Original Article

Examining Relationship of Food App Design Features and Students' Behavior

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Abstract - India's food delivery market is experiencing a revolutionary phase, attracting huge investments from food tech investors. The majority of the consumers are looking forward to ordering food and beverages in an online mode with a single click of a mobile application. Brick and Mortar restaurants in India have started having tie-ups with food delivery platforms like Zomato and Swiggy, who are penetrating the Indian market with increasing investment in technology in food apps for ordering and delivering food an online mode. Though there are various studies about food apps, there is a shortage of studies exploring the relationship between food app design features and students' buying behavior. Data was collected from students studying in esteemed institutes of Delhi-NCR using an e-questionnaire as a survey tool. The Snowball sampling method was used to reach out to a maximum number of students who have used the food app for ordering food. A total of 573 respondents participated in the survey. The data collected was analysed for PLS-SEM and other analyses. This study's outcome implies a great relationship between food app design features, namely, simplicity, flexibility, security, speed, image resolution, search options, color schemes, user feedback, push notifications, and updates on students' buying behavior. With the food app sector in India's infancy, this unique study will provide great insights for food app service providers to understand the relationship between app design features and students' behavior to enhance business, loyalty, and brand image.

Keywords - Food app, Students' behavior, Design features, India.

1. Introduction

Ordering food through food apps gained momentum in 2014 as various start-ups appeared. Many of these were limited to specific cities first before raising large-scale funding and expanding to other cities. Since then, unprecedented developments in e-commerce and m-commerce have given rise to online food ordering services via e-commerce platforms on the Indian subcontinent [1]. Online mobile users grew at a prompt pace in Asia (6.8%), Africa, and the Middle East (6.3%) as well as within individual countries, including India (10.1%), China (9.0%), and Indonesia (8.5%), according to e-Marketer's global digital user update for 2020. As India's m-commerce boom continues, the growing demand for mobile food application platforms is attracting start-ups developing food and beverage start-ups. According to Statista, the mobile food application platforms segment in India generates revenue of $7 billion. The biggest market segment is the restaurant to consumer delivery, which generates $5 billion in revenue. Recently, Indian restaurants have begun collaborating with food application service providers to grow the market and retain frequent and regular patrons [2]. Despite the

enhancement of market potential for food apps in India, the literature review shows that no studies have focused on exploring the relationship between food app design features and students' behavior. This study is a first of its kind which will examine the relationship between different design features of food apps and students' behavior.

2. Reason for this study

Delhi/NCR region comprises the neighboring cities of Delhi – Gurugram, Greater Noida, Faridabad, Sonepat, Ghaziabad, and Greater Noida, along with Delhi. Delhi, the capital city of India, is one of the major academic centers in India. There are around 3 lakh students who study in some of the esteemed institutes, and these include the Indian Institute of Technology (IIT Delhi), Faculty of Management Studies (FMS Delhi), Management Development Institute (MDI Gurgaon); Indian Institute of Foreign Trade (IIFT Delhi); Indraprastha Institute of Information Technology (IIIT Delhi), Jamia Hamdard University, Delhi, Jamia Millia Islamia, Delhi, Indira Gandhi National Open University (IGNOU), Delhi; Amity University, Noida; K.R. Mangalam University, Gurgaon; New Delhi YMCA; Jagan Institute of

Management Studies (JIMS Rohini). When it comes to the restaurant business in Delhi / NCR, there are around 2000 restaurants that capitalise on these students groups through these food apps by listing their restaurants and providing numerous design features to attract the student crowd who will order food from these apps such as Swiggy, Zomato, Food Panda, etc. Delhi / NCR has a 20% market share, the next highest after Bengaluru in terms of food ordered online. With the huge influx of investments towards food technology to enhance design features, this study becomes contemporary, trying to examine food app design features and students' behavior.

3. Literature review

Several studies have been conducted on mobile commerce or m-commerce technology and e-commerce through wireless devices such as smartphones [3]. Among these studies are the Theory of Reasoned Action (TRA) [4], the Technology Acceptance Model (TAM) [5], and the Unified Theory of Acceptance and Use of Technology (UTAUT) [6]. An adoption intent model grounded on perceived usefulness and perceived ease of use was developed by [6]. Tam-related factors were determined by [7], which include perceived usefulness and ease of use, subjective norms, behavior control, self-efficacy, and the role of alternative channels. Furthermore, studies have demonstrated that the mobile food application interface improves consumer experience and brand value [7], [8], [9], [10]. Most studies investigated the antecedents of technology adoption without examining whether m-commerce led to detailed purchases. It has been recognised by [11] that the user interface and the visual and graphic design of a mobile app are important attributes which make it desirable for a consumer to download and use that mobile application. [12] examined the associations between mobile application attributes and collaboration and conversion among students using food application platforms, but this study did not study food app design features from the context of students buying behavior. Thus, this study aims to go beyond the impetus for app adoption and set itself apart from past research. Instead, the aim is to investigate students' genuine app usage and examine the relationship between food app design features and students' behavior**.**

4. Food app design features

4.1. Simplicity

Getting access to information quickly and easily will likely frustrate your customers, and they will look for another option - possibly using the competitor's app. Clear, uncluttered screens that will lead the customer to the progressive movement in the process and eliminate ambiguity improve the app experience.

4.2. Speed

It is vital to have fast-loading screens. It is tedious to wait, especially when all you are looking at is a loading symbol, and this frustration often turns to boredom, leading to a desire for something better. A fast application means using appropriate graphics and not loading huge databases and tables.

4.3. Image Resolution

In addition to app speed, you must balance app functionality and resolution and ensure that the display information is detailed enough to make the user experience worthwhile.

4.4. Flexibility

Currently, there are 3 major mobile operating systems in the world, namely, iOS, Android, and Windows - and to have a successful app, you need to make sure that it is available on each. The coding may not require a change, but varied screen sizes and resolutions might require testing on either system before uploading.

4.5. Security

In the internet world, security is becoming increasingly important, and the same applies to your app. Applications that store sensitive and personal information, or credit card and debit card information, must be secured.
Search Options - Although this seems simple, many apps fail to include this feature since many users rely on it. It is important to be able to search your app or the internet as it is not going to be very useful for game-based apps, but it is essential for social and business apps.

4.6. Colour Schemes

It is essential to use eye-catching color schemes to make your customers stay. The app will look stylish and professional if you use complementary colors from the color wheel.

4.7. Push notifications

Push notifications are trending in recent times, which are better than traditional emails as the mail will end up as spam in the mailbox, which gets unnoticed. Push notifications will help personalise and communicate sales promotions on a timely basis, which serves the messages that are relevant and personalised better than unsolicited messages since they are specific to the user and are likely to be of interest to them.

4.8. User Feedback

Customer feedback is a good way to find out what your customers want and what they think should be added or deleted, what can be done with minimal work, and what you should ignore. The client can tell you what would improve the app by clicking on the feedback button.

4.9. Updates

Using your feedback, you can determine how to make your app more relevant to your customers and send periodic updates. It will make your product better and improves accessibility and the ability to address security issues as they arise. Updating your app keeps users engaged and helps them with their desired content.

5. Food app design features and students' behavior

Recent studies have determined that app design feature provides efficient support to consumers during all stages of the buying process. It is also believed that design features enhance purchases in an online platform or e-commerce [13], promoting and displaying the online traffic to your mobile application and rapid reviews, increasing awareness and businesses [3]. Additionally, consumers can better search and access the information if provided with appropriate search provisions, precise information about products and services offered, and contemporary navigation options [7]. The use of price comparison, consumer comments, and buying history will assist consumers in their evaluation process [3]. Additionally, the delivery process, order queue, payment options, and payment gateway influence purchase decisions [11]. Flexible deliveries track orders and allow returns and referral bonuses with post-purchase services [14]. The study was finalised on the below-mentioned hypotheses.

H1. Food app design features may influence the awareness stage of students' behavior

H2. Food app design features may influence the information stage of students' behavior

H3. Food app design features may influence the evaluation stage of students' behavior

H4. Food app design features may influence the purchase stage of students' behavior

H5. Food app design features may influence the post-purchase stage of students' behavior

Stages of buying behavior
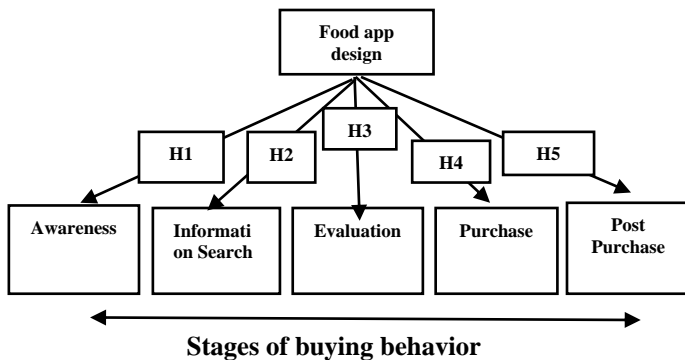
6. Methodology

6.1. Survey Instrument

We used a multi-stage approach to develop a robust survey instrument for this study. The shortlist consists of app design features (ADF), (A.W.) awareness is made up of four items, (IF) information search is made up of five, (E.V.)

evaluation is made up of four items, (P.S.) purchase is made up of four items, and (P.P.) post-purchase is made up of four items. An expert panel assessed the instrument's content and item and scale validity.

6.2. Sampling and Data Collection

Data was collected from students studying in esteemed institutes of Delhi-NCR using an e-questionnaire as a survey tool. The Snowball sampling method was used to reach out to a maximum number of students who have used the food app for ordering food. A total of 573 respondents participated in the survey. The data collected was analysed for PLS-SEM and other analyses.

6.3. Analysis of Data

Data collected through an online survey tool was uploaded in SPSS 23 to provide basic statistical data and then imported into SmartPLS-3 for PLS-SEM and other analyses. For testing the hypotheses, structural equation modeling is used [15], [16] because it can test the colorant causal models that are supported by theory [15]. As PLS-3 emphasises likelihood and assessment, it may be useful in research analysis to make the most of the described variances of an independent variable on the dependent variable [17], [16]. The significance level (P) was set at less than 0.05 for this study due to practicality ($P < 0.05$). Attributes of students' behavior were considered independent variables, and food app design features were considered dependent variables.

7. Results and discussion

7.1. Descriptive Statistics

A total of 573 students participated in the survey. More men than women responded, and respondents aged 18-21 (61%) comprised the majority. Since most restaurants will be crowded during brunch and lunch, most orders were placed through apps. Furthermore, ₹250 - ₹500 and ₹500 - ₹1000 categories accounted for the majority of total spending per order.

Table 1. Demographic overview

		Respondents	(%)
Gender	Male	379	66
	Female	194	34
Age (Yrs.)	18-21	287	50
	21-24	155	27
	24-27	80	14
	27 and above	51	9
Preferred Meal	Breakfast	93	16
	Brunch	137	24
	Lunch	194	34
	Dinner	149	26
Expenditure per order (₹)	Less than 250	80	14
	250 -500	200	35
	500-1000	155	27
	Above 1000	138	24

Table 2. Construct Reliability

Construct	No. of items	(α)	(C.R.)	(AVE)
ADF	10	0.716	0.757	0.632
AW	4	0.839	0.725	0.665
IF	5	0.732	0.774	0.600
EV	4	0.857	0.735	0.608
PS	4	0.796	0.814	0.675
PP	4	0.709	0.836	0.686

Table 3. Discriminant Validity - Fornell-Larcker criterion

Constructs	ADF	AW	IF	EV	PS	PP
ADF	**0.739**					
AW	0.556	**0.731**				
IF	0.626	0.646	**0.812**			
EV	0.643	0.699	0.704	**0.830**		
PS	0.732	0.647	0.642	0.600	**0.777**	
PP	0.645	0.501	0.775	0.807	0.766	**0.809**

Table 4. Correlation between the constructs

Constructs	ADF	AW	IF	EV	PS	PP
ADF	**1.00**					
AW	0.86	**1.00**				
IF	0.85	0.84	**1.00**			
EV	0.79	0.73	0.79	**1.00**		
PS	0.75	0.77	0.72	0.74	**1.00**	
PP	0.71	0.71	0.71	0.71	0.75	**1.00**

7.2 Convergent and Discriminant validity

Convergent and discriminant validity tests were carried out for this study's constructs before analysing data through Smart PLS3 for SEM. To gain a deeper understanding of how items relate to one another, convergent validity was utilised. To accomplish this, Cronbach's Alpha (α), Composite Reliability (CR.), and Average Variance Extracted (AVE.) values have been accessed. In Table2, it can be learned that the values of Cronbach's Alpha (α), Composite Reliability, and Average Variance Extracted are 0.7, 0.7, and 0.5, all above the defined limit, which indicates the convergent validity tests for constructs are valid and reliable. To conduct a discriminant validity test, correlations between the constructs were analysed. Based on Table3, it can be learned we can conclude that discriminant validity tests are accepted since the square root of the AVE for each construct of the study is higher than its correlation value for all other constructs. The correlations between the constructs

are shown in Table4. Its design features are very important to motivate consumers into the food app, which will help commitment and exploration of products and services stimulated by the organisation. The dominant correlation was found between awareness and design features of the food app (0.86), while the feeblest correlation was found between post-purchase and design features of the food app (0.71).

7.3 Structural Equation Model

According to Table 5, the Structural Equation Model analysis of the food app is based on Smart PLS-3.3. A dominant correlation exists between food app design features and students' behavior. A significant result can be found in all the paths in Table 5, proving the model and constructs are reliable. Students' behavior is influenced at all stages of the buying process by features featured in the food app. Information and awareness are weighed more heavily than evaluation, purchase, and post-purchase.

Table 5. Structural Equation Model of hypotheses

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T statistics (O/ STDEV)	P values
H 1: ADF →AW	0.596	0.724	0.067	7.570	0.000
H 2: ADF → IF	0.608	0.710	0.068	9.183	0.000
H 3: ADF → EV	0.577	0.659	0.079	5.161	0.000
H 4: ADF → PS	0.614	0.716	0.110	4.987	0.000
H 5: ADF → PP	0.376	0.464	0.097	3.685	0.000

8. Conclusion

In this study, food app design features are explored in the buying behavior of students in Delhi / NCR at different stages of their educational lives, contributing to existing literature. A lack of empirical evidence concerning food apps and students' behavior prompted this study to develop a model and hypothesis to determine whether food app design features influence students' behavior. Results showed that all ten aspects of the food app design features, namely, simplicity, speed, image resolution, flexibility, security, search options, color schemes, push notifications, user feedback, and updates, affected students' behavior throughout the process. This study will provide food app service providers with a better understanding of the important design features to engage customers, drive sales, and build a positive brand reputation.

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