ac.in) ; ORCID iD : https://orcid.org/0000-0001-7856-3004
[3] *Assistant Professor,* Marketing Area, FORE School of Management, "Adhitam Kendra," B-18, Qutub Institutional Area, New Delhi - 110 016. (Email : prof.ashutoshp@gmail.com) ; ORCID iD : https://orcid.org/0000-0002-8255-8459

DOI : https://doi.org/10.17010/ijom/2023/v53/i1/172593

Food delivery is one of the O2O services that has been bullish worldwide in the pre-pandemic and post-pandemic revival phases. The food delivery system in India is about 130 years old when the dabbawalas of Mumbai began operating their fleet on the streets of Mumbai to carry lunch boxes from homes to offices (Borah, 2021). Then came the era of home delivery of food (like pizza) by ordering it from select vendors over a mobile phone call. Today, OFD services have successfully delivered fully cooked meals to homes by taking online orders for restaurants across the city through an aggregator setup. Further, after the success in pilot trials, OFD services are now striving to make contactless delivery of food through drones viable commercially ("Swiggy, ANRA get approval," 2021). The Indian OFD segment had a market value of USD 11.782 billion in 2021 and is estimated to touch USD 19.367 billion in 2025 at a CAGR of 13.22%. OFD services are expected to have 538.1 million users by 2025, up from 308 million users in 2021. India stands globally at the third spot (USD 11.782 billion) in terms of OFD revenue generation in 2021, preceded by the USA (USD 31.362 billion) and China (USD 158.976 billion) (Statista.com, 2021). Indian OFD market majorly is a duopoly with Zomato (35%) and Swiggy (25%) as significant market shareholders compared to Dominos (10%), McDelivery (5%), and Yum! Brands (10%) (Statista.com, 2021). Such a positive growth rate of the OFD sector, along with limited academic research in India, an economically, culturally, religiously, and demographically diverse country, has made it a highly sought-after research area among contemporary researchers, where they have expressed the need to carefully examine the use of OFD services from different perspectives (Jayanthi & Hari Prasad Reddy, 2017; Munshi & Singla, 2022; Sivathanu, 2017).

While other O2O services majorly involve service dispensation, O2O food delivery dispenses both services and products — this is specialized where customer satisfaction and purchase intentions depend on product and service features. Extant OFD literature has investigated the factors critical to OFD use and tested their linear relationships, mediators, and moderators, in Indian and foreign contexts (Agarwal & Sahu, 2021; Kang & Namkung, 2019; Kapoor & Vij, 2018; Singh & Nanda, 2022; Zhao & Bacao, 2020). However, there is a lack of studies investigating the requirements, apprehensions, and reasons for the use/ non-use of OFD services at the sub-dimension level. Not many studies have focussed on identifying and prioritizing the reasons for the non-usage of OFD services, leading to ambiguity, misunderstanding, and failures in designing strategies to bring them on board. Moreover, prior literature has confirmed that preferences vary significantly for males and females (Chincholkar & Sonwaney, 2022; Hossain et al., 2021; Malati et al., 2012; Parmod & Arora, 2021; Parray & Bhat, 2019). However, rarely has any study offered a comparative analysis of OFD usage/ non-usage preferences for each gender at an elemental level. Such a study can prove beneficial in channeling the resources precisely to ensure the growth, expansion, and sustainability of OFD services, even in uncertain economic circumstances (Dhote & Zahoor, 2017). Therefore, this study intends to fill these voids by investigating the enablers and deterrents of OFD use at the sub-dimension level. This study used the simple ranking method for requirements prioritization to analyze the ordinal data and compute the absolute priorities of customers. Specifically, the study attempted to execute a gender-based prioritization of these requirements to provide a self-comparison of their preferences.

This study is expected to provide valuable insights into the expectations and hesitations of users and non-users of OFD services which are not explained clearly through linear relationships under structural equation modeling. A typical restaurant owner, eatery owner, food-tech start-up, or OFD aggregator can gain fundamental insights from this study to optimize their operations and make their services more customer-centric, ultimately assisting stakeholders in changing strategies and allocating resources intelligently to optimize customer happiness, satisfaction, and retention.

Literature Review

OFD services have been actively investigated worldwide to understand various aspects. For instance, Shah et al.

(2020) investigated the factors motivating Indonesian customers to use OFD apps. Wang et al. (2019) examined the antecedents impacting word-of-mouth and intentions to reuse OFD services among Taiwanese consumers. Roh and Park (2019) empirically established that perceived convenience significantly impacted the ease of use, subsequently influencing OFD intentions among South Korean customers. Agarwal and Sahu (2021) examined Indian OFD consumers and reported that repeat usage intentions were influenced by initial usage intentions and satisfaction as OFD services are still in the expansion stage.

Extant OFD literature has identified information quality (Shah et al., 2020; Wang et al., 2019), interface quality (Akram et al., 2020), safety measures (Al Amin et al., 2021), and perceived convenience (Roh & Park, 2019; Troise et al., 2021) as critical enablers, and perceived risk (Suhartanto et al., 2021; Troise et al., 2021) as a significant deterrent to OFD use intentions. This study took a step ahead and identified the sub-dimensions of these five enablers and one deterrent to OFD services' use. The enablers, deterrents, and their sub-dimensions used are discussed as follows.

Information Quality (InfoQ)

It signifies the extent of comprehensiveness and standard of the details provided by the e-commerce firm to its customers (Shah et al., 2020). Comprehensive information about menu items, food safety assurance, credible ratings and reviews, correct prediction of delivery time, information on product availability, images of food, correct menu items, and up-to-date delivery information are eight sub-dimensions of information quality required by customers at all stages of OFD use (Al Amin et al., 2021; Kang & Namkung, 2019; Lee et al., 2019; Saad, 2021; Shah et al., 2020; Verma, 2020; Xu & Huang, 2019). Such information enhances the customers' buying confidence and reduces their fears and apprehensions.

Interface Quality (IntfQ)

It signifies the standard of features, efficiency, accessibility, and functioning of the app or website used by an e-commerce merchant (Akram et al., 2020). Since OFD services use websites or smartphone apps to function, their interface design plays a crucial role in shaping customer usage experience and impacting their intentions (Kapoor & Vij, 2018; Wang et al., 2019). Layout and structure, easy navigation, ease-of-use, technical support, functioning speed, interface efficiency, personalization, and aesthetics (attractiveness) are the eight sub-dimensions of interface quality (Kapoor & Vij, 2018; Tandon et al., 2018; Wang et al., 2019).

Perceived Convenience (PC)

It signifies the degree of a customer's intent to save resources such as time, money, and efforts while using or buying a product or service (Jiang et al., 2013). With e-services, customers can enjoy a variety of conveniences that positively influence their use/reuse intentions (Jiang et al., 2013; Roh & Park, 2019). Access (anytime, anywhere), search (browse, find, select), evaluation (variety, text, and graphical information), transaction (payment options, simple and easy payment), and possession/post possession (undamaged, timely, correct item receiving, easy return) convenience are five sub-dimensions to perceived convenience (Jiang et al., 2013).

Safety Measures (SfM)

Health crises due to the COVID-19 pandemic demand additional safeguards in OFD services as there are chances of infection transmission. No contact delivery, restaurant safety ratings, tamper-proof packaging, well-behaved delivery personnel, information privacy, transaction security, app or website genuinely indicator, and hygiene

features are the eight sub-dimensions to safety measures (Duda-Chodak et al., 2020; Jose & Koshy, 2018; Kim et al., 2021; Rizou et al., 2020).

Perceived Risks (PR)

PR refers to the degree of anxiety or skepticism a customer experiences while using any e-service (Tandon et al., 2018). Scholars have identified financial (card data theft, overcharging), product performance (bad quality/ wrong specifics), psychological (mental tension, self-guilt), social (respect/status loss), time (tiring/time wastage), security (virus/data breach), privacy (personal data theft), and delivery risks (wrong product/address) as eight types of risks experienced by customers during e-shopping (Park & Tussyadiah, 2017). The perception of such risks by customers can severely dent their satisfaction and intentions to purchase online (Park & Tussyadiah, 2017; Tandon et al., 2018; Thakur et al., 2017). Therefore, it becomes indispensable to identify the severity of risks perceived by OFD users so that the practitioners can take the necessary steps to reduce them.

Methodology

Requirements Prioritization Technique

This study performs requirements prioritization using a simple ranking method employing the rank-sum weighting scheme (Hatton, 2007; Stillwell et al., 1981). Requirement prioritization is a quantitative method of ascertaining the importance or the order of implementation of requirements identified by stakeholders to establish or improve a system or process (Firesmith, 2004). In other words, requirements prioritization helps determine the relative importance of requirements through a consensus with stakeholders. The simple ranking method is more suitable for ordinal data analysis as it is consistent and enjoys greater respondent confidence. It is less complex, requires fewer efforts in execution, is straightforward, intuitive, quick, and efficient for a limited number of requirements compared to other techniques such as MoSCoW (must have, should have, could have, won't have), hundred dollar, spanning tree, bubble sort, binary search tree method, and advanced multi-criteria decision making (MCDM) techniques such as analytic hierarchy process (AHP), and hierarchical AHP (Hatton, 2007). A simple ranking of attributes is an effortless and natural process for individuals as they keep comparing things in daily life based on their perceptions, experiences, expectations, and knowledge (Berander & Andrews, 2005; Hatton, 2007). While advanced MCDM techniques are appropriate for properly educated respondents or experts, the simple ranking method is ideal for general respondents (Hatton, 2007; Karlsson et al., 1998).

Prior literature suggests that if the features to be ranked are limited in number (e.g., 5 to 8), easy to understand, and known to the general public, the simple ranking methodology should be used instead of complex MCDM techniques because it does not require subject matter experts to compare attributes in a pairwise manner like AHP (Hatton, 2007; Karlsson et al., 1998). Hatton (2007) reported that out of AHP, MoSCoW, hundred dollar, and simple ranking, AHP took the maximum time to complete, had the highest level of difficulty in execution, and had the lowest level of respondent confidence while answering. In contrast, MoSCoW and the simple ranking method have the lowest difficulty level and the highest level of respondent confidence among all methods. The accuracy and consistency of results are as important as the degree of difficulty and the respondents' confidence. The respondents' confidence level plays an essential role in data collection, as the lower the difficulty level, the higher the confidence level while answering. The “keep it simple, stupid” (KISS) theory of effective sales strategy supports the psychology that sometimes simple techniques are more effective than complex ones in making decisions for uncomplicated things (Berander & Andrews, 2005; Berander & Svahnberg, 2009; Hatton, 2007; Karlsson et al., 1998; Macintosh & Gentry, 1999).

Since our study involves ranking familiar OFD sub-dimensions/requirements using ordinal data collected from ordinary consumers, the simple ranking technique is suitable for data analysis. The respondents were asked to rank only the five best options of their choice from the list. It improved the accuracy and consistency of the results as fewer options can easily be remembered and ranked (Hatton, 2007; Karlsson et al., 1998). The essential criterion in the prioritization technique is the weighting scheme. We have used the rank-sum weighting scheme suggested by Stillwell et al. (1981).

Simple Ranking Prioritization Procedure with Illustration

The following steps explain the procedure for the simple ranking technique :

Step 1. Respondents were asked first to select the five most essential sub-dimensions of their choice from the list of each main factor. Then they had to rank the selected five sub-dimensions from 1st to 5th as per their understanding. Here, rank 1 refers to the *most important* option, and 5 denotes the *least essential* option out of the five.

Step 2. Then, the frequency count (F_i) of all ranks given to each sub-dimension of the main factor is calculated (see Table 1).

Step 3. Further, weights (W_i) are assigned to each rank to indicate its relative importance to others using the rank-sum weighting scheme suggested by Stillwell et al. (1981). It is calculated as :

$$W_i = \frac{N - R_i + 1}{\sum_{i=1}^{N}(N - R_i + 1)} \qquad (1)$$

Here, N denotes the number of assigned ranks, and R_i indicates the position. So, rank 1 gets a weightage of 0.33, while rank 5 gets a weightage of 0.07.

Step 4. Then, the sum of the product of each rank with its designated weight is computed to obtain a final weighted sum score for each sub-factor.

$$Weighted\ Sum\ Score = \sum_{i=1}^{5} F_i \times W_i \qquad (2)$$

Step 5. A normalized weighted score is then calculated by dividing the weighted sum score of each sub-dimension by the total weighted sum score for each main factor.

Step 6. The final rank of each sub-requirement is computed based on normalized weighted scores arranged in descending order. Rank 1 denotes the most important sub-requirement, while rank 8 denotes the least important sub-requirement (see Table 2).

Table 1. ***Frequency Count Calculation of all Five Ranks Given to Each Sub-Dimension***

Rank →	1st	2nd	3rd	4th	5th	Total
Frequency count of sub-dimension 1→	8	6	16	10	18	58

Table 2. ***Computation of Weighted Sum Score of Sub-Dimensions***

	INTERFACE QUALITY								
	Weights (W_i) →	**0.33**	**0.27**	**0.20**	**0.13**	**0.07**			
	Rank Frequency (F_i)	**1st**	**2nd**	**3rd**	**4th**	**5th**	**Weighted Sum ($F_i \times W_i$)**	**Normalized Weight (NW_i)**	**Final Rank**
Sub- Dimensions	Aesthetics (Attractiveness)	4	6	16	4	12	7.47	0.109	5
	Structure and Layout	8	4	4	8	8	6.13	0.090	6
	Easy Navigation	18	16	6	6	10	12.93	0.189	2
	Technical Support	2	20	12	16	12	11.33	0.166	3
	Ease-of-Use	26	8	4	18	8	14.53	0.213	1
	Personalization Options	10	4	8	14	8	8.40	0.123	4
	Efficiency of Interface	4	2	5	2	3	3.33	0.049	8
	Functioning Speed	2	7	4	5	3	4.20	0.061	7
							Total = 68.33		

Data Collection

The sub-dimensions (requirements) of primary factors, that is, information quality, interface quality, perceived conveniences, safety measures, risks, and the reasons for using and not using OFD services, were sourced from the survey of published journal articles mentioned in the literature review section. An online questionnaire was prepared using Google Forms and sent to one professor and two research scholars for the pre-test. To identify problems in the comprehension of the questionnaire and response filling, a pilot test on 30 students was also conducted. The suggested corrections were incorporated, and then the questionnaire link was sent through e-mail and WhatsApp to solicit data. The sample framework constituted a common consumer having OFD usage experience of at least one year. A convenience sampling technique of mall interception was adopted for selecting respondents. The survey was conducted in August – September 2021. We used G*Power 3 software for sample size collection, and it suggested a sample size of 121 at a 95% confidence level and 80% power (Faul et al., 2007). A total of 261 questionnaires were returned, of which only 200, greater than the suggested sample size, were found complete and fit for analysis. The respondents belonged to 30 Indian cities.

Data Analysis and Results

The ordinal data were analyzed using SPSS 20.0 and Microsoft Excel, following the steps mentioned in the previous section. The sub-dimensions were ranked for males and females, and the combined rank was also computed.

Demographic Information

The demographic characteristics are presented in Table 3. The valid sample consists of an equal proportion of both genders, with the majority (91%) in the age band of 15 – 25 years. Such a high percentage of this age group is not unusual, as earlier studies in OFD have also observed this and argued that this age group is tech-savvy, quite comfortable, and enthusiastic about using OFD services compared to the higher age groups (Suhartanto et al., 2021; Zhao & Bacao, 2020). A majority (81%) of the respondents were students; 49% of the respondents

Table 3. ***Demographic Characteristics (Sample Size = 200)***

Measure	Item	*N*	%
Gender	Male	101	50.5
	Female	99	49.5
Age	15 – 25	183	91.5
	25 – 35	17	8.5
Education	High School/ Intermediate	55	27.5
	Bachelor's	97	48.5
	Master's	46	23
	Doctoral/ Ph.D.	2	1
Occupation	Student	175	87.5
	Service	13	6.5
	Self-employed	2	1
	Business	4	2
	Unemployed	2	1
	Jobseeker	4	2
Respondent Type	OFD User	146	73
	OFD Non-User	54	27
Use Duration	Less than 6 months	16	11
	1 year	22	15.1
	2 years	32	21.9
	More than 2 years	76	52.1
Use Frequency	Less than three times	70	47.9
	3 – 5 times	54	37
	5 – 10 times	16	11
	more than 10 times	6	4.1
Average Order Value	Less than ₹ 100	2	1.4
	₹ 100 – ₹ 300	70	47.9
	₹ 300 – ₹ 600	58	39.7
	₹ 600 – ₹ 1,000	10	6.8
	Above ₹ 1,000	6	4.1

possessed bachelor's degrees, while 23% had completed their master's degree. More than 50% of the respondents had OFD usage experience of more than 2 years, and 48% of the respondents used OFD services less than three times per month. A majority (47.9%) of order values were in the range of ₹ 100 to ₹ 300, followed by 39.7% in the ₹ 300 to ₹ 600 range.

Findings

The data analysis reveals several critical outcomes. First, the information quality sub-dimensions are prioritized (see Table 4).

Table 4. ***Ranking of Information Quality Sub-Requirements***

Information Quality			
Sub-Dimensions	**Overall Ranking**	**Ranking by Males**	**Ranking by Females**
Comprehensive Details	1	1	1
Food Safety Assurance	2	2	2
Credible Ratings and Reviews	3	4	4
Correct Predicted Delivery Time	4	3	5
Correct Product Availability	5	6	3
Correct Food Image Cues	6	5	8
Correct Menu Items	7	7	6
Up-to-Date Information	8	8	7

Table 5. ***Ranking of Interface Quality Sub-Requirements***

Interface Quality			
Sub-Dimensions	**Overall Ranking**	**Ranking by Males**	**Ranking by Females**
Ease-of-Use	1	1	1
Easy Navigation	2	2	2
Technical Support	3	3	4
Functioning Speed	4	7	6
Personalization Options	5	4	3
Efficiency of Interface	6	8	4
Structure and Layout	7	6	7
Aesthetics (Attractiveness)	8	5	8

As per the analysis, comprehensive details regarding menu items are the topmost requirement for both genders, followed by information on food safety assurance. However, the third most crucial requirement is different: males require correct delivery time prediction, and females require accurate information on product availability. Moreover, users want ratings and reviews to be genuine and highly credible, not fake or paid.

Second, in terms of interface quality, both gender requires ease to use interface with smooth forward-backward navigation (see Table 5). While females need personalization options on the interface, men want efficient technical support (calling or chat box help). The top five priorities in overall ranking suggest that users are more concerned with the practical aspect of interface quality than hedonic ones.

Third, both genders' top requirement is seamless check-out and payment convenience (see Table 6). Females use OFD for the post-purchase convenience of timely receipt of the correct order. Moreover, both genders love the convenience of accessing OFD services anytime and anywhere, besides the comfort of browsing and evaluating the menu items offered by a wide range of restaurants.

Fourth, the prioritization of safety measures reveals that female OFD users strongly demand food preparation and delivery hygiene, transaction security, and safe packaging (see Table 7). Males also seek similar safety measures but in a different importance sequence. Packaging safety is a prime concern for males, followed by food

Table 6. ***Ranking of Perceived Convenience Sub-Requirements***

Perceived Convenience			
Sub-Dimensions	**Overall Ranking**	**Ranking by Males**	**Ranking by Females**
Transaction Convenience	1	1	1
Access Convenience	2	2	3
Search Convenience	3	3	5
Evaluation Convenience	4	4	4
Post-Purchase Convenience	5	6	2
Purchase Convenience	6	5	6

Table 7. ***Ranking of Safety Features' Sub-Requirements***

Safety Measures			
Sub-Dimensions	**Overall Ranking**	**Ranking by Males**	**Ranking by Females**
Hygiene Features	1	2	1
Safe Packaging	2	1	3
Transaction Security	3	3	2
Restaurant Safety Ratings	4	5	4
Well-Behaved Delivery Personnel	5	4	6
Information Privacy	6	7	5
No Contact Delivery	7	6	7
Website or App Genuinity Indicator	8	8	8

Table 8. ***Ranking of Reasons for OFD Use***

Reasons for Using OFD Services			
Reasons	**Overall Ranking**	**Ranking by Males**	**Ranking by Females**
Delivery Experience	1	1	3
Due to Purchase Convenience	2	2	2
Because it is Easy to Use	3	5	1
Customer Experience	4	3	4
Because of its Usefulness	5	4	5
Due to Fun/ Pleasure/ Enjoyment in using it	6	7	6
Due to Monetary Savings	7	6	10
Because of Trustworthiness	8	8	7
Due to Control over Complete Process	9	9	8
Because of Habit	10	10	9
Due to Societal Pressure/ Influence	11	11	11

Table 9. ***Ranking of Various Perceived Risks in OFD Use***

Perceived Risks			
Sub-Dimensions	**Overall Ranking**	**Ranking by Males**	**Ranking by Females**
Product Performance Risk	1	1	4
Delivery Risk	2	3	3
Privacy Risk	3	7	1
Time Risk	4	2	6
Financial Risk	5	5	2
Security Risk	6	6	5
Psychological Risk	7	4	7
Social Risk	8	8	8

hygiene and transaction security. This outcome confirms that OFD services must take care of these three features at all costs to ensure continued use by customers.

The top five reasons females use OFD services are ease-of-use, convenience in purchasing, delivery experience, customer experience, and perceived usefulness (see Table 8). Moreover, males use OFD services for the same five reasons, but in a different preference sequence. The overall ranking also features these reasons in the top five, with delivery experience, purchase convenience, and ease of use being the top three reasons for OFD use.

Privacy loss is the biggest issue for women, followed by financial and delivery risks (see Table 9). However, men are worried about wrong food specifics, time wastage in searching, and delivery failure. Unlike women, men are less concerned about privacy violations, perhaps because the leakage of information like phone numbers, addresses, and e-mail IDs is a more serious issue for women. However, the risk of social scorn or unacceptance is the least severe concern for both genders, implying that OFD users are not worried about society's thinking of them.

Lastly, the results suggest that the biggest reason for both genders not using OFD services is the inability to assess food quality online (see Table 10). According to the overall ranking, the following four reasons are cleanliness issues, high pricing/delivery charges, non-reliable/non-trustworthy service, and the risk of online fraud. Most importantly, males and females have different priorities for OFD avoidance reasons. The risk of distribution failure is minimal, indicating that even non-users are convinced that such an event can rarely occur.

Table 10. ***Reasons for Not Using OFD Services***

Reasons	**Overall Ranking**	**Ranking by Males**	**Ranking by Females**
Cannot Judge Food Quality	1	1	1
Hygiene Issues	2	2	3
Issue of Overpricing/ Delivery Fee	3	7	2
Non-Reliable/ Non-Trustworthy Service	4	3	10
Risk of Online Fraud	5	5	8
Risk of Delayed Delivery	6	9	5
Waste of Money	7	8	7
Personal Info Not Secure	8	12	4

Difficult to Cancel the Order	9	4	17
Cannot Wait till the Food Arrives	10	18	6
Very Complicated to Place an Order	11	17	9
Reduced Food Quantity	12	14	11
Risk of Wrong Order Delivery	13	11	14
Paid Reviews/ Fake Ratings	14	6	22
Risky Monetary Transactions	15	15	13
Return Issues	16	19	12
No Value for Money	17	20	15
Grievance Redressal is Time Taking	18	21	16
Risk of Delivery at the Wrong Place	19	13	18
App/ Website Security Problem	20	16	19
Risk of Religious Non-Compliance	21	10	20
Risk of Delivery Failure	22	22	21

Implications

Theoretical Contributions

This study deepens our understanding of a complex O2O service by prioritizing various sub-dimensions of critical OFD enablers and deterrents. This study goes beyond the gender-based analysis of linear relationships that has been done excessively in the past. In fact, this study exhibits that gender-based differences in expectations and fears exist even at the sub-dimension level. In addition, by identifying and ordering the reasons for not using OFD services, this paper evaluates the attitudes of non-users, which were rarely studied earlier. Prioritized sub-dimensions can help researchers select relevant variables for their future studies. The outcomes will assist practitioners in prioritizing the resources' allocation for better improvement in services.

Practical Implications

This study produces an overall and gender-wise ranking for each main factor's sub-dimensions to better understand the specific issues. These results allow OFD aggregators to fix bottlenecks with their services, redesign services, and focus on highly expected features. In addition, they can create advertising campaigns based on highly anticipated features to differentiate their services from others and target misconceptions that lead to the avoidance of OFD services. To improve the overall quality of information, operators of OFDs must provide a detailed description of each dish on their menu (such as its spiciness, portion size, ingredients, and steps taken for food safety). It can include a user id or authentication mark with each review or rating to indicate its authenticity and make it possible to show only available dishes in the online menu.

The OFD operators should design upscale but uncluttered layouts of apps/websites, making them easy to use and quickly moving forward and backward. Since males' and females' food portion size requirements can differ, operators can include a customization option to choose portion sizes in as many dishes as possible. As female users require, OFD operators can store preferred restaurants and dishes for each occasion in the personalization section of the app/website for quick retrieval. Such upgrades in the interface will enhance convenience in searching for restaurants and dishes, evaluating prices and offers, and during transactions (check-out and payments).

OFD operators should implement strict quality norms, conduct regular audits, and delist/punish habitual offenders for maintaining hygiene at all stages and mitigating product performance risks. Innovative and standardized packaging material for spillage-spoilage-free food delivery is the need of the hour. OFD operators must strengthen their IT infrastructure to avoid failures during ordering and payments. They need to ensure that genuine customers do not suffer in such situations.

The risk of loss of privacy (such as theft of personal information, phone number, address, and e-mail id) is a primary concern among females, which operators must protect at all costs through encryptions. Incorporate easy, secure, and multiple payment options and a grievance redressal portal to assist in financial loss issues. Educated, tech-savvy, and well-trained delivery personnel are critical safety elements and mitigate wrong delivery risks.

There is a need to address misconceptions of non-users carefully and innovatively to reduce their reluctance to use OFD services. Judging food quality online can be assisted by adding tags like 'best-seller,' 'highly recommended,' 'specialty,' 'delicious,' or star ratings to each dish based on actual sales data or feedback. Posting license certificates, the date of the last quality audit, and real pics of the kitchen and restaurant can help draw the idea of the outlet's hygiene status. Apart from maintaining transparency in the price of each dish and the discount offered, the delivery charges should not be too high. Other reforms can help OFD operators reduce misconceptions, instill trust and confidence among non-users, and persuade them to use OFD services.

Conclusion

This article intends to unveil the perception of ordinary users regarding OFD services using the requirements prioritization approach. InfoQ, IntfQ, PC, and SfM are identified as four enablers, and PR as one deterrent significantly influencing customer satisfaction and use/reuse intentions through the literature survey. More importantly, the study mines the sub-dimensions of these enablers and deterrents and incorporates the perspectives of both users and non-users. This article uses a consistent and effective ordinal data prioritization technique to compute final ranks. Insights derived from the results help understand the expectations and perceptions of OFD users and non-users at the elemental level. Prioritized sub-dimensions can help academicians select relevant variables for their study. The practical implications are valuable to OFD operators, food-tech start-ups, and even common eatery owners to understand Indian customers' perceptions, fine-tune the operations, and gain a competitive advantage.

Limitations of the Study and Scope for Future Research

Despite the contributions, the study has some limitations. Though data were collected from 30 Indian cities, the sample size is only 200, raising generalizability issues. The study needs to be replicated in more cities with larger sample sizes. The current study is cross-sectional. A longitudinal study may reveal better insights regarding the changes in preferences over a while. This study used only gender for comparative evaluation. Future studies may also use other demographic characteristics. Finally, future studies can take up new sub-dimensions and employ other ranking techniques to prioritize consumer data.

Acknowledgement

The infrastructural support provided by the FORE School of Management, New Delhi, in completing this paper is gratefully acknowledged. The authors also acknowledge the support provided by ABV-IIITM, Gwalior, in facilitating the development of this paper.

Authors' Contribution

Vaibhav Agarwal and Prof. Rajendra Sahu conceptualized the research topic idea. Vaibhav Agarwal did the literature survey and the identification of dimensions and sub-dimensions. Vaibhav Agarwal, Prof. Rajendra Sahu, and Dr. Ashutosh Pandey selected and finalized the methodology. Measurement instrument preparation, data collection, data cleaning, software arrangement, and formal analysis were done by Vaibhav Agarwal. Vaibhav Agarwal wrote the original draft, and Vaibhav Agarwal, Prof. Rajendra Sahu, and Dr. Ashutosh Pandey did the writing, reviewing, and editing.

Conflict of Interest

The authors have no known competing financial interests or personal relationships that could have influenced the work of this paper.

Funding Acknowledgement

This research received no specific grant from public, commercial, or not-for-profit funding agencies.

References

Agarwal, V., & Sahu, R. (2021). Predicting repeat usage intention towards O2O food delivery: Extending UTAUT2 with user gratifications and bandwagoning. *Journal of Foodservice Business Research*, *25*(4), 434–474. https://doi.org/10.1080/15378020.2021.1951074

Akram, U., Ansari, A. R., Fu, G., & Junaid, M. (2020). Feeling hungry? let's order through mobile! examining the fast food mobile commerce in China. *Journal of Retailing and Consumer Services*, *56*, 102142. https://doi.org/10.1016/j.jretconser.2020.102142

Al Amin, M., Arefin, M. S., Alam, M. R., Ahammad, T., & Hoque, M. R. (2021). Using mobile food delivery applications during COVID-19 pandemic: An extended model of planned behavior. *Journal of Food Products Marketing*, *27*(2), 105–126. https://doi.org/10.1080/10454446.2021.1906817

Berander, P., & Andrews, A. (2005). Requirements prioritization. In, A. Aurum, & C. Wohlin (eds.), *Engineering and managing software requirements* (pp. 69–94). Springer. https://doi.org/10.1007/3-540-28244-0_4

Berander, P., & Svahnberg, M. (2009). Evaluating two ways of calculating priorities in requirements hierarchies – An experiment on hierarchical cumulative voting. *Journal of Systems and Software*, *82*(5), 836–850. https://doi.org/10.1016/J.JSS.2008.11.841

Borah, P. M. (2021, May 26). Dabbawalas in Mumbai now set to deliver food from restaurants. *The Hindu*. https://www.thehindu.com/life-and-style/food/food-delivery-dabbawalas-in-mumbai-direct-order-method-national-restaurant-association-india/article34648529.ece

Chincholkar, S., & Sonwaney, V. (2022). How demographic factors impact consumers' product choice during online shopping : An empirical study of tier-III markets. *Indian Journal of Marketing*, *52*(2), 34–52. https://doi.org/10.17010/IJOM/2022/V52/I2/168153

Dhote, T., & Zahoor, D. (2017). Framework for sustainability in e-commerce business models : A perspective based approach. *Indian Journal of Marketing*, *47*(4), 35–50. https://doi.org/10.17010/IJOM/2017/V47/I4/112681

Duda-Chodak, A., Lukasiewicz, M., Zięć, G., Florkiewicz, A., & Filipiak-Florkiewicz, A. (2020). Covid-19 pandemic and food: Present knowledge, risks, consumers fears and safety. *Trends in Food Science & Technology*, *105*, 145–160. https://doi.org/10.1016/J.TIFS.2020.08.020

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*, 175–191. https://doi.org/10.3758/BF03193146

Firesmith, D. (2004). Prioritizing requirements. *Journal of Object Technology*, *3*(8), 35–47. https://doi.org/10.5381/JOT.2004.3.8.C4

Hatton, S. (2007). Early prioritisation of goals. In, J. L. Hainaut et al. (eds.), *Advances in conceptual modeling – Foundations and applications. ER 2007. Lecture Notes in Computer Science* (Vol. 4802, pp. 235–244). Springer. https://doi.org/10.1007/978-3-540-76292-8_29

Hossain, A., Uddin, M. H., & Islam, I. (2021). Drivers for online buying behaviour in Bangladesh. *Abhigyan, 39*(1), 22–31. https://www.proquest.com/openview/3830137f3a76418dfb018b6240701a50/1?pq-origsite=gscholar&cbl=5403485

Jayanthi, B. V., & Hari Prasad Reddy, Y. (2017). Consumer socialization process and adolescent junk food consumption in Chennai and Hyderabad. *Indian Journal of Marketing*, *47*(3), 43–61. https://doi.org/10.17010/IJOM/2017/V47/I3/111422

Jiang, L. (A), Yang, Z., & Jun, M. (2013). Measuring consumer perceptions of online shopping convenience. *Journal of Service Management*, *24*(2), 191–214. https://doi.org/10.1108/09564231311323962

Jose, H., & Koshy, M. P. (2018). Factors influencing young consumers of organic food products to lead a healthy lifestyle. *Indian Journal of Marketing*, *48*(10), 7–19. https://doi.org/10.17010/IJOM/2018/V48/I10/132323

Kang, J.-W., & Namkung, Y. (2019). The information quality and source credibility matter in customers' evaluation toward food O2O commerce. *International Journal of Hospitality Management*, *78*, 189–198. https://doi.org/10.1016/j.ijhm.2018.10.011

Kapoor, A. P., & Vij, M. (2018). Technology at the dinner table: Ordering food online through mobile apps. *Journal of Retailing and Consumer Services*, *43*, 342–351. https://doi.org/10.1016/j.jretconser.2018.04.001

Karlsson, J., Wohlin, C., & Regnell, B. (1998). An evaluation of methods for prioritizing software requirements. *Information and Software Technology*, *39*(14–15), 939–947. https://doi.org/10.1016/S0950-5849(97)00053-0

Kim, J. J., Kim, I., & Hwang, J. (2021). A change of perceived innovativeness for contactless food delivery services using drones after the outbreak of COVID-19. *International Journal of Hospitality Management*, *93*, 102758. https://doi.org/10.1016/j.ijhm.2020.102758

Kurup, A. J., & Jain, P. (2018). Effect of e-loyalty cues on repurchase behavioural intentions among online shoppers. *Indian Journal of Marketing*, *48*(11), 7–22. https://doi.org/10.17010/IJOM/2018/V48/I11/137982

Lee, S. W., Sung, H. J., & Jeon, H. M. (2019). Determinants of continuous intention on food delivery apps: Extending UTAUT2 with information quality. *Sustainability*, *11*(11), 3141. https://doi.org/10.3390/su11113141

Macintosh, G., & Gentry, J. W. (1999). Decision making in personal selling: Testing the "K.I.S.S. principle." *Psychology & Marketing*, *16*(5), 393–408. https://doi.org/10.1002/(SICI)1520-6793(199908)16:5<393::AID-MAR2>3.0.CO;2-N

Malati, N., Tiwari, P., & Jain, S. (2012). An empirical study of faculty satisfaction and its impact on retention. *Abhigyan*, *30*(3), 45–56. https://www.proquest.com/openview/f26da4f6e90049b7f3af652391d1a984/1?pq-origsite=gscholar&cbl=5403485

Munshi, A., & Singla, A. R. (2022). Exploring key growth drivers and strategies for enhancing performance of Indian food tech startups. *Indian Journal of Marketing*, *52*(1), 42–57. https://doi.org/10.17010/IJOM/2022/V52/I1/159847

Park, S., & Tussyadiah, I. P. (2017). Multidimensional facets of perceived risk in mobile travel booking. *Journal of Travel Research, 56*(7), 854–867. https://doi.org/10.1177/0047287516675062

Parmod, & Arora, U. (2021). Effect of gender, age, and marital status of grocery consumers on their perceived retail store image : A study of organized grocery market in India. *Indian Journal of Marketing*, *51*(4), 58–71. https://doi.org/10.17010/IJOM/2021/V51/I4/158471

Parray, Z. A., & Bhat, S. A. (2019). Turnover intention's relationship to organizational culture and job satisfaction in the health care industry. *Abhigyan*, *37*(2), 48–56.

Rizou, M., Galanakis, I. M., Aldawoud, T. M., & Galanakis, C. M. (2020). Safety of foods, food supply chain and environment within the COVID-19 pandemic. *Trends in Food Science & Technology*, *102*, 293–299. https://doi.org/10.1016/J.TIFS.2020.06.008

Roh, M., & Park, K. (2019). Adoption of O2O food delivery services in South Korea: The moderating role of moral obligation in meal preparation. *International Journal of Information Management*, *47*, 262–273. https://doi.org/10.1016/j.ijinfomgt.2018.09.017

Saad, A. T. (2021). Factors affecting online food delivery service in Bangladesh: An empirical study. *British Food Journal*, *123*(2), 535–550. https://doi.org/10.1108/BFJ-05-2020-0449

Shah, A. M., Yan, X., Shah, S. A., & Ali, M. (2020). Customers' perceived value and dining choice through mobile apps in Indonesia. *Asia Pacific Journal of Marketing and Logistics*, *33*(1), 1–28. https://doi.org/10.1108/APJML-03-2019-0167

Shashikala, R., & Suresh, A. M. (2017). Role of servicescape in shaping dining experience - An empirical study. *Abhigyan*, *35*(3), 10–20. https://www.proquest.com/openview/ab87c3f31f62824693730eb3aea67a89/1?pq-origsite=gscholar&cbl=5403485

Singh, A., & Nanda, P. (2022). Comparing factors influencing loyal consumption behavior towards fast-food restaurants. *Indian Journal of Marketing*, *52*(6), 41–58. https://doi.org/10.17010/IJOM/2022/V52/I6/169835

Sivathanu, B. (2017). Food marketing and its impact on adolescents' food choices. *Indian Journal of Marketing*, *47*(8), 46–60. https://doi.org/10.17010/IJOM/2017/V47/I8/117432

Statista.com. (2021, October). *Online food delivery - India*. https://www.statista.com/outlook/dmo/eservices/online-food-delivery/india

Stillwell, W. G., Seaver, D. A., & Edwards, W. (1981). A comparison of weight approximation techniques in multiattribute utility decision making. *Organizational Behavior and Human Performance*, *28*(1), 62–77. https://doi.org/10.1016/0030-5073(81)90015-5

Suhartanto, D., Kartikasari, A., Najib, M., & Leo, G. (2021). COVID-19: Pre-purchase trust and health risk impact on m-commerce experience – Young customers experience on food purchasing. *Journal of International Food & Agribusiness Marketing, 34*(3), 269–288. https://doi.org/10.1080/08974438.2021.1880514

Sur, S. (2018). Theoretical review of growth of e-commerce in India and its relevance in future business sustainability. *Abhigyan*, *36*(3), 41–50. https://www.proquest.com/openview/c84d45dc4c399c40876f179b8e056ce7/1?pq-origsite=gscholar&cbl=5403485

Swiggy, ANRA get approval to start drone trials for food delivery. (2021, June 16). *The Economic Times.* https://economictimes.indiatimes.com/tech/startups/swiggy-anra-get-approval-to-start-drone-trials-for-food-delivery/articleshow/83574991.cms

Tandon, U., Kiran, R., & Sah, A. N. (2018). The influence of website functionality, drivers and perceived risk on customer satisfaction in online shopping: An emerging economy case. *Information Systems and E-Business Management*, *16*, 57–91. https://doi.org/10.1007/s10257-017-0341-3

Thakur, A., Shabnam, & Kaur, R. (2017). An empirical study on consumer trust in online shopping in Punjab. *Indian Journal of Marketing*, *47*(2), 47–59. https://doi.org/10.17010/IJOM/2017/V47/I2/110027

Troise, C., O'Driscoll, A., Tani, M., & Prisco, A. (2021). Online food delivery services and behavioural intention – A test of an integrated TAM and TPB framework. *British Food Journal*, *123*(2), 664–683. https://doi.org/10.1108/BFJ-05-2020-0418

Verma, P. (2020). The effect of presentation, product availability and ease upon transaction reliability for online food delivery aggregator applications – Moderated mediated model. *Journal of Foodservice Business Research*, *23*(4), 285–304. https://doi.org/10.1080/15378020.2020.1761586

Wang, Y.-S., Tseng, T. H., Wang, W.-T., Shih, Y.-W., & Chan, P.-Y. (2019). Developing and validating a mobile catering app success model. *International Journal of Hospitality Management*, *77*, 19–30. https://doi.org/10.1016/j.ijhm.2018.06.002

Xu, X., & Huang, Y. (2019). Restaurant information cues, Diners' expectations, and need for cognition: Experimental studies of online-to-offline mobile food ordering. *Journal of Retailing and Consumer Services*, *51*, 231–241. https://doi.org/10.1016/j.jretconser.2019.06.010

Zhao, Y., & Bacao, F. (2020). What factors determining customer continuingly using food delivery apps during 2019 novel coronavirus pandemic period? *International Journal of Hospitality Management*, *91*, 102683. https://doi.org/10.1016/j.ijhm.2020.102683

About the Authors

Vaibhav Agarwal is a Research Scholar in the Department of Management Studies at ABV-IIITM, Gwalior. He is an MBA, B. Tech graduate, and is UGC-NET qualified with 4 + years of teaching experience. His research area is consumer behavior in the e-commerce sector, with international publications (Scopus and ABDC indexed) to his credit.

Prof. (Dr.) Rajendra Sahu is a Professor in the Department of Management Studies at ABV-IIITM, Gwalior. He received his PhD from IIT Kharagpur and has more than 30 years of teaching, research, and consulting experience. He is on the editorial board of eight international journals, has guided more than 10 PhD scholars, and has several national and international publications (SCOPUS, ABDC, and SCI indexed) to his name.

Dr. Ashutosh Pandey is an Assistant Professor (Marketing area) at FORE School of Management, New Delhi. He received his PhD from ABV-IIITM, Gwalior. He has industry and academic experience with numerous FDPs, workshops, and national and international publications (SCOPUS, ABDC, and SCI indexed).