



Print ISSN: 1738-3110 / Online ISSN 2093-7717  
 JDS website: <http://accesson.kr/jds>  
<http://doi.org/10.15722/jds.23.12.202512.105>

# What Factors Influence Consumer Behavior for Food Delivery Apps as a Distribution Channel?

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Received: June 08, 2025. Revised: July 03, 2025. Accepted: December 05, 2025.

## Abstract

**Purpose:** This study aims to analyze the influence relationships among perceived value, satisfaction, trust, attitude, and loyalty regarding food delivery apps (FDAs), reflecting retail marketing paradigms and contemporary trends in a rapidly changing distribution market. The reason for the study is the growing consumer interest in purchasing reasonably priced and diverse food options through familiar mobile food delivery apps (MFDAs) as a distribution channel. **Research design, data, and methodology:** To empirically test the research model, a survey was conducted targeting online users with experience using the three major delivery apps in Korea's distribution channel. Multiple regression analysis was employed as the statistical method for testing the study's hypotheses. **Results:** The analysis revealed that most perceived value dimensions significantly influenced satisfaction, trust, attitude, and loyalty, with one exception: the relationship between functional value (a dimension of perceived value) and trust was not statistically significant. Additionally, satisfaction and trust were shown to influence both attitude and loyalty. Finally, attitude was found to directly affect loyalty. **Conclusions:** This study identified the impact relationships among perceived value, satisfaction, trust, attitude, and loyalty in the context of FDAs. It also highlighted limitations not identified in the research and suggested directions for future research on FDAs.

**Keywords :** Food Delivery App (FDA), Distribution Market, Mobile Application, Distribution Channel, Perceived Value

**JEL Classification Code :** D12, L66, L81, M31

## 1. Introduction

With the rapid increase in mobile phone users worldwide, mobile commerce has gained attention in the distribution market for product selection. As a result of this trend, applications reflecting consumer demand and trends have been developed, leading to a variety of mobile applications for customers (Wu & Lee, 2017). Mobile applications are generally designed as software that can be downloaded and installed by anyone using cellular phones, computers, tablets,

and other mobile devices, allowing users to enjoy useful and diverse services in their daily lives, such as information retrieval and communication (Purcell et al., 2010; Shang Guan et al., 2018).

Additionally, as the economic value associated with the growth of the mobile platform distribution market has increased, mobile apps, applications that can be installed and operated on mobile phones according to individual needs, are being utilized as sales channels in the distribution industry. Against this backdrop, platforms where consumers and distributed products can meet directly have rapidly

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emerged as a new model in the distribution industry, prompting related companies to launch various delivery apps services to increase points of contact with customers. In particular, the flow of the Fourth Industrial Revolution and the spread of Covid-19 have further accelerated the non-face-to-face culture, making delivery app services in the distribution market an everyday occurrence. Especially due to the change in thinking in consumer purchasing behavior, the mobile food delivery app industry is growing rapidly (Chotigo & Kadono, 2021; Zhao & Bacao, 2020).

Food Delivery Application (FDA) is an emerging mobile technology platform that provides a service channel between restaurants and consumers by integrating online order system and offline delivery services to the customer (Ray et al., 2019). The FDA facilitates the convenience of ordering food by allowing users to compare menus from different restaurants and ensuring fast delivery of meals to their desired locations. For food vendors and restaurant owners, these platforms provide high-quality advertising opportunities, enabling them to directly reach potential customers looking to order meals, making their marketing efforts much more effective (Song et al., 2021).

Based on studies regarding the FDA, mobile food delivery apps (MFDAs) refer to applications that consumers can download to their smartphones to access restaurants and view menus, order food and pay without any physical interaction with staff at the restaurant (Alalwan, 2020). These enable customers to order and pay for food remotely and to have the food delivered to a specified address, all without having to meet the restaurant personnel (Alalwan, 2020; Amin et al., 2020).

The domestic delivery app market has grown into two segments: one centered around franchise companies and the other focused on specialized delivery app service providers (Yoo & Kim, 2019). FDAs have played a significant role in the Korean distribution market. In April 2010, 'Baedal Tong' became the first service to allow users to search for delivery companies around their location and place orders using location information. Following that, 'Baedal Minjok' launched in June 2010, and 'Yogiyo' followed in 2012. As of December 2024, the rankings for food delivery apps are as follows: first place is Baedal Minjok, second is Coupang Eats, and third is Yogiyo. Currently, Baedal Minjok has approximately 22.07 million users, making it the most popular, while Coupang Eats has around 10.02 million users, and Yogiyo has about 5.22 million users.

In South Korea, MFDAs facilitate easy access to a variety of delivery content and experiences, which accelerates users' desires for new content. As a result, delivery apps service providers continuously develop and offer a diverse range of food products that cater to customer demands, leading to an ongoing cycle of selection and re-selection.

However, as the demand for online food delivery services and the number of apps increased, competition among vendors in the distribution market became fierce. Consequently, distribution marketing communication to promote services and apps has become an essential means of delivering messages to the target audience. To deliver effective messages, marketers need to understand the consumption behavior of potential consumers (Puccinelli et al., 2009).

Research related to delivery apps indicates that studies have been conducted across various delivery app distribution markets. Notably, many studies focus on the distribution and hospitality service industries. Numerous research efforts have examined areas such as traditional market delivery models using delivery apps (Yoo & Kim, 2019), mobile shopping (Byun & Kyung, 2020; Dai & Lee, 2018; Kim et al., 2018), hospitality tourism (Hong & Kang, 2022; Wu & Lee, 2017; Shang Guan et al., 2018; Cho, 2019), and the food industry (Cha & Seo, 2020; Shin et al., 2022). Research addressing delivery services in the Korean food distribution market includes Cha and Seo (2020) that examined the impact of service quality (SERVQUAL) on brand loyalty and customer satisfaction, as well as Shin et al. (2022) that investigated how key service quality elements affect satisfaction with delivery apps, corporate satisfaction, and repurchase intentions.

The results of examining empirical research topics on FDAs indicate that studies are predominant in presenting research models that utilize variables commonly used in distribution management, including the conceptualization of delivery apps, and analyzing the relationships among service quality characteristics, perceived value, satisfaction, attitude, and behavioral intention (Hsu & Lin, 2015). With the emergence of the coronavirus and the post-COVID era, many studies have addressed the rapidly growing distribution environment of delivery apps (Shin et al., 2022; Teng et al., 2023).

Li et al. (2016) conducted an empirical study to identify the factors influencing the decision-making behavior of customers using delivery apps. Sun (2017) constructed perceived value as a multidimensional scale as an independent variable and examined the relationship between the four dimensions of perceived value, app satisfaction, and app purchase intention.

Other empirical research cases include Ali et al. (2023) that investigated the relationship between trust and five key variables related to app usage motivation in FDAs in Bangladesh; Das and Ramalingam (2023) that explored the influence of six independent variables, including trust, on positive and negative word-of-mouth effects in FDA; Hong and Kang (2022) that investigated the relationship between the attributes of FDAs, trust and loyalty from the perspective of hotel food supply chain marketing; Humbani et al. (2024)

that addressed the impact of external and internal factors, trust, satisfaction, and behavioral intention. The study specifically identified the mediating role of satisfaction in the relationship between environmental factors and behavioral intention; Taheri et al. (2023) that examined the structural relationships between barriers (economic, experience, efficiency), trust, and loyalty in online food delivery services; and Triyuni et al. (2021) that examined the relationships among service quality, food quality, trust, and loyalty in Indonesia's Online Food Delivery Service. Additionally, Sharma et al. (2021) established a research model utilizing various variables, applying the concept of FDAs and behavioral reasoning theory, focusing particularly on the structural relationships between trust, attitude, and behavioral intentions.

The following studies include Pop et al. (2023) that explored the structural relationships among mobile app attributes, user attitude, and purchase intention, and confirmed the mediating role of attitude in behavioral intentions, and Tandon et al. (2021) that examined the relationships among consumer value, attitude, and purchase intention in the context of delivery apps, and Song et al. The TAM posits that a user's perceived usefulness and perceived ease of use of a technology are key determinants of their behavioral intention to use it. On the other hand, the AIDA model, which stands for Attention, Interest, Desire, and Action, outlines the stages a customer goes through before making a purchase, particularly in the context of food delivery apps. It emphasizes customer marketing by guiding potential customers from initial awareness to purchase. Overall, TAM, the AIDA model, and behavioral theories provide useful frameworks for understanding users' behaviors and attitudes towards food delivery apps. A common feature of these three studies is the inclusion of attitude as a variable within their research models.

Research on FDAs primarily focuses on factors influencing consumer decision-making from the perspective of customer utilization, often incorporating significant consumer behavior theory models. However, a review of the existing studies highlights a scarcity of research utilizing perceived value as an independent variable. It is necessary to conduct empirical studies focusing on FDAs to examine the impact relationships among perceived value, satisfaction, trust, attitude, and loyalty as variables.

Therefore, this study aims to comprehensively analyze the influence relationships among perceived value, satisfaction, trust, attitude and loyalty regarding FDAs, reflecting the paradigm of retail marketing and the contemporary trends in a rapidly changing distribution market.

## 2. Literature Review and Hypotheses

### 2.1. Food Delivery Application (FDA)

A mobile application is a program that allows anyone to download, install, and enjoy useful and diverse services in their daily lives, such as information searching and communication, using mobile devices like cellular phones, smart pads, and tablet PCs. In other words, a delivery app is a simple payment system that allows users to find a restaurant, place an order, and complete payment all at once using a cellular phone app without directly calling the restaurant. It is one of the core service industries of food tech, which combines information and communication technology, big data, and existing food distribution services. The development of the internet and information technology has made various mobile apps a reality in daily life, and food delivery applications (FDAs) along with the development of food services, have become the most important applications in the distribution market in modern society.

FDA connects users to restaurants or food providers, enabling easy menu browsing, order placement, and payment integration via a mobile platform. These apps enhance convenience for both businesses and customers by offering real-time order tracking and delivery. Mobile food delivery applications (MFDA) are mobile apps that consumers can download to their smartphones to access restaurants and view menus, order food and pay without any physical interaction with staff at the restaurant (Alalwan, 2020).

In the global COVID-19 pandemic in 2020, FDA service providers play a crucial role as a service platform between consumers and restaurants, with the advantages of FDA service as an application that facilitates meals for consumers and enables restaurants to continue operations during the COVID-19 shutdown. FDA platforms also provide a variety of functions that offer consumers a wide range of services and food choices, such as order taking and relaying to restaurants, payment services, and tracking capability (Li et al., 2020).

MFDA are a convenient payment system that allows users to find restaurants, order, and pay all in one go using a cellular phone app without directly calling the restaurant. It is one of the core service industries of food tech, which combines information and communication technology with existing food-related services and big data. Also, it allows for comparison by type and company of delivery food, providing rational consumption and swift delivery services, and receiving a lot of response from users. They offer convenience in menu search, ordering, and payment, as well as additional benefits such as reviews from other users, points, and discounts.

## 2.2. The Perceived Value of the FDA

The Perceived value can be defined as the customer's evaluation of the merits of a product or service and its ability to meet their needs and expectations based on the awareness of the utility of the target (Zeithaml, 1988). Perceived value is a key concept in distribution marketing, and by offering products and distribution services with high value demanded by customers, a company can secure a competitive advantage (Woodruff, 1997). From the Delivery app's perspective, perceived value can be regarded as customers evaluating the app's attractiveness. In previous studies, perceived value is one of the key elements that is used in providing customer services or experiences in the distribution market (McDougall & Levesque, 2000).

In many studies, perceived value has been approached on a multidimensional scale rather than a single dimension as independent variables (Lee & Seong, 2021). Sweeney and Soutar (2001) expanded the perceived value to include emotional, social, economic and functional elements, and the measurement of perceived value has been extensively studied (Prebensen & Xie, 2017; Yang & Ahn, 2020).

In this study, perceived value was defined as "a personal evaluation of a food delivery app by comparing the costs and benefits incurred when using it," based on the definitions from previous studies. The four values can be identified as follows: Emotional value (the sense of security and enjoyment felt when using FDA service), Social value (the social image that can be gained from feeling social interaction with others through the use of FDA service), Economic value (whether the service and products received were beneficial compared to the price paid), and Functional value (the quality of the products or services received through FDA).

## 2.3. Satisfaction with the FDA

Oliver (1981) defined satisfaction as the emotional response and customer perception of the service provider based on comparing the difference between what they receive as compared to previous expectations. Satisfaction has been approached primarily in the distribution marketing in the sense of customer satisfaction (Lee & Seong, 2021).

Satisfaction with using a mobile app is in many ways the result of evaluating and raising the user's app performance, and intention to order through mobile applications includes an individual assessment of the subjective probability or in decision-making (Cha & Seo, 2020).

Cronin et al. (2000) presented a satisfaction model in which perceived value affects customer satisfaction and Bolton and Drew (1991) found that perceived value positively affects overall customer satisfaction in the ACASI (American Customer Satisfaction Index) model.

Additionally, Alalwan (2020) found the price value of FDAs affected consumers' e-satisfaction and continued use intentions and Sun (2017) confirmed that the four perceived value factors (emotional, social, economic and functional) significantly influence satisfaction. In several other studies, researchers have confirmed a positive relationship between perceived value and satisfaction (Eggert & Ulaga, 2002; Lee & Seong, 2021; McDougall & Levesque, 2000). We, therefore, propose the following hypotheses:

- H1:** The perceived value of the FDA will have a positive effect on satisfaction.
- H1-1:** The emotional value of the FDA will have a positive effect on satisfaction.
- H1-2:** The social value of the FDA will have a positive effect on satisfaction.
- H1-3:** The economic value of the FDA will have a positive effect on satisfaction.
- H1-4:** The functional value of the FDA will have a positive effect on satisfaction.

## 2.4. Trust in the FDA

Trust is defined as the willingness to believe in others by positively perceiving their intentions or actions (Mayer et al., 1995). Trust leads individuals to place a high value on their mutual relationship and increases their investment in the other party, thereby improving the quality of the relationship. It also encourages both parties to rely on each other, thereby increasing the sustainability of the relationship (Schurr & Ozanne, 1985).

Trust is a concept that has been studied in a wide range of academic fields, including politics, psychology, anthropology, economics, and business administration, and the definition and application of trust have been diversely utilized in various fields (Morgan & Hunt, 1994). While previous studies on trust have primarily focused on trust in transactions conducted offline, recent research has expanded to online environments, where trust is emerging as a key factor in promoting online purchases (Jarvenpaa et al., 2000).

In the field of online information and communication technology, trust is described as a concept that encompasses both the expectation of interaction with a specific counterpart and the belief in exposure to and acceptance of vulnerabilities due to the medium or environment of transactions, among other factors (Pavlou et al., 2007). According to Triyuni et al. (2021), trust referred to the confidence of customers in the services' quality and reliability.

Online media, such as mobile apps, facilitate commerce between consumers and merchants on behalf of the seller, thereby fostering trust (Chang et al., 2013). The significance of trust in online settings is far greater than in offline settings,

and the role of trust becomes even more crucial in online environments where uncertainty is prevalent (Pavlou, 2003). Also, Li'ebana-Cabanillas et al. (2022) described trust in the online system as the integrity of using mobile services, particularly the security of the system, the confidentiality of personal data, and the accuracy of the results of mobile payment transactions.

Several studies have highlighted the role of trust, confirming that consumers' perceived value has a significant impact on trust (Mathwick et al., 2001; Gil-Saura et al., 2009). From a similar perspective, it has been confirmed that customer perceived value has been accepted as a reliable predictor of trust (Afsar, 2014; Lee & Seong, 2021; Morgan & Hunt, 1994). Therefore, the following hypotheses were presented:

- H2:** The perceived value of the FDA will have a positive effect on trust.
- H2-1:** The emotional value of the FDA will have a positive effect on trust.
- H2-2:** The social value of the FDA will have a positive effect on trust.
- H2-3:** The economic value of the FDA will have a positive effect on trust.
- H2-4:** The functional value of the FDA will have a positive effect on trust.

## 2.5. Attitude toward the FDA

Attitude is defined as the degree of favorability (or unfavorable appraisal) of behavior as evaluated by an individual consumer (Ajzen, 1991) and in terms of distribution marketing, a consumer's attitude towards a product or service can be said to represent the consumer's evaluation of that product or service. Attitude is a variable that has been of great interest to scholars studying consumer behavior and is an important variable that influences consumer behavior. The definition of attitude is the extent to which someone views online shopping as a good idea and feels satisfaction in online shopping (Vijayasathy, 2004).

Prior literature has investigated the relationships between perceived value and attitude. For instance, Ruiz-Molina and Gil-Saura (2008) clarified the existence of a relationship between perceived value and customer attitude, considering this variable an important determinant of customer loyalty and Sumarto et al. (2023) highlighted the relationships among perceived value, attitude and behavior towards purchasing food products. Charton-Vachet et al. (2020) used perceived value as a mediating variable to explain the relationship between attitude and purchase behavior intention. Baek (2021) stated that the functional and situational value of preferred food enhances consumers' trust, leading to the formation of positive attitudes.

In the mobile app-related research, Chen et al. (2020) confirmed that utilitarian and hedonic values act as partial mediators for the relationship between attitude and purchase intentions for FDA services and Pop et al. (2023) found that perceived usefulness and social value attributes of mobile apps influence consumers' attitudes toward using mobile apps. Similarly, Rakhmawati and Farisi (2024) tested the influence of price value on consumer purchase intentions on the FDA, using the variable of attitude as a mediator. Therefore, the following hypotheses were proposed:

- H3:** The perceived value of the FDA will have a positive effect on attitude.
- H3-1:** The emotional value of the FDA will have a positive effect on attitude.
- H3-2:** The social value of the FDA will have a positive effect on attitude.
- H3-3:** The economic value of the FDA will have a positive effect on attitude.
- H3-4:** The functional value of the FDA will have a positive effect on attitude.

## 2.6. Loyalty toward the FDA

Loyalty can be defined as the quality or state, or an instance, of being loyal. Customer loyalty refers to the consistent repurchase or use of a preferred product or service by a customer in the future (Oliver, 1999). Loyalty has been studied by many researchers as it is an important strategic goal of a business, and it is a key factor of customer satisfaction in the service and business (Shin et al., 2015). In distribution-related research, loyalty is primarily analyzed as an indicator of a customer's behavioral intention and is related to the attitude based on customer psychology (Lee & Seong, 2021).

Loyalty is composed of behavioral intention-related variables such as repurchase intention, recommendation intention, and continued use intention. According to Aaker (1997) and Taylor and Baker (1994), purchase intention refers to the expression of a consumer's willingness to engage in a specific future behavior to a certain extent when purchasing a product. Understanding a customer's purchase intention allows the seller to predict the consumer's behavior patterns and can increase the likelihood of actual purchases when the consumer's attitude is favorable, as purchase intention tends to be higher in such cases. Loyalty is generally composed of behavioral intention-related variables such as repurchase intention, recommendation intention, and continued use intention.

Repurchase intention is a variable that is highly likely to trigger behavioral elements in the cognitive, emotional, and behavioral components of attitudes, and when a person intends to purchase a specific product, their beliefs and

attitudes lead to purchasing behavior (Engel et al., 1990). Boulding and Zeithaml (1993) emphasized repurchase intention and a willingness to spread positive word-of-mouth as elements that make up behavioral intention and Hawkins et al. (2007) argued that if consumers are satisfied with their experiences or the value of a product or service, their loyalty will increase, leading to increased use, repurchase, or recommendations of that product or service.

Recommendation intention can be described as customers' willingness to share their purchasing experiences with people around them. Word-of-mouth among consumers is often defined as an informal exchange of characteristics of a business or product (Westbrook, 1987).

Continuous intention to use refers to a consumer's decision to use a service at a future point in time based on their evaluation of the service they are currently using. This can be described as the extent to which a consumer wants to reuse and the extent to which they recommend others to use the company and its services (McDougall & Levesque, 2000). From the perspective of a delivery app, maintaining continuous use by consumers is a key means of ensuring profitability. In the early stages of a transaction, continuous use by consumers incurs higher costs, but managing consumers' continuous use in future e-commerce gradually reduces costs. Continuous use by consumers generates revenue and will contribute to the sustained development of the app platform in the distribution market.

Some scholars have shown that customer perceived value is indeed a significant determinant of customer satisfaction, and customer satisfaction is a significant predictor of behavioral intentions (Reddy et al., 2011; Ryu et al., 2012; Lee & Seong, 2021). Auka (2012) clarified the relationships among service quality, perceived value, satisfaction, and loyalty. Talwar et al. (2020) and Dhir et al. (2020) found social value to be positively associated with continuance intentions for online travel services and mobile messaging apps. In the mobile app-related research, Tandon et al. (2021) examined associations between FDA visibility, values (social and functional) and purchase intentions. Sun (2017) confirmed that four of the perceived value factors (emotional, functional, and financial value) significantly influence purchase intention. Hence, we hypothesize as follows:

- H4:** The perceived value of the FDA will have a positive effect on loyalty.
- H4-1:** The emotional value of the FDA will have a positive effect on loyalty.
- H4-2:** The social value of the FDA will have a positive effect on loyalty.
- H4-3:** The economic value of the FDA will have a positive effect on loyalty.
- H4-4:** The functional value of the FDA will have a positive effect on loyalty.

## **2.7. The Relationships among Satisfaction, Trust, Attitude and Loyalty in the FDA**

### **2.7.1. The Influence of satisfaction and trust on attitude in the FDA**

Satisfaction and trust are considered important factors influencing a positive attitude towards the adoption of the FDA (Stefan et al., 2013). Customer satisfaction is the most frequently mentioned concept in consumer behavior studies and refers to the extent to which a product or service meets a customer's expectations and needs as an evaluation result (Anderson & Sullivan, 1993). Satisfaction can be viewed as the result of fully meeting customers' desires and expectations, and it is characterized by a state where customers' trust continues, along with repeated purchases of products and services.

In this study, satisfaction with delivery apps refers to the degree of satisfaction or disappointment experienced by users, which arises from the difference between expectations before using the app and the consumer experience after use. Oliver (1997) stated that satisfaction has a positive impact on customer attitudes and increases the intention to reuse, and from the perspective of service providers, satisfaction is an important factor that can influence loyalty along with trust.

Wong et al. (2019) confirmed that customer satisfaction would affect both the attitude towards brands and positive repurchase behavior. Garga et al. (2019) concluded that in mobile purchasing services, the level of customer satisfaction was directly associated with the attitude towards switching providers, and that customers with higher satisfaction were less likely to switch providers than those with lower satisfaction.

Zarei et al. (2019) identified the roles of satisfaction and attitude as variables influencing customer purchase behavior and Smith (2020) emphasized the role of customer personality in satisfaction, attitude-to-brand, and loyalty in mobile services.

Trust is the most important part in the relationship of trading goods, and the formation of trust between the parties to the transaction is very important as a leading indicator that triggers purchasing behavior. Nelloh et al. (2019) emphasize that the construction of a safe transaction system in terms of personal information protection, security, infrastructure, and technical aspects is important for mobile transactions, and in the same context, Li'ebana-Cabanillas et al. (2022) view trust in the system as resulting from the integrity of using mobile services, especially the security of the system, the confidentiality of personal data, and the accuracy of mobile payment transaction results, and attitude as a product of the consequences due to trust.

Trust reduces consumer anxiety or strengthens bonds in the online mobile system environment and influences the

formation of favorable attitudes and is having an important influence on transaction behavior in the online environment. Schurr and Ozanne (1985) derived the results that the buyer's trust influenced the attitude or behavior towards the supplier. Sharma et al. (2021) verified the mediating role of trust, quality issues, and attitude in an empirical study targeting delivery apps.

In some scholars' research, satisfaction and trust have been studied to have a significant impact on attitude (Musa et al., 2016; Jeon & Kwon, 2022; Shahbandi & Farrokhshad, 2021). Therefore, we propose the following hypotheses:

**H5:** Satisfaction with the FDA will have a positive effect on attitude.

**H6:** Trust in the FDA will have a positive effect on attitude.

### 2.7.2. The Influence of Satisfaction and Trust on Loyalty in the FDA

Research in the field of distribution marketing has emphasized the importance of customer satisfaction and trust between parties, which arises from the discrepancy between actual experiences and expectations as a means of facilitation for the sustainability of important relationships in business areas.

Customer satisfaction is found to directly affect intention and actual behavior, which means that in the case of delivery app services, satisfaction with app usage leads to the intention to continue using it in the future (La Barbera & Mazursky, 1983). Ribbink et al. (2004) argued that the higher customer satisfaction, the more recommendations they make of friends and the higher their purchase intention, and that such customers show the same high levels of loyalty in online environments as well. Similarly, Sun (2017) confirmed that customer satisfaction has a significant impact on in-app purchase intention, and that the higher the perceived satisfaction with O2O delivery apps, the higher the intention to make in-app purchases. Customer dissatisfaction on the other hand, leads to negative WOM (NWOM) (Saad Andaleeb & Conway, 2006; Um & Lau, 2018).

In the context of distributing marketing, trust is the most crucial factor, serving as a leading indicator that triggers actual purchasing behavior and enhances customer loyalty, which in turn leads to repeat purchases. Therefore, establishing trust between parties involved in a transaction is of paramount importance. Schurr and Ozanne (1985) stated that a buyer's trust not only affects their attitudes but also their behavioral intentions towards the supplier. Meanwhile, Ponte et al. (2015) suggested that trust facilitates the online purchasing of hospitality products. Amin et al. (2022) found that a customer's attitude positively influences their satisfaction in mobile banking apps, and satisfaction significantly impacts their intention to reuse. As such, the role of trust is becoming increasingly important in online

platforms, and in e-commerce, trust in information directly impacts consumers' positive behaviors (Kuan & Bock, 2007).

In mobile app-related research, Kang and Namkung (2019) identified a positive relationship between trust and continuation intentions toward FDAs. Furthermore, price is a key product characteristic impacting consumers' perceived value of FDAs (Alalwan, 2020; Cho et al., 2019). Specifically, within the domain of MFDA, several studies have proposed its relevance and direct relationship with continuation usage intention (Goyal et al., 2023). Users' continuation usage intentions increase when they feel confident and secure about MFDA (Hong et al., 2023). Trust influences consumer behavior, such as purchase intentions, recommendation intention, and continued use intention. Consumers are more inclined to continue transactions with mobile apps when they believe their data is only shared with trusted parties (Kang & Namkung, 2019). Thus, we propose the following hypotheses:

**H7:** Satisfaction with the FDA will have a positive effect on loyalty.

**H8:** Trust in the FDA will have a positive effect on loyalty.

### 2.7.3. The Influence of Attitude on Loyalty in the FDA

Attitude can be defined as a consumer's favorable or unfavorable evaluation of a specific behavior (Belanche et al., 2020). Among consumer loyalty, purchase intention is a variable that is highly likely to trigger the behavioral elements of attitude, and it is beliefs and attitudes that lead to purchase behavior when considering buying a specific product (Engel et al., 1990). Previous studies have shown that system acceptance attitudes directly affect consumer behavioral intentions (Lin & Lu, 2000). Davis et al. (1989) found that users' attitudes determine their intention to adopt a technology, influencing actual use. Since attitudes do not change easily and directly influence behavioral intentions, the formation of positive attitudes among consumers is playing a crucial role (Costa et al., 2016; Suh et al., 2016). Consumers tend to recall products they think positively about more easily, and this attitude is closely related to behavioral intentions (Hartmann & Apaolaza-Ibanez, 2012).

Prior literature has extensively examined the association between attitude and purchase intention (Lechuga Sancho et al., 2020). Pop et al. (2023) confirmed that users' positive attitudes have a positive impact on their purchase intention through fast fashion mobile apps. Belanche et al. (2020) similarly determined a major influence of attitude on word-of-mouth and use intention for FDAs. Thus, keeping in line with prior studies, we also expect a positive and significant influence of consumers' attitude on their FDA behavioral intentions. Accordingly, we similarly hypothesize:

**H9:** Attitude toward the FDA will have a positive effect on

loyalty.

Based on research, literature review and hypotheses development, Figure 1 shows a research model.

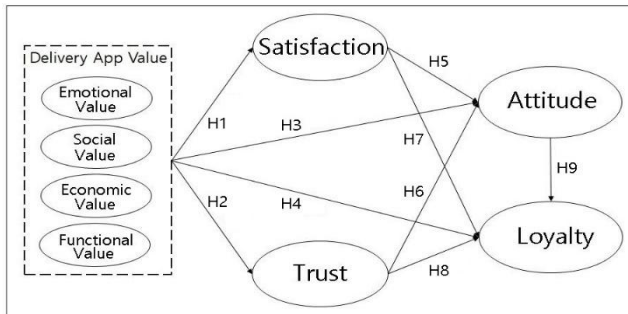


Figure 1: Research Model

### 3. Research Methodology

#### 3.1. Sample and Data Collection

Data collection for this study utilized the non-probability sampling method, specifically convenience sampling, by surveying online users who have experienced using the three major delivery apps in Korea: Baedal Minjok, Coupang Eats and Yogiyo. A method to mitigate the potential bias, which is a weakness of convenience sampling, is to select a diverse range of participants to avoid overrepresentation of specific groups, such as those distinguished by gender, age, and other demographic factors. Additionally, increasing the sample size to 300 or more helps reduce the sampling error and enhance the representativeness of the sample.

The population of the study was set as a consumer over the age of 20 in the metropolitan area in Korea who has experience in purchasing food through delivery apps. In total, 320 self-administered structured questionnaires were collected over the period of December 11 to December 30 in 2023. A total of 300 copies were used for the data analysis. To ensure clarity and reliability in data collection, 41 cases were excluded, which were deemed insincere in their responses by either hastily filling out the questionnaire or leaving important questions unanswered. This step was taken to prevent any incomplete or biased data from affecting the analysis outcomes. The data collected was analyzed using the SPSS 24.0 statistical package.

#### 3.2. Measurements

This study reviewed the measurement items of the constructions from existing literature and made slight modifications to suit the context of the study. The variables

corresponding to general characteristics, including demographic variables, which serve as the basic data for the study, were constructed as 6 items and measured using nominal scales.

First, perceived value of the food delivery application, as it related to emotional, social, economic and functional value, was measured using 16 items from Lee and Seong (2021), Prebensen and Xie (2017), Sweeney and Soutar (2001), Sun (2017), and Yang and Ahn (2020).

As for the emotional value, this study used 4 items including 'Using this delivery app itself is enjoyable', 'Using this delivery app makes me feel good', 'Using this delivery app makes me comfortable', and 'Using this delivery app makes me feel a variety of emotions that I want to use'.

As for the social value, this study used 4 items including 'Using this delivery app helps me maintain relationships with others', 'Using this delivery app seems to have made a good impression on others', 'Using this delivery app is thought to have raised my social status', and 'Using this delivery app makes me feel like I am a member of society'.

As for the economic value, this study used 4 items including 'This delivery app offers excellent goods for the cost', 'This delivery app provides reasonable benefits commensurate with the price', 'This delivery app is generally reasonable and economical in price', and 'This delivery app provides services and value for money beyond the paid cost'.

As for the functional value, this study used 4 items including 'This delivery app provides better goods and services than other apps', 'This delivery app provides goods and services in a timely manner', 'This delivery app has good functions', and 'This delivery app provides various information'.

Second, for Satisfaction with the food delivery application, 4 items were used including 'This delivery app is well-made and satisfying', 'I think using this delivery app is a wise decision', 'I am satisfied with the goods and distribution services provided by this delivery app' and 'I am generally satisfied with using this delivery app'. These are borrowed from Lee et al. (2019), Lee and Seong (2020), Lee and Seong (2021), Oliver (1981), Ryu et al. (2012), and Sun (2017).

Third, trust in the food delivery application was measured using 4 items from Das and Ramalingam (2023), Jarvenpaa et al. (2000), Lee and Seong (2021), Sharma et al. (2021), and Taheri et al. (2025). The 4 items include 'I trust the goods and services provided by this delivery app', 'The goods and services provided by this delivery app meet my expectations' and 'The goods and services of this delivery app are safe and honest' and 'The goods and services provided by this delivery app are reliable'.

Fourth, attitude toward the food delivery application was measured using 4 items from Pop et al. (2023), Sharma et al. (2021), Song et al. (2021), and Tandon et al. (2021). The 4 items include 'Using this delivery app for purchasing seems like a great idea', 'Using this delivery app for purchasing

feels attractive', 'Using this delivery app for purchasing feels enjoyable' and 'Using this delivery app for purchasing seems like a wise and reasonable choice.'

Fifth, loyalty toward the food delivery application was measured using 4 items from Lee and Seong (2020), Lee and Seong (2021), Pop et al. (2023), Song et al. (2021), Sun (2017), Taheri et al. (2025), and Yang and Ahn (2020). The 4 items include 'I will continue to use this delivery app in the future', 'If the conditions are the same, I will continue to use this delivery app to make purchases', 'I will positively tell people around me about the value and merits of this delivery app' and 'I highly recommend purchasing using this delivery app to my acquaintances'.

## 4. Empirical Research

### 4.1. Profile of Respondents

The general characteristics, including the demographic characteristics of the sample subjects (N= 300) used for the analysis of this study are shown in Table 1. The gender ratio of consumers who used food delivery apps was 41% male and 59% female, with a higher proportion of women. The age distribution was 48.7% in their 20s, 31% in their 30s, 16% in their 40s, and 4.3% over 50, with a significant decrease in proportion as the age group increased. The current marital status was 66.3% unmarried, 31.6% married, and 2% other, in that order. In the question about occupation, students accounted for 36.7%, the highest priority, followed by office workers at 30%, professionals at 15.7%, and self-employed individuals at 8%, respectively.

Next, the question about the main usage frequency of delivery apps was surveyed to be 40% per week for 1-2 times, 24% for 3-4 times, 19% for 5 times or more, and 17% for 1 time or less. Lastly, in the question about the average spending per delivery app session, users spending less than 20,000 won accounted for 56%, the highest, followed by 29.3% for 20,000-30,000 won, 8.3% for 30,000-40,000 won, and 5.0% for 40,000-50,000 won.

**Table 1:** Profile of Respondents

Variables	Categories	Frequency	
		N	%
Gender	Male	123	41.0
	Female	177	59.0
Age	20s	146	48.7
	30s	93	31.0
	40s	48	16.0
	Over 50	13	4.3
Marital status	Married	95	31.6
	Unmarried	199	66.3
	Others	6	2.0

Variables	Categories	Frequency	
		N	%
Occupation	Professionals	47	15.7
	Self-employed	24	8.0
	Office worker	90	30.0
	Student	110	36.7
	Housewife	16	5.3
	Others	13	4.3
The frequency of delivery app usage per week	1 time or less	51	17.0
	1-2 times	120	40.0
	3-4 times	72	24.0
	5 times or more	57	19.0
Average spending per delivery app session	Less than 20,000 won	168	56.0
	20,000-30,000 won	88	29.3
	30,000-40,000 won	25	8.3
	40,000-50,000 won	15	5.0
	Over 50,000 won	4	1.3
Total		300	100.0

### 4.2. Verification of the Reliability and Validity

The reliability and validity of the questionnaire are generally confirmed through exploration factor analysis and Cronbach's alpha. This is known for estimating the internal consistency reliability of test scores (Choi & Lee, 2018). The factor analysis extraction in this study was based on principal component analysis. To maintain the independence of the factors and simplify the loading of each factor, we conducted a factor rotation using the varimax method, an orthogonal rotation method. A factor loading greater than 0.5 can be considered a significant variable.

#### 4.2.1. Analysis of the Reliability and Validity of Independent Variables

This study conducted an Exploratory Factor Analysis to verify the validity of 16 independent variables. Four factors were extracted as shown in Table 2. These factors explain 84.771% of the total variance.

The KMO coefficient, which validates the suitability of the sample size, was found to be high at 0.951 (df= 120), and Bartlett's test showed that the correlation between the variables was statistically significant at a significant level (p< .001), indicating that the data is appropriate for conducting factor analysis.

The reliability analysis of independent variables shows that Cronbach's  $\alpha$  coefficient for emotional value is 0.919, social value is 0.937, economic value is 0.933, functional value is 0.958, and all of them were high values.

**Table 2:** Analysis of the Validity and Reliability of Independent Variables

Factor and Variables		Rotated Component				Cronbach's $\alpha$	
		1	2	3	4		
Emotional value	Using this delivery app makes me feel good.	.832				.919	
	Using this delivery app itself is enjoyable.	.786				.919	
	Using this delivery app makes me comfortable.	.765				.919	
	Using this delivery app makes me feel a variety of emotions that I want to use.	.722				.919	
	This delivery app provides goods and services in a timely manner.		.828			.958	
	This delivery app has good functions.		.793			.958	
	This delivery app provides various information.		.778			.958	
	This delivery app provides better goods and services than other apps.		.727			.958	
Social value	Using this delivery app is thought to have raised my social status.			.794		.937	
	Using this delivery app makes me feel like I am a member of society.			.755		.937	
	Using this delivery app helps me maintain relationships with others.			.754		.937	
	Using this delivery app seems to have made a good impression on others.			.720		.937	
Economic value	This delivery app provides reasonable benefits commensurate with the price.				.798	.933	
	This delivery app offers excellent goods for the cost.				.768	.933	
	This delivery app provides services and value for money beyond the paid cost.				.745	.933	
	This delivery app is generally reasonable and economical in price.				.682	.933	
KMO Measure: .951 df= 120 Bartlett's Test Sig.: .000		Initial eigen-values	7.738	1.1103	1.016	1.007	Rotation Variance Sums (%)
KMO Measure: .951 df= 120 Bartlett's Test Sig.: .000		Rotation eigen-values	3.465	3.464	3.323	3.311	Rotation Variance Sums(%)
KMO Measure: .951 df= 120 Bartlett's Test Sig.: .000		Extracted Variance (%)	65.229	6.893	6.350	6.299	84.771
KMO Measure: .951 df= 120 Bartlett's Test Sig.: .000		Rotated Variance (%)	21.659	21.650	20.769	20.693	84.771
Principal component analysis was employed as the extraction method, and the factor rotation was performed using the Varimax method with Kaiser normalization. The rotation converged after five iterations							

#### 4.2.2. The study performed an exploratory factor analysis to assess the validity of the 16 dependent variables and to examine their reliability and consistency.

As indicated in Table 3, four factors were derived, accounting for 82.06% of the overall variance. The KMO coefficient, which validates the suitability of the sample size, was found to be high at 0.956 (df= 120), and Bartlett's test showed that the correlation between the variables was statistically significant at a significant level ( $p < .001$ ), indicating that the data is appropriate for conducting factor analysis.

The reliability analysis of independent variables shows that Cronbach's  $\alpha$  coefficient for trust is 0.956, satisfaction is 0.952, loyalty is 0.905, attitude is 0.860, and all of them were high values. As a result, the measurement tools for the dependent variables are like those of existing studies, indicating that both the validity (convergent validity and discriminant validity) and reliability of the dependent variables have been secured.

**Table 3:** Analysis of the Validity and Reliability of Dependent Variables

Factor and Variables		Rotated Component				Cronbach's $\alpha$
		1	2	3	4	
Trust	I trust the goods and services provided by this delivery app.	.864				.956
Trust	The goods and services provided by this delivery app meet my expectations.	.854				.956
Trust	The goods and services of this delivery app are safe and honest.	.822				.956

Factor and Variables		Rotated Component				Cronbach's $\alpha$	
		1	2	3	4		
Trust	The goods and services provided by this delivery app are reliable.	.815				.956	
Satisfaction	I think using this delivery app is a wise decision.		.799			.952	
Satisfaction	I am satisfied with the goods and distribution services provided by this delivery app.		.786			.952	
Satisfaction	I am generally satisfied with using this delivery app.		.776			.952	
Satisfaction	This delivery app is well-made and satisfying.		.751			.952	
Loyalty	I will positively tell people around me about the value and merits of this delivery app.			.793		.905	
Loyalty	I highly recommend purchasing using this delivery app to my acquaintances.			.789		.905	
Loyalty	I will continue to use this delivery app in the future.			.636		.905	
Loyalty	If the conditions are the same, I will continue to use this delivery app to make purchases.			.627		.905	
Attitude	Using this delivery app for purchasing seems like a great idea.				.726	.860	
Attitude	Using this delivery app for purchasing seems like a wise and reasonable choice.				.671	.860	
Attitude	Using this delivery app for purchasing feels attractive.				.618	.860	
Attitude	Using this delivery app for purchasing feels enjoyable.				.618	.860	
KMO Measure: .956 df= 120 Bartlett's Test Sig.: .000		Initial eigen-values	9.533	1.361	1.179	1.057	Rotation Variance Sums (%)
KMO Measure: .956 df= 120 Bartlett's Test Sig.: .000		Rotation eigen-values	3.928	3.564	2.934	2.704	Rotation Variance Sums (%)
KMO Measure: .956 df= 120 Bartlett's Test Sig.: .000		Extracted Variance (%)	59.581	8.506	7.368	6.606	82.060
KMO Measure: .956 df= 120 Bartlett's Test Sig.: .000		Rotated Variance (%)	24.551	22.274	18.336	16.899	82.060
* Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. / Rotation converged in 5 iterations.							

### 4.3. Hypothesis Verification

#### 4.3.1. Hypothesis 1 Verification

Hypothesis 1: The perceived value of the FDA will have a positive effect on satisfaction was shown in Table 4. Multiple regression analysis is conducted as the statistical technique for verifying research hypotheses. The result shows that the R<sup>2</sup> is .702. This implies that 4 independent variables explained about 70.2% of the variance in the dependent variable of store satisfaction. The adjusted R<sup>2</sup>, reflecting the degree of freedom (df= 4, 295), was found to be .698. Durbin-Watson is 2.106, close to the reference value of 2 and not close to 0 or 4, so it is judged that there is no correlation between the residuals, and the regression

model is appropriate. The F Value 173.636 (p= .000) of the regression model indicated an overall significant effect of the independent variables on the dependent variable (satisfaction).

The results of the verification of significance of independent variables put into the multiple regression equation for the dependent variable (satisfaction) are as follows; Emotional value (t=3.462, p= .001), social value (t=2.586, p= .01), economic value (t=8.747, p= .000 < .001), and functional value (t=2.099, p= .037 < .05) have a significant impact on store satisfaction. The absence of multicollinearity among the independent variables was confirmed, as indicated by a Variance Inflation Factor (VIF) below 10. Hypothesis 1 is accepted

**Table 4:** Regression Analysis between Perceived Value and Satisfaction

Independent Variable	Unstandardized Coefficients		Std. Beta	T	Sig.	Results	VIF
	$\beta$	Std. Error					
(Constant)	.083	.144		.580	.563		
Emotional value	.188	.054	.171	3.462***	.001	adopted	2.417
Social value	.148	.057	.144	2.586**	.010	adopted	3.509

Independent Variable	Unstandardized Coefficients		Std. Beta	T	Sig.	Results	VIF
	$\beta$	Std. Error					
Economic value	.518	.059	.491	8.747***	.000	adopted	3.125
Functional value	.120	.057	.115	2.099*	.037	adopted	2.947
R= .838, R <sup>2</sup> = .702, Adjusted R <sup>2</sup> = .698				F=173.636, Sig.= .000, Durbin-Watson= 2.106			
a: Dependent Variable = Satisfaction, *: p<.05, **: p<.01, ***: p<.001							

#### 4.3.2. Hypothesis 2 Verification

Hypothesis 2: The perceived value of the FDA will have a positive effect on trust was shown in Table 5. The result shows that the R<sup>2</sup> is .606. This implies that four independent variables explained about 60.6% of the variance in the dependent variable of trust. The adjusted R<sup>2</sup>, reflecting the degree of freedom (df= 4, 295), was found to be .600. Durbin-Watson is 2.025, close to the reference value of 2 and not close to 0 or 4, so it is judged that there is no correlation between the residuals, and the regression model is appropriate. The F Value 113.293 (p= .000) of the regression model indicated an overall significant effect of the independent variables on the dependent variable (trust).

The results of the verification of significance of independent variables put into the multiple regression equation for the dependent variable (trust) are as follows; Emotional value (t= 7.956, p= .000< .001), social value (t= 2.824, (p= .005< .01), and economic value (t= 4.909, p= .000< .001) have a significant impact on trust. Functional value (t= -1.691, p= .092> .05) has no significant impact on trust. The absence of multicollinearity among the independent variables was confirmed, as indicated by a Variance Inflation Factor (VIF) below 10. Hypothesis 2 is accepted partially.

#### 4.3.3. Hypothesis 3 Verification

Hypothesis 3: The perceived value of the FDA will have a positive effect on attitude as shown in Table 6. The result shows that the R<sup>2</sup> is .720. This implies that four independent variables explained about 72% of the variance in the dependent variable of attitude. The adjusted R<sup>2</sup>, reflecting the degree of freedom (df= 4, 295), was found to be .717. Durbin-Watson is 1.725, close to the reference value of 2 and not close to 0 or 4, so it is judged that there is no correlation between the residuals, and the regression model is appropriate. The F Value 190.087 (p= .000) of the regression model indicated an overall significant effect of the independent variables on the dependent variable (attitude).

The results of the verification of significance of independent variables put into the multiple regression equation for the dependent variable (attitude) are as follows; Emotional value (t=4.140, p= .000 < .001), social value (t=2.401, p= .017 < .05), economic value (t=8.129, (p= .000 < .001), and functional value (t=3.225, p= .001) have a significant impact on attitude. The absence of multicollinearity among the independent variables was confirmed, as indicated by a Variance Inflation Factor (VIF) below 10. Hypothesis 3 is accepted.

**Table 5:** Regression Analysis between Perceived Value and Trust

Independent Variable	Unstandardized Coefficients		Std. Beta	T	Sig.	Results	VIF
	$\beta$	Std. Error					
(Constant)	1.127	.139		8.120	.000		
Emotional value	.416	.052	.452	7.956***	.000	adopted	2.417
Social value	.156	.055	.181	2.824**	.005	adopted	3.509
Economic value	.281	.057	.317	4.909***	.000	adopted	3.125
Functional value	-.093	.055	-.106	-1.691	.092	rejected	2.947
R= .778, R <sup>2</sup> = .606, Adjusted R <sup>2</sup> = .600				F= 113.293, Sig.= .000, Durbin-Watson = 2.025			
a: Dependent Variable = Trust, *: p<.05, **: p<.01, ***: p<.001							

**Table 6:** Regression Analysis between Perceived Value and Attitude

Independent Variable	Unstandardized Coefficients		Std. Beta	T	Sig.	Results	VIF
	$\beta$	Std. Error					
(Constant)	.905	.108		8.414	.000		
Emotional value	.168	.041	.198	4.140***	.000	adopted	2.417
Social value	.103	.043	.129	2.401*	.017	adopted	3.059
Economic value	.360	.044	.442	8.129***	.000	adopted	3.125
Functional value	.138	.043	.170	3.225***	.001	adopted	2.947
R= .849, R <sup>2</sup> = .720, Adjusted R <sup>2</sup> = .717				F= 190.087, Sig.= .000, Durbin-Watson = 1.725			
a: Dependent Variable = Attitude, *: p<.05, **: p<.01, ***: p<.001							

**4.3.4. Hypothesis 4 Verification**

Hypothesis 4: The perceived value of the FDA will have a positive effect on loyalty was shown in Table 7. The result shows that the R<sup>2</sup> is .767. This implies that four independent variables explained about 76.7% of the variance in the dependent variable of loyalty. The adjusted R<sup>2</sup>, reflecting the degree of freedom (df= 4, 295), was found to be .764. Durbin-Watson is 1.715, close to the reference value of 2 and not close to 0 or 4, so it is judged that there is no correlation between the residuals, and the regression model is appropriate. The F Value 243.030 (p= .000) of the regression model indicated an overall significant effect of the

independent variables on the dependent variable (loyalty).

The results of the verification of significance of independent variables put into the multiple regression equation for the dependent variable (loyalty) are as follows; Emotional value (t=2.229, p= .027 < .05), social value (t=2.175, p= .030 < .05), economic value (t=6.360, (p= .000 < .001), and functional value (t=9.180, p= .000< .001) have a significant impact on satisfaction. The absence of multicollinearity among the independent variables was confirmed, as indicated by a Variance Inflation Factor (VIF) below 10. Hypothesis 4 is accepted.

**Table 7: Regression Analysis between Perceived Value and Loyalty**

Independent Variable	Unstandardized Coefficients		Std. Beta	T	Sig.	Results	VIF
	β	Std. Error					
(Constant)	.310	.115		2.706	.007		
Emotional value	.096	.043	.097	2.229*	.027	adopted	2.417
Social value	.099	.046	.107	2.175*	.030	adopted	3.059
Economic value	.300	.047	.316	6.360***	.000	adopted	3.125
Functional value	.417	.045	.443	9.180***	.000	adopted	2.947
R= .876, R <sup>2</sup> = .767, Adjusted R <sup>2</sup> = .764				F= 243.030, Sig.= .000, Durbin-Watson = 1.715			
a: Dependent Variable = Loyalty, *: p<.05, **: p<.01, ***: p<.001							

**4.3.5 Hypotheses 5 and 6 Verification**

Hypothesis 5: Satisfaction with the FDA will have a positive effect on attitude, and Hypothesis 6: Trust in the FDA will have a positive effect on attitude, as shown in Table 8. The result shows that R<sup>2</sup> is .672, explaining 67.2% of the dependent variable (attitude), and the adjusted R<sup>2</sup>, reflecting the degrees of freedom (df= 2, 297), is .670.

Durbin-Watson is 1.779, close to the reference value of 2 and not close to 0 or 4, so it is judged that there is no correlation between the residuals, and the regression model

is appropriate. The F-value of the regression model is 304.836 (p= .000), indicating that it is statistically very significant for the dependent variable (attitude). The test results showed that the t-value for satisfaction was 12.630 (p = .000 < .001) and the t-value for trust was 7.637 (p = .000 < .001), indicating a significant impact on attitude. Additionally, no multicollinearity was found among the independent variables, as indicated by a VIF below 10. Hypotheses 5 and 6 are accepted.

**Table 8: Regression Analysis for the Influence of Satisfaction and Trust on Attitude**

Independent Variable	Unstandardized Coefficients		Std. Beta	T	Sig.	Results	VIF
	β	Std. Error					
(Constant)	.922	.126		7.339	.000		
Satisfaction	.431	.034	.558	12.630***	.000	adopted	1.767
Trust	.310	.041	.337	7.637***	.000	adopted	1.767
R= .820, R <sup>2</sup> = .672, Adjusted R <sup>2</sup> = .670				F= 304.836, Sig.= .000, Durbin-Watson = 1.779			
a: Dependent Variable = Attitude, *: p<.05, **: p<.01, ***: p<.001							

**4.3.6 Hypotheses 7, 8, and 9 Verification**

Hypothesis 7: Satisfaction with the FDA will have a positive effect on loyalty, Hypothesis 8: Trust in the FDA will have a positive effect on loyalty, and Hypothesis 9: Attitude toward the FDA will have a positive effect on loyalty, as shown in Table 9. The result shows that R<sup>2</sup> is .678, explaining 67.8% of the dependent variable (loyalty), and the adjusted R<sup>2</sup>, reflecting the degrees of freedom (df = 3, 296), is .675.

Durbin-Watson is 1.863, close to 2, indicating no correlation (independence) in the residuals, making the regression model suitable. The F-value of the regression model is 208.190 (p = .000), indicating a statistically very significant relationship with the dependent variable (loyalty). According to the test results, the t-value for satisfaction is 7.732 (p = .000 < .001), the t-value for trust is 3.265 (p = .0001), and the t-value for attitude is 5.651 (p = .000 < .001),

suggesting that they significantly influence loyalty. The absence of multicollinearity among the independent

variables was confirmed, as indicated by a Variance Inflation Factor (VIF) below 10. Hypotheses 7, 8, and 9 are accepted.

**Table 9:** Regression Analysis for the Influence of Satisfaction, Trust and Attitude on Loyalty

Independent Variable	Unstandardized Coefficients		Std. Beta	T	Sig.	Results	VIF
	$\beta$	Std. Error					
(Constant)	.148	.158		.934	.351		
Satisfaction	.379	.049	.420	7.732***	.000	adopted	2.717
Trust	.168	.051	.156	3.265***	.001	adopted	2.114
Attitude	.380	.067	.325	5.651***	.000	adopted	3.053
R= .824, R <sup>2</sup> = .678, Adjusted R <sup>2</sup> = .675				F= 208.190, Sig.= .000, Durbin-Watson = 1.863			
a: Dependent Variable = Loyalty, *: p<.05, **: p<.01, ***: p<.001							

## 5. Conclusion

### 5.1. Summary and Implications

What are the factors influencing consumer behavior for FDAs as a distribution channel? This study analyzed the influence relationships among perceived value, satisfaction, trust, attitude, and loyalty regarding FDAs, reflecting the paradigm of retail marketing and the contemporary trends in a rapidly changing distribution market.

The reason for the study is that customers are showing increased interest in purchasing reasonably priced food from familiar FDAs. FDAs have established a distribution industry culture that allows users to view various information provided by multiple restaurants in their mobile location, order the food they want, and have it delivered to their desired location by providing each restaurant's menu through the app. In fact, FDAs in Korea started with 'Baedal Tong' in April 2010, and the delivery app market, including three brands such as 'Baedal Minjok', 'Coupang Eats' and 'Yogiyo', has become an important pillar of the restaurant industry. Additionally, since the COVID-19 pandemic, FDAs have experienced rapid growth as a contactless service and are now facing an era of excessive competition among companies.

The above study holds significance as a basic material that can contribute to understanding customers of food delivery apps, providing empirical evidence on the factors influencing consumer attitudes and loyalty, and advancing the fields of retail marketing and consumer behavior. It aims to lay the groundwork for further research and practical applications in these areas, enhancing our overall understanding and knowledge. To this end, this survey was conducted online for customers who used the three major FDA services in Korea ('Baedal Minjok', 'Coupang Eats' and 'Yogiyo'), and 300 responses were used for data analysis. Thus, based on the research model and statistical evidence, 9 hypotheses for this study were verified.

The results of the study are summarized as follows.

First, as mentioned in the general characteristics including demographic elements of the respondents, the

dominant percentage of food delivery app customers are young adults in their 20s and 30s, as in the results of previous studies on food delivery apps (Song et al., 2021; Sun, 2017; Tandon et al., 2021). Users are forming the customer market primarily among single individuals, students, and office workers, and are utilizing the apps about 1-4 times per week. Therefore, FDA services should establish strategies to prevent consumer churn while offering a variety of products to further attract them.

Second, as the results of the verification, four dimensions of the perceived value (emotional, social, economic, and functional value) of the food delivery application have a positive effect on satisfaction. In detail, these dimensions affect satisfaction in the order of economic, emotional, social and functional value. Young customers consider the economic value of the product and service to be very important, and these results are in line with Lee and Seong (2021), who highlight the importance of economic values. Sun (2017) found that the influence of functional and economic value is higher than that of emotional and social value. But the overall results are like those of previous research on the relationship between perceived value and satisfaction (Eggert & Ulaga, 2002; Lee & Seong, 2021; McDougall & Levesque, 2000; Sun, 2017).

Third, as the results of the verification, three dimensions of the perceived value (emotional, social and economic value) of the FDA have a positive effect on trust. Three dimensions affect satisfaction in the order of emotional, economic and social value. However, since functional value did not significantly impact trust in the FDA, it is judged that functional value can act as an important factor in customer satisfaction, but not as an important factor in trust. The reason why functional value does not positively influence the trust in delivery apps is that customers may perceive the quality of food and services provided through delivery apps to be at a certain level or higher, or it could be due to the intensifying competition in the delivery app market, where significant differentiation factors are not found in functional value.

There is a slight difference with Lee and Seong (2021), who stated that these dimensions affect trust in the order of economic, functional and emotional value. But the overall results are like those of previous research (Afsar, 2014; Lee & Seong, 2021; Morgan & Hunt, 1994).

Fourth, as the results of the verification, four dimensions of the perceived value (emotional, social, economic, and functional value) of the FDA have a positive effect on attitude. In detail, these dimensions affect satisfaction in the order of economic, emotional, functional and social value. Based on this background, we can see that economic and emotional value have a significant impact on attitude in the FDA. The overall results are like those of previous research on the relationship between perceived value and satisfaction (Pop et al., 2023; Rakhmawati & Farisi, 2024).

Fifth, satisfaction and trust in the FDA have a positive effect on attitude. Comparing the two variables, satisfaction had a slightly stronger effect on attitude than on trust. Past studies have examined the relationships between satisfaction and attitude and some empirical studies of them reinforced the results of this research. Also, in several studies, trust has been used as a meaningful variable, and trust influences attitude (Jeon & Kwon, 2022; Musa et al., 2016; Schurr & Ozanne, 1985; Shahbandi & Farrokhsad, 2021).

Sixth, satisfaction, trust and attitude have a positive effect on loyalty. They are shown to affect loyalty in the order of satisfaction, attitude, and trust. Based on the results above, we can see that satisfaction, attitude and trust have significant impacts on loyalty in the food delivery application. This is consistent with previous app-related studies, such as satisfaction and trust influencing consumer behavior, including purchase intentions, recommendation intention, and continued use intention (Amin et al., 2020; Kang & Namkung, 2019; Kuan & Bock, 2007; Sun, 2017). It also aligns with the findings of some studies that users' attitude has positive impacts on their loyalty (Belanche et al., 2020; Pop et al., 2023).

The results of this study raise significant implications for both theory and practice in the context of FDAs and their prevalence in the marketplace. The finding means most customers feel satisfied with the FDA, develop trust along with their expectations, subsequently form a positive attitude, and can promote future purchasing activities.

The research results have significant implications for stakeholders in the delivery app market.

First, delivery app companies need to enhance the perceived value for customers by introducing new features or improving customer services to build trust and increase customer loyalty.

Second, marketing strategists can use these relationships as key elements in their marketing strategies. For instance, they can conduct special promotions to boost customer

satisfaction or run campaigns to strengthen brand image to gain customer trust.

Third, policy makers can establish policies that promote consumer protection and market integrity based on these research findings. For example, they can encourage companies to fulfill their social responsibilities to enhance customer loyalty.

Fourth, consumers can better understand the factors influencing their purchasing decisions through this research. This enables them to choose more satisfying services and prefer reliable brands in the long term. In these ways, the research results can provide foundational assistance for all stakeholders in the delivery app market to formulate more effective strategies and make better decisions.

## 5.2. Limitations and Future Research

There are limitations during this study, and we aim to suggest future research tasks and directions for the FDA.

First, the questionnaire was limited to those who had experienced the three major delivery apps in Korea and was selected by the convenience sampling method, and the number of samples utilized for the analysis was limited to 300 copies, which may be somewhat difficult to generalize the results of this study as the characteristics of food delivery as a distribution channel. As with the respondent profile, the fact that the sample is formed towards younger age groups is also a limitation of the study. In future research, a larger sample should be used to ensure that the research results are conducted with higher reliability.

Second, this study created a research model by selecting only a few important variables used in consumer distribution marketing, focusing on perceived convenience as an independent variable. Against this backdrop, this study was derived from the simplicity of the model, using only statistical methods centered on frequency analysis and multiple regression analysis to derive research results.

Third, as already mentioned, this study applied the relationships among perceived value, satisfaction, trust, attitude, and loyalty of delivery apps to create a research model, but there are various variables that are expected to effectively explain the relationship factors affecting loyalty to delivery apps. Therefore, at a time when the fierce competition among FDAs is intensifying, it is a point in time where diversified research on the influence relationship that affects the growth and continuous use of delivery apps is needed. Especially, this study was limited to customer perceived value factors, but there is a need to consider opposing variables such as perceived risk factors in future studies.

Fourth, this study conducted research on delivery apps as private distribution companies in the commercial O2O platform service market. However, in order to rationally understand the characteristics and future direction of delivery

apps in the Korean distribution market, it is necessary to conduct a study that performs an analysis of similar influence relationships for 'public delivery apps, which are delivery apps operated by local governments and private delivery app companies in cooperation to support small business owners, which are different from existing prior studies.

Fifth, although the FDA market has developed rapidly, the competitive situation among the delivery app-related companies is also accelerating. Through a review of existing literature, we were able to confirm several studies on customer purchasing behavior related to delivery apps; however, studies on topics related to factors influencing customer churn or corporate social responsibility activities in the unstable competitive situation of delivery apps were found to be lacking. Therefore, future research should not only focus on various empirical studies of delivery apps but also conduct qualitative research as a complementary research method.

## Declarations

### Ethics Approval and Consent to Participate

Not applicable. This study did not involve human participants or animal subjects.

### Competing Interests / Conflicts of Interest

The authors declare that they have no competing interests.

### Funding

This research received no external funding.

### Author Contributions

[Choi, H. W.]: Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing – original draft, Visualization.

[Lee, H. J.]: Conceptualization, Methodology, Resources, Investigation, Writing – review & editing, Supervision, Project administration.

All authors have read and approved the final manuscript.

### Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

### Declaration of Generative AI and AI-assisted Technologies in the Writing Process

During the preparation of this work, the authors used ChatGPT-4 (OpenAI) and AskUp (Upstage) to improve the clarity and readability of the manuscript. All AI-generated content was reviewed, revised, and verified by the authors. The authors take full responsibility for the final content of the publication.

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