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# Structural Equation Modeling of Consumer Adoption for Online Food Delivery Services

**Ms. Peenal Sankhla1, Dr. Jitesh Parmar2**

1Assistant Professor, BVPIM, UkaTarsadia University, Gujarat, India

2Associate Professor, SRIMCA-MBA, UkaTarsadia University, Gujarat, India

***Abstract:*** *The changing nature of recent world demanding everything to be delivered with maximum advantage and with least effort. Savvy customers wants to have easy and convenient accessibility and delivery of products and services. Keeping this in mind, the food aggregator, like Zomato, Swiggy, Uber eats and Foodpanda have started offering service of delivering the food at the customers site without visiting restaurants in person. This paper examines consumer's adoption of online food delivery services in Surat, Navsari and Bardoli city. The aim of the recent study is to observe the structural relationship between the factors influencing adoption of OFD services and usage behaviour for OFD services. The theoretical framework used for this study was Unified Theory of Acceptance and Use of Technology2 (UTAUT2) model. The 1000 sample size was taken for the study purpose who are using the OFD apps. The SEM was applied to check the model fit and test of hypothesis.*

**Keywords:** Consumer Adoption, Structural Equation Modelling, UTAUT2 Model, Online Food Delivery Services

## Introduction:

In this fastest growing era of technology, people want everything on their tip of finger. With the rapid rise of smartphones and internet connectivity across the country, the adoption of online food ordering services has become the part of upgraded lifestyle, providing easy and convenient accessibility of online food delivery platforms. Considering this findings, in recent years, the online food delivery service market has revolutionized the Indian dining system, providing a wide range of cuisines suiting the tastes and preferences of Indian community through mobile apps or website.

It is currently at the customers' doors. The modern type of catering and hospitality is the online food ordering and delivery service. The service for ordering food online is still in its revolutionary development stage. The delivery and online ordering of food services is one of the emerging industries with double-digit compound annual growth rates. The rapid expansion of online meal ordering services can be attributed to M- and E-commerce.

People used to have to go to a hotel or restaurant for lunch, supper or to pick up a takeaway package. We are grateful that Pizza Hut and Dominos launched their home delivery services, inspiring other eateries and lodging establishments to follow suit. They began to accept orders over the phone or via a mobile device and to send delivery personnel to deliver food to homes.

## Literature Review:

There are various views shared for online food delivery services. The tremendous growth of internet has enabled online to offline model in which consumers are attracted towards online platform and tends to fulfill transactions in offline setting(Lee et al., 2019). Consumers are familiar to shopping online or ordering food online through apps or website due to convenience, transparency and expectations to get same experience they are getting from dine-in (Borgohain, 2019; Parashar & Ghadiyali, 2017).

Development in internet and technology has enabled food retailers to avail online existence to serve the customers via online platform (Nguyen et al., 2019; Wang & Somogyi, 2018). Dependency of technology has motivated consumers to order cooked meals online to their doorstep for its convenience and time benefits (Das, 2018; Rathore & Chaudhary, 2018). As per the views of (Anib et al., 2019), the online food delivery services is successful as it bridges the gap between restaurant and customers. The taste and quality of food is main factors affecting certain group of customers over restaurant's ambience and good services which has triggered the growth of online food delivery services (Gawande et al., 2019).

As the theory got published in 2003, many of the researchers have started using the UTAUT model to examine the adoption of technology such as Online Food Delivery services by (Karulkar et al., 2019) to examine the UTAUT model to explore the consumer adoption. (Kecerdasan & Ikep, n.d.; Mensah, 2019) used UTAUT model to analyze the intention to order food online. To study the continuous use intention for food delivery application were studied by (Alalwan, 2020; Lee et al., 2019). ICT adoption by (Technology, 2014) to determine the intention to use ICT for learning and research. Intention to use mobile learning was attempted by (Chao, 2019; Thomas et al., 2013).

Baptista and Oliveira (2015) explored determinants ofMobile Banking Adoption (MBA) among Mozambique mobile users wherein; theyfound that PE to have a positive influence on BI.Yee (2015) examined factors affecting mobile e-book adoption amongMalaysian students wherein; he found that PE was found to have a positive influenceon BI. Segura and Thiesse (2015) examined factors affecting pervasive informationsystem (PIS) (such as Google Glass) adoption among German consumers wherein; theyfound that PE was found to have a positive influence on BI. Faria et al (2014) exploredfactors that affect mobile internet adoption among Brazilian smartphone users wherein;they concluded that PE was found to have a positive impact on BI.

Segura and Thiesse (2015) examined factors affecting pervasive informationsystem (PIS) (such as Google Glass) adoption among German consumers wherein; theyfound that EE was found to have a significant positive impact on BI. Faria et al (2014)explored factors that affect mobile internet adoption among Brazilian smartphone userswherein; they found that EE was found to have a significant positive impact on BI. Kit(2014) examined the influence of UTAUT2 constructs on m-app adoption amongMalaysian mobile users wherein he found EE to have a significant positive impact onBI.

Park et al (2007) explored the factors that affect MTA among Chinese consumers using UTAUT wherein they found SI to have a significantpositive effect on ATT, which in turn has a positive influence towards INT. Carlsson etal (2006) explored factors that affect MTA usingUTAUT theory wherein they found SI to have a significant positive effect on BI. Lu etal (2005) examined the factors that affect MTA usingTAM theory wherein they found to have a positive impact on PU and PEOU, but theywere found to have no significant impact on INT.

Mishra (2014) examined factors that affect acceptance of MCA using TPB approach wherein he found PBC to have a significantpositive impact on INT. Kit (2014) examined the influence of UTAUT2 constructs on m-app adoption among Malaysian students wherein he found FC to have no majorimpact on BI. Faria et al (2014) investigated the factors that affect internet adoption through smartphone among Brazilian smartphone users using UTAUT2 modelwherein they found FC to have asignificant positive impact on BI.

**Research Methodology:**

The objective of this study was to observe the structural relationship between the factors influencing adoption of OFD services and usage behaviour for OFD services. The recent study is based upon the study of 1000 samples who are using or have used online food delivery services and residing in Surat, Navsari and Bardolicity. The structured questionnaire was used for the data collection purpose. The questionnaire was structured taking the help of academician, past studies of related area, industry experts and users of OFD platform. Responses were measured on 5 points Likert-Scale ranging from 1= Strongly Disagree to 5= Strongly Agree. UTAUT2 model was examined for OFD services by applying EFA, CFA and SEM. The collected data were analysed using statistical data package of SPSS-27 and Amos-23 to identify the factors and to check the goodness of fit of developed model. Further, on the basis of it, the hypothesis were checked that affect the adoption of online food delivery services.

**Method of analysis:**

For the hypothesis testing, structural equation modeling was used in this study. SEM is basically used to analyze the relationships among multiple variables such as, performance expectancy, effort expectance, social influence, facilitating condition, hedonic motivation, price value, habit, behavioral intention and use behavior.

**Results:**

**Structural equation modeling:**

Before moving ahead with SEM, the Content Validity, Convergent Validity, and Discriminant Validity was checked. Content validity check was done by an expert opinion from Industry, academics and from a customer. The value of CR (Composite Reliability) of each constructs is achieved greater than 0.7, which indicate that constructs are reliable. The value of AVE (Average Variance Extracted) for all the 9 latent variables is found greater than 0.5, which represent that the items of an individual latent variable unite and share a great amount of variance in mutual which shows the convergent validity of the measurement scale. For testing discriminant validity, the value of AVE should be greater than the value of Maximum Shared Variance (MSV) and the value of AVE is found greater than the value of MSV for all values shows the discriminant validity of measurement scale.

The Cronbach's alpha value was 0.936, which was within an acceptablerange and showed consistency among the items of the unified theory of acceptance and use of technology model. This indicates that the model is reliableand fit for this study.

**Hypothesis Testing:**

In this study, the SEM examined the relationship between performance expectancy, effort expectancy, social influence, facilitating condition, hedonic motivation, price value, habit, behavioral intention and use behavior. The table 2 shows the result of hypothesis testing and diagram of structural model of consumer adoption for online food delivery services represented in figure 1.

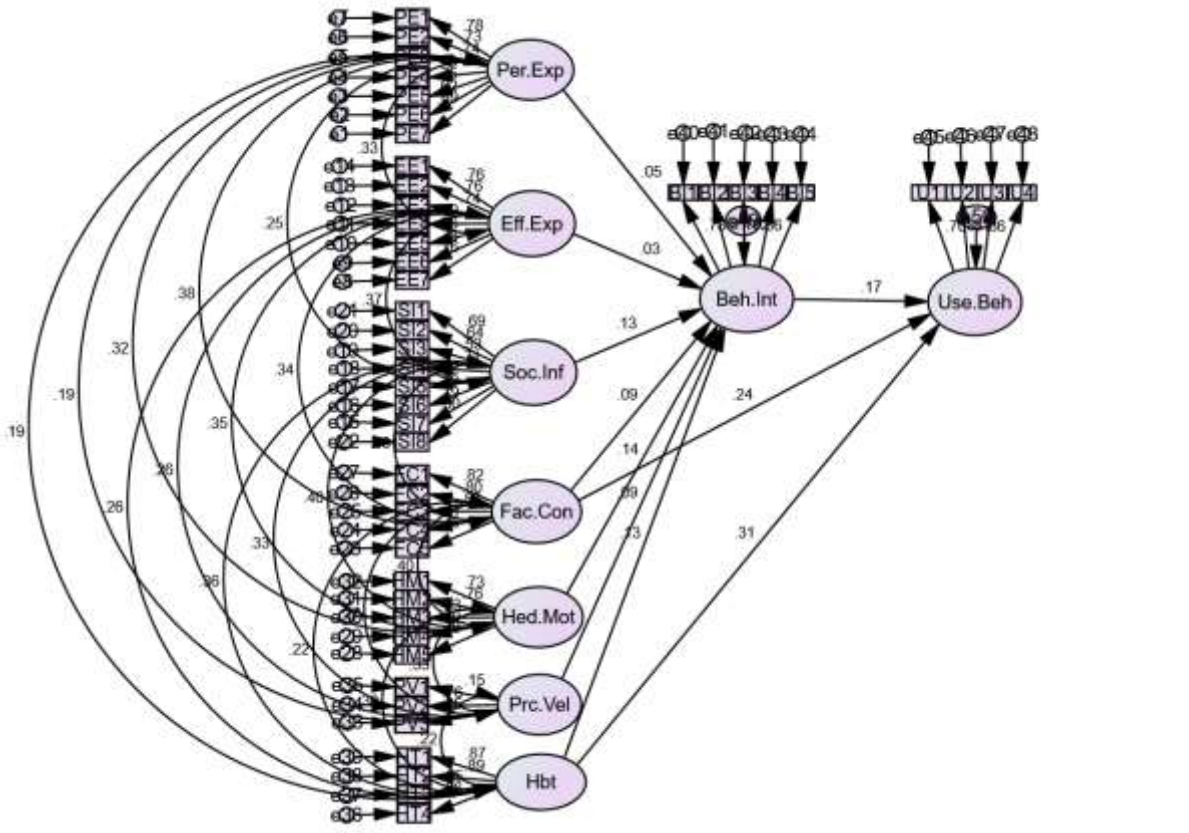


**Figure-1 Structural Model**

**Table no. 1: Structural model fit estimation**

| Indices | Recommended value | Model Fit Indices |
|---|---|---|
| CMIN/df | <3 | 2.878 |
| GFI | ≥0.90 | 0.886 |
| AGFI | ≥0.80 | 0.872 |
| NFI | ≥0.90 | 0.898 |
| CFI | ≥0.90 | 0.930 |
| RMSEA | ≤0.08 | 0.043 |

(Arbuckle and Worthke, 1995 and Hair et al.,1998)

The structural model fit is patterned based on CMIN/df, p-value, Goodness of Fit (GFI), Adjusted Goodness of Fit (AGFI), NFI, Comparative Fit Index (CFI), Root Mean square of approximation (RMSEA) and P Close. The Model fit indices of the constructs were found and the summary of the result is shown in the table above. The attained Model fit indices are compared with the recommended value. The chi-square value is 2.878 which is less than 3. The attained GFI value is 0.886 which is near to the recommended value of 0.9. For the all above indices related to Structural Model, 0 shows the least and 1 shows the perfect fit.

The attained AGFI value is 0.872 which is near to the recommended value of 0.8. The attained NFI value is 0.898 which is falling between the range of 0 and 1 and nearer to 1. The attained CFI value is 0.930 which is greater than the recommended value of 0.90. The attained value for RMSEA is 0.043 which is lesser than the recommended value of 0.08. So, it can be said the Model is having Moderate to Perfect Fit.

**Table no. 2: Hypothesis Testing**

| No. | Hypothesis | Standardized Regression Weights | P value | Significant/ Not Significant |
|---|---|---|---|---|
| 1 | Performance expectancy has a significant impact on behavioral intention to adopt online food delivery services. | 0.042 | 0.081 | Significant |
| 2 | Effort expectancy has a significant impact on behavioral intention to adopt online food delivery services. | 0.041 | 0.449 | Not Significant |
| 3 | Social influence has a significant impact on behavioral intention to adopt online food delivery services. | 0.035 | 0.002 | Significant |
| 4 | Facilitating condition has a significant impact on behavioral intention to adopt online food delivery services. | 0.040 | 0.027 | Significant |
| 5 | Hedonic motivation has a significant impact on behavioral intention to adopt online food delivery services. | 0.038 | *** | Significant |
| 6 | Price value has a significant impact on behavioral intention to adopt online food delivery services. | 0.035 | 0.021 | Significant |
| 7 | Habit has a significant impact on behavioral intention to adopt online food delivery services. | 0.028 | *** | Significant |
| 8 | Facilitating condition has a significant impact on usage of online food delivery services. | 0.038 | *** | Significant |
| 9 | Habit has a significant impact on usage of online food delivery services. | 0.030 | *** | Significant |
| 10 | Behavioral intention has a significant impact on usage of online food delivery services. | 0.037 | *** | Significant |

**Findings:**

The result of structural model fit indicates the good-fit of model. From the above table, it can be said that for the hypothesis, the significant impact of performance expectancy, social influence, facilitating condition, hedonic motivation, price value and habit was found on behavioral intention to adopt the online food delivery services as their p-values are less than 0.05. At the same time, facilitating condition and habit was found to have a significant impact on usage of online food delivery services. The significant impact of behavioral intention was found on usage of online food delivery services.

**Conclusion:**

In this study, the focus is upon to observe the structural relationship between the factors influencing adoption of OFD services and usage behaviour for OFD services. In this area, few organised study was carried out in the area of OFD services thus this study will definitely benefit the stakeholders of this industry. The structural equation modelling was carried out on unified theory of acceptance and use of technology for online food delivery services. The indices of model indicates that the model is having moderate to perfect fit.All construct of UTAUT2 model, accept effort expectancy found significant having impact on behavioral intention to adopt online food delivery services. The study result could also be utilised by OFD marketer to strategies according to the findings of study to have effective targeting among prospects and consumer.

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