

Emotional and Functional Drivers of Customer Engagement: Exploring Person-Environment Fit in Online Food Delivery Apps

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Abstract

With the spread of COVID-19 and the implementation of non-face-to-face policy, orders for food delivery have increased. Online food delivery applications developed rapidly and attracted high attention from consumers. We have analyzed the correlation between the suitability of online food delivery services and customer engagement. The relationships between functional values, emotional values, needs-supplies fit, personal-app fit, and customer-app engagement of online food delivery applications were analyzed. We conducted among 190 women who had ever used 'Blue Apron' application before. We found that users are aware of the importance of service quality, self-efficacy, and self-identity. Also, consumers prefer to purchase products from companies which have the same value as themselves in these areas. At the same time, if a product meets consumers' demands or values, consumer interest will increase, making it less likely to switch to alternative platforms. Conversely, information quality was not found to be related to these two fits. Based on our findings, theoretical and practical implications have been provided.

Keywords: Functional value; Emotional value; Needs-supplies fit; Person-app fit; Consumer Engagement

1. INTRODUCTION

In 2022, the global online food delivery market was estimated to be worth 215.69 billion USD, and in prediction, this number will increase to 388.74 billion in 2028 (Market analysis report) [1]. Women are more care about public safeties than men, and most of women choose to reduce the frequency of dining out [2]. Besides, innovative services are accepted by female customers more frequently. Other than males, when females perceive that a food delivery service is innovative, they are more likely to use the service and express positive emotions [3,4]. Following the change of online market increasing and the difference between male and female, food service companies need to pay attention to the female market.

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With the increasing of online marketing, lots of studies have investigated and illustrated consumer purchase behavior [5]. However little study determined how consumer demand and value affect their purchase behavior. Therefore, currently a lack of research has illustrated the effect of person-environment fit on customer-app engagement. Li and Fang (2021) [6] applied the person-environment fit theory to the field of mobile applications. Classified complementary fit and supplementary fit according to the person-environment fit theory and verified that it has a positive impact on users' behaviors. Meanwhile, the mismatch between consumers and brands will result in the loss of customers [7, 8]. Accordingly, the research model for this study contains two aspects of person-environment fit, namely needs-supplies fit as complementary fit, and person-app fit as supplementary fit, trying to deduce whether they will affect customer engagement.

The two primary metrics used to scale the degree of task-technology fit are information quality and service quality. In studies about consumers' intention to use mobile applications and brand loyalty, Ali et al. (2022) [9] investigated that service quality and information quality play crucial parts. According to Su et al. (2022) [10], the functional qualities of mobile food delivery service have impact on customer perceived value, which positively affect consumers loyalty towards the service.

Besides functional values, the role of emotional values cannot be underestimated. According to Ding and Tseng (2015), Le et al. (2021) [11, 12], positive emotions can convert into hedonic motivations which positively influence brand loyalty. Patel et al. (2020) and Carfora et al. (2019) [13, 14] proved that during consumer purchase process, self-identity has effects on purchase intention, and consumers are willing to choose the products or services which can fulfill their needs of emotional values. Meanwhile, self-efficacy has also influence on consumer fit and behavior [15].

In previous studies, it was found that the sub-fits of person-environment fit will affect consumers' purchase decisions or engagement [6, 16]. According to Li and Fang (2021) [6], customers first and foremost care about whether the affordances of a branded app can meet customers' needs during their purchase decision process when determining their fit with the application. Besides, the value congruence between people and organization (application) positively influences the engagement.

Based on the gap of the previous studies, this study intends to illustrate the effect of person-environment fit on consumer-app engagement. And most of female choose to reduce the frequency of dining out and innovative services are accepted by female customers more frequently than male [2]. Thus, this study selected female as our research target consumer. The findings of this study have important theoretical and managerial values because this study integrates the person-environment fit model that is rarely used in the field of technologies and applications studies. Additionally, it investigates consumers' needs and values from the perspectives of functional and emotional values. Moreover, this study could provide some theoretical background for application related research focus on the emotional value effect on their engagement. And we could provide some insight for application marketer to manage female consumer more effectively.

2. THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

2.1. Functional Value and P-E Fit Dimensions

According to Task-Technology fit, it could be concluded that for an application, users always pay more attention on information quality and service quality of the application. Therefore, this thesis proposes information quality and service quality as functional values.

The definition of information quality is considered as the features of the desired output of an application or software [17]. In previous research, the fact that information quality has a significant impact on the decision

to adopt applications was revealed [9].

The definition of service quality under information technology is considered as the ability of an application to accord with the needs of its users [18]. In general, a high service quality will increase the users' purchasing intention and their application loyalty [9]. The consumers' usage habits and overall satisfaction were proved to significantly affect their usage intentions [19], which means consumers prefer applications with high service quality. In previous research, it was proved that Chinese online shopping business can gain high purchase intention from the consumers due to the quality of its service [20]. Furthermore, if one application has high service quality, the users' happiness will also increase, and users will be less willing to switch to other application [9].

Therefore, it is hypothesized that information quality and service quality both have positive influences on needs-supplies fit and person-app fit.

H1: Information quality positively influences needs-supplies fit.

H2: Information quality positively influences person-app fit.

H3: Service quality positively influences needs-supplies fit.

H4: Service quality positively influences person-app fit.

2.2 Personal Value and P-E Fit Dimensions

Self-identity is defined as a cognition-based construct which expresses 'who am I?' [21]. Self-identity can be divided into three different aspects: 1). Personal identity, the self-definition of unique and special characteristics; 2). Role identity, the self as playing a particular role; 3). Social identity, the self as a part of a social group [22]. In prior studies, it has been found that self-identity is one of the crucial factors that influence users' behavioral intention in various fields [13, 23].

On the other hand, self-efficacy refers to personal ability, which positive affect needs-supplies fit and person-app fit [15]. Thus, it is hypothesized that enjoyment and self-identity both have positive impacts on needs-supplies fit and person-app fit.

H5: Self-identity positively influences needs-supplies fit.

H6: Self-identity positively influences person-app fit.

H7: Self efficacy positively influences needs-supplies fit.

H8: Self efficacy positively influences person-app fit.

2.3 P-E Fit Dimensions and Customer Engagement

The mechanism of a consumer's value towards a product or brand, whether through direct or indirect contributions, was termed as customer-app engagement. Also, customer-app engagement should be considered as a coverage of all customer activities [24, 25]. The literature reviews suggest that both related qualities of an application and emotional qualities play important roles in customer engagement [26]. Thus, move to application field, through the relationship between person-environment fit and work engagement based on the studies in work field, it can be concluded that companies that meet the needs of employees and share the same values with employees usually have more actively engaged employees. Therefore, if the application satisfies the requirements of the consumer and has consistencies in values with its users, then the customer engagement will be positively affected. Thus, it is hypothesized that needs-supplies fit, and person-app fit both positively affect customer-app engagement.

H9: Needs-supplies fit positively influences customer-app engagement.

H10: Person-app fit positively influences customer-app engagement.

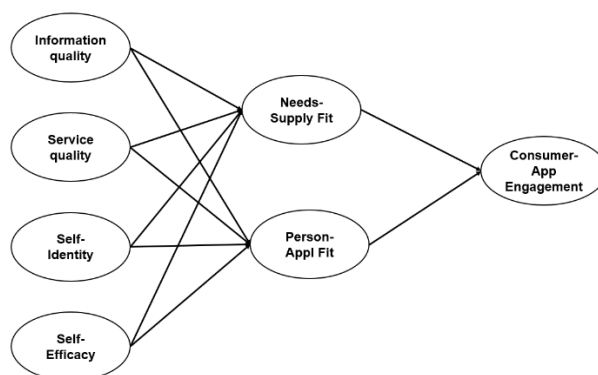


Figure 1. Research Model

3. METHODS

3.1 Measurement Development

All the study constructs were measured with multiple item scales, as shown in Table. 3, all measurements scales used were adopted from previous research. The first section of the questionnaire was designed to collect personal backgrounds. The second section consists of two categories that measure the functional values, which include information quality and service quality. All measurements were revised from Candra et al. (2021) [20] and Hsieh et al. (2021) [27]. The third section measures the emotional values which have self-identity and self-efficacy. The measurements were adapted from Hsieh et al. (2021) [27] and [15]. The fourth section is about the needs-supplies fit and person-app fit. In order to better combine with this study, moderate adjustments have been made to all items according to Li & Fang (2021) [6] Tang & Chen (2020) [7]. The last section measures the customer-app engagement and was revised from Le et al. (2021) [12]. All items used in each section were measured on a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). All measurements were developed in English and were pretested with 75 American users who had ever used 'Blue Apron' before. According to the feedbacks of the pre-test, all of the measurements are comprehensible and meaningful. Based on the pre-testing results, some minor modifications were made to develop the final questionnaire.

3.2 Data Collection and Sample Characteristics

Blue Apron Inc. is an American ingredient and recipe meal kit company based in New York City, and the services are operated exclusively in the United States. Users can order their personalized meal kit up to four times per week and can choose their own recipes in order to meet with their preferences. After the reservation, consumers will receive boxes containing ingredients and recipes. Besides that, consumers can also order local ingredients or wines through their website and applications.

Since 'Blue Apron' application is only available in the United States, this research used 'Google Form' to conduct an online questionnaire for users who have used the 'Blue Apron' application before. The survey is about the consumers' experiences and their feelings after using 'Blue Apron'. The responses were mainly collected in Blue Apron Facebook group and Instagram during November 1st to November 15th, 2022. 'Have you ever used Blue Apron' is the screening question used in this study in sampling participants. The questionnaire would end if the respondent replied 'No' to this question.

All participants in this survey were voluntary and were informed the main purpose of the study. In order to

increase the response rate, participants who submitted valid responses were offered a chance to join in the prize draw to win Starbucks gift cards worth \$55 in total. During the process of conducting respondents' demographic analysis, it was found that the number of male respondents was only 4% of the total responses. Thus, all responses of male were removed. Therefore, only the responses of female were collected and examined in order to focus on the perspectives from female users. A total of 204 surveys were collected and 190 of them are valid.

Regarding the age of the respondents, a majority (52.1%) of the participants was 40-49 years old, and 28.9% were 30-39 years old. Meanwhile, 83.2% of the respondents were Caucasians. About 63.2% held a bachelor's degree or equivalent, and 21.1% held a master's degree or equivalent. For the family status, 96.8% of the participants answered they live with their family members and 52.1% have 2-3 children, 17.9% have 3 children or more. Besides, 85.3% were employed full-time, and 55.3% had \$100,000-\$200,000 annual household income; 33.2% had more than \$200,000 annual household income. In terms of eating habits, 97.9% said they always eat at home and 97.4% were non-vegetarian. Further to this, Table. 3 shows the channels that the consumers acquire information from, 70.5% of the respondents got information from internet, and 12.6% got information from internet, family, or friends.

4. DATA ANALYSIS AND RESULTS

4.1 Measurement Model Assessment

Before testing the hypotheses, the proposed model was assessed by testing the confirmatory factor analysis (CFA), the reliability, the convergent and discriminant validity in order to examine if this is an acceptable measurement model. According to the result of CFA, except two items in information quality, two items in service quality, one item in enjoyment, three items in needs-supplies fit, and three items in person-app fit, all other item factor loadings exceed 0.60. meanwhile, the value of SD arrange from 0.158 to 0.295. The reliability was evaluated by examining the Cronbach's Alpha, composite reliability and average variance extracted (AVE) measures [7]. According to Fornell and Larcker (1981) [28], the AVE greater than 0.50 is considered acceptable, and the recommended threshold for composite reliability and Cronbach's Alpha is 0.70 [7]. The results presented in Table. 1 indicated all measurements' AVE exceeded 0.50, also the Cronbach's Alpha and composite reliability values are greater than 0.70, which indicates all variables are reliable and consistent.

Discriminant validity indicates that the construct is unique and acquires a phenomenon which didn't captured by other constructs. The discriminant validity was tested by Fornell-Larcker criterion. For Fornell-Larcker criterion, the model is valid if the square root of the average variance extracted by a construct is greater than the correlation between the construct and any other constructs [28]. As presented in Table.2, the HTMT values of the structure are below the recommended value 0.90. Further to this, if the constructs are conceptually more distinct, a threshold of 0.85 is suggested [29]. Therefore, the discriminant validity was established.

Table 1 Confirming factor analysis results

Constructs	Items	Cronbach's Alpha	Composite Reliability	AVE	Loadings
Information Quality (IQ)	IQ2	0.767	0.845	0.677	0.856
	IQ4				0.701
	IQ5				0.897

Service Quality (SQ)	SQ3	0.792	0.815	0.702	0.820
	SQ4				0.859
	SQ5				0.834
Self-Efficacy (SE)	SE1	0.865	0.877	0.711	0.815
	SE2				0.839
	SE3				0.885
	SE5				0.834
Self-identity (SI)	SI1	0.910	0.921	0.787	0.842
	SI2				0.898
	SI3				0.920
	SI4				0.887
Needs-Supplies fit (NSF)	NSF4	0.849	0.870	0.766	0.857
	NSF5				0.885
	NSF6				0.884
Person-App fit (PAF)	PAF2	0.781	0.885	0.694	0.762
	PAF4				0.798
	PAF6				0.930
Customer-App Engagement (CAE)	CAE1	0.880	0.884	0.736	0.864
	CAE2				0.892
	CAE3				0.881
	CAE4				0.792

Table 2 Discriminant validity

Construct	CAE	SI	SE	IQ	NSF	PAF	SQ
CAE	0.858						
SI	0.302	0.887					
SE	0.353	0.284	0.843				
IQ	0.068	0.058	0.024	0.822			
NSF	0.384	0.414	0.358	0.151	0.875		
PAF	0.399	0.481	0.406	0.099	0.548	0.833	
SQ	0.343	0.388	0.247	0.121	0.383	0.366	0.838

Note: CAE = Customer-App Engagement, SI = Self-Identity, SE = Self-Efficacy, IQ = Information Quality, NSF = Needs-Supplies Fit, PAF = Person-App Fit, SQ = Service Quality

4.2 Structural Model

The relationships between factors were examined by estimating the R-square values and path coefficients. The path coefficients and R-square values together determine how well the study is supported by the data. A bootstrapping test was conducted by using two-tailed and 5000 samples, with a 95% significance level. Fig. 2 shows the conceptual model and Fig. 2 shows the conceptual model with path coefficient and R-square values.

The results indicate that the model explains 28.7% of the variance in needs-supplies fit, 33.6% of the variance in person-app fit, and 19.8% of the variance in customer-app engagement. Moreover, the results demonstrate that 8 out of 10 hypotheses were accepted. Service quality positively influences needs-supplies

fit and person-app fit. Therefore, H3 ($\beta = 0.213$, $t = 2.442$, $p < 0.05$) and H4 ($\beta = 0.161$, $t = 2.256$, $p < 0.05$) are supported. Furthermore, self-efficacy and self-identity both have positive impacts on needs-supplies fit and person-app fit, supporting H5 ($\beta = 0.229$, $t = 2.880$, $p < 0.01$), H6 ($\beta = 0.269$, $t = 3.451$, $p < 0.01$), H7 ($\beta = 0.260$, $t = 3.447$, $p < 0.01$) and H8 ($\beta = 0.339$, $t = 4.148$, $p < 0.001$). In addition, needs-supplies fit, and person-app fit were proved both have significant effects on customer-app engagement, which is a support of H9 ($\beta = 0.236$, $t = 2.817$, $p < 0.01$) and H10 ($\beta = 0.270$, $t = 3.272$, $p < 0.01$). However, the results also demonstrate one of the functional values, information quality, does not have significant effects on needs-supplies fit, and person-app fit. Hence, H1 ($\beta = 0.104$, $t = 1.064$) and H2 ($\beta = 0.053$, $t = 0.575$) are not supported.

5. DISCUSSION

5.1 Theoretical and Managerial Implications

We contribute to the extension of person-environment theory in the online food delivery application field. First, the relationships between functional and personal values, the complementary and supplementary fit and customer-application engagement were investigated. In previous studies, for a brand or an application, complementary fit and supplementary fit positively affect customers' purchase decisions, satisfaction, and engagement [6, 25]. Second, personal factors were found to play important roles in people's needs and values, as expected, women expect to gain emotional benefits from the products, and they also prefer to purchase from the application which has the same emotional values with them. Next, the results demonstrated that if female users get enjoyment or self-identification from the product, and the service quality of the product is high, then they will be more willing to use this product and will not easily switch to other similar alternative products. This is also similar to [6]. Different from these studies, this research investigated the specific influencing factors, combined with the characteristics of application products and consumers, functional values and psychology values have been added as two influencing parts which have impacts on the fits.

Finally, these findings help us deeply understand the needs of consumers and the products values they emphasize. With the development of the internet and technology, users are gradually accustomed to shopping online, and purchasing ingredients or food deliveries through the internet have steadily become the main theme of people's life. In many previous studies, scholars are more concerned about the factors that influence consumers' purchase intentions or continuing purchases [3]. Additionally, the users of online services have increased, including online food delivery service [1]. However, there are not many studies on the impact of consumers' perceived fit with the applications or consumer engagement. Thus, this study provides different research directions and ideas. Also, this study proves that female users are more inclined to use applications which are consistent with their needs and values, and it will also arise positive emotions from consumers. It also proves that information quality is not a high priority for food delivery applications.

This study provides managerial insights as well. First, it targets the female markets. For related businesses, women are the main consumer group, because in most families, women are responsible for cooking, and they would like to pay more attention to their children's diet, such as using ingredients with high nutritional value. Second, these findings offer notable suggestions as to the aspects that relevant online food delivery applications should pay attention to. In addition to optimizing the quality of the products, the emotional needs of female users should also be highlighted. Besides the practical value of the product itself, it is also necessary to think about how the company's services or products can bring psychology values to consumers and what kind of emotional values to provide. Moreover, colors, pictures and voice have been proved that they can please

customers [11]. Therefore, using cheerful music in advertisements, or adding pleasing photos to the application would help.

Next, this study confirms that ease of use plays a significant role in service quality. According to the demographic results, the proportion of users over 40 years old is close to 70%. For older people, they always have more difficulty when learning the usage of new technology than younger people [30]. Therefore, for elderly users, it is necessary to simplify the service process and the application layouts.

6. CONCLUSION

We attempt to explain and to investigate what kind of factors can enhance consumer engagement based on the person-environment model. According to the sample analysis of female users who have ever used 'Blue Apron' application before, four major findings were disclosed. The present study extends person-environment fit to online food delivery applications, also proved that complementary fit and supplementary fit both positively affect consumer engagement. However, this study still has some limitations. First of all, the target consumer of our research, the user group of 'Blue Apron' has relatively distinct user characteristics. They are high-income groups; live with their families; have at least one child and are used to eat at home. Therefore, future study needs to collect more normal data to illustrate the relationship between fit and consumer engagement. Meanwhile, female consumers indicated that they seldom pay attention to view the SNS platform related to the application they are using or to publish related posts on SNS. But this study did not consider any SNS related variables. Future study needs to add more SNS related variables to illustrate the relationship.

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