Consumers' Choice for Fresh Food at Online Shopping in the Time of Covid19*

Su-Han LEE[1], Min-Kyu KWAK[2], Seong-Soo CHA[3]

Abstract

Purpose: This study aims at investigating consumers' choice in online food purchasing behavior and the impact on repurchase for fresh food delivery which has recently shown rapid growth in Korea. The study focuses on the user experience factors affecting satisfaction and intention to continuously use the online food market. **Research design, data and methodology:** The survey was conducted by 309 people who had purchased fresh food online, and the analysis was conducted using SPSS and AMOS. Structural Equation Modeling was used for the analysis for the verification of hypotheses. The factors that consumers value when ordering fresh food delivery services were defined as system quality, service quality, commodity quality, brand characteristics, and economics from the preceding study and the relationship between satisfaction and willingness to repurchase was verified. **Results:** When consumers purchase fresh food online, system quality, product quality, brand characteristics, and economics have had a significant impact on satisfaction. Meanwhile, of the five optional attributes of consumers, only economic efficiency has been verified to have a statistically significant impact on repurchase intentions. **Conclusions:** The results of the study suggested factors that consumers consider important when ordering fresh food online, providing basic data for companies to develop related strategies.

Keywords : Fresh Food, Online Shopping, Delivery, COVID19.

JEL Classification Code : D11, D12, L66, L81

1. Introduction

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1 First Author, Professor, Dept. of Food Science & Service, College of Bio-Convergence, Eulji University. Tel: +82-31-740-7196, Email: shlee@eulji.ac.kr
2 Co-First Author, Assistant Professor, Dept. of Food and Nutrition, College of Bio-Convergence, Eulji University, Tel: +82-31-740-7418, E-mail: genie6@eulji.ac.kr
3 Corresponding Author, Assistan t Professor, Dept. of Food Science & Service, College of Bio-Convergence, Eulji University, Tel: +82-31-740-7274, Email: sscha@eulji.ac.kr
These authors contributed equally to this work

The domestic grocery market is rapidly developing due to the recent changes in consumer lifestyles and the recent COVID19. Meanwhile, grocery purchases have relied on offline hypermarkets because of the freshness of products and the characteristics of foods that are judged by looking directly at the quality. However, due to the reduction in delivery time and the development of packaging technology, freshness can be maintained, resulting in an increase in online food transaction volume of 42.6% year-on-year in 2018. The online grocery market, which has been distributed mainly for bottled water or processed foods, has gradually expanded thanks to the development of freshness maintenance technology, and the purchase of meat and vegetables is also increasing (Kim & Kim, 2019).

In particular, the online food market, which features a non-face-to-face purchase method, satisfies the consumer's desire to safely purchase groceries out of the Covid19 risk. The online food distribution market is expanding to various types of platforms. Therefore, in this study, the online food market is defined as an online grocery market that sells fresh and processed foods based on mobile applications. Currently, the race in grocery delivery starts at the break of dawn in South Korea, with SSG.com, an online marketplace under Korean retail major Shinsegae Group, being the latest to join the early-arrival phenomenon sweeping the niche fresh food market.

As a result, almost all domestic distributors are investing in the fresh food market, and competition among industries for dominance is becoming fierce. However, in the online market including mobile applications, it is difficult for any specific company to take a competitive advantage because it is a very easy environment for consumers to compare product prices, discounts, and information search. In order to survive in the online food market, which must be more competitive than the offline market, it is most important to establish the brand's unique identity by accurately grasping customer needs.

So far, research on food distribution through online platforms has mainly focused on the relationship between service characteristics, trust, user experience factors, and satisfaction of the food delivery platform (Song, Jeon, & Jeon, 2017). Most online food market research is limited to analyzing factors affecting the user's purchasing decision, such as research on priorities that affect the purchase decision of customers who purchase fresh food in the open market. However, research in terms of user experience is required to secure the position of the online food market in the grocery market and establish itself as a sustainable growth sector. Therefore, this study focuses on the user experience factors affecting satisfaction and intention to continuously use the online food market, which is a logistics system. In addition, it intends to provide basic data to companies so that the online fresh food delivery market can increase customer loyalty and develop a method to attract non-users.

2. Theoretical Background

2.1. User experience factors

User experience factors include all direct and indirect experiences that users can gain while using products and services (McNamara & Kirakowski, 2006). Kim and Sullivan (1998) suggested the brand expansion method of

new distribution companies by deriving user experience factors of the online shopping market. Based on the previous research, the research was conducted by setting the leading factors (system quality, service quality, product quality, brand characteristics, economics) that affect the satisfaction and repurchase intention of online food market users.

Cha and Seo (2020) studied the impact of the selectivity importance of food delivery applications on satisfaction and loyalty and demonstrated that the optional attributes have statistically significant effects on satisfaction and loyalty.

2.2.1. Quality of system

System quality means a service dimension that is convenient and safe for users to use and has technical stability. Due to the nature of the online food market based on mobile apps, the system quality of the application acts as an important factor in satisfaction and continuous use. The effect of system elements such as the ease of use of the application and the convenience of the payment system on satisfaction and sustained intention has been proven in research on delivery apps (Song, Jeon, & Jeon, 2017). Contextual usability, which is available to anyone anytime, anywhere, can also be seen as a quality characteristic of the system. Seo, Park, and Shin (2009) said the accessibility of any online shopping mall available at any time positively affects repurchase intentions and the quality of the system, which has the freedom of use as a sub-factor, affects user satisfaction. Based on these prior studies, the following assumptions can be presented.

H1-1: Quality of the system will have a positive effect on satisfaction in online fresh food delivery.
H1-2: Quality of the system will have a positive effect on repurchase intention in online fresh food delivery.

2.2.2. Quality of service

When purchasing goods and services online, the customer becomes aware of the risks of not experiencing the purchased goods directly (Lee, 2016). Seller provides various forms of service, such as product description, post-purchase evaluation, and delivery timeliness, to reduce the risk perceived by the customer, and this interaction to meet the customer's needs is defined as the quality of service. Gu, Bao, and Lee (2019) revealed through a study that sufficient information on products and product descriptions when using the restaurant O2O delivery app affect customer satisfaction. Lee (2016) said that when purchasing fresh food online, customers do not experience it directly, so they rely heavily on reviews such as other customers' purchase experiences, so if there are more user reviews, they are more satisfied. A study of delivery apps by Song, Jeon, and Jeon

(2017) also shows that other users' reviews have defined consumer satisfaction through reliability, while a study by Jung (2012) shows that reviews of use replace objective evaluation and affect consumers' decision to repurchase. A study by Kim and Chun (2004) found that timely delivery, such as when goods or services arrive on a scheduled date from an Internet shopping mall, when goods or services are delivered, and when delivery progress can be checked, had a significant impact on shopping satisfaction. A study by Pang and Lee (2019). Gu, Bao, and Lee (2019) on consumers using overseas direct purchase sites has also proven that delivery services such as delivery accuracy have a defining impact on customer satisfaction and repurchase intentions. Based on these prior studies, the following assumptions can be suggested.

H2-1: Quality of service will have a positive effect on satisfaction in online fresh food delivery.
H2-2: Quality of service will have a positive effect on repurchase intention in online fresh food delivery.

2.2.3. Quality of goods

As the online food market has grown in size and customers' options have diversified, consumers no longer decide to buy at only low prices (Mutum, 2014). Companies are focusing on the quality of their products, which means various and safe products, and strengthening their differentiation from other companies by using non-price strategies. Lim (2006) said that the quality of the products in the bakery significantly affects customer satisfaction and intention to revisit and contributes to increasing the customer's purchasing power. Hwang (2013) also derived product quality as a factor of satisfaction for customers using Jeju agricultural products online shopping mall.

The study by Mutum (2014), which conducted a study of PB product buyers, also shows that the quality level of the product affects the repurchase. The quality of the product is assumed to differ from the perspective of the viewer by the user-centered approach, and this concept of quality is consistent with the marketing concept of achieving the entity's goals through consumer satisfaction and serves as an important factor in the entity's business performance (Lim, 2006). Seo and Kim (2009) analyzed the factors affecting consumers' satisfaction with purchasing agricultural products online, and also found that product diversity significantly affects customer satisfaction by analyzing the factors for those who have purchased products online. Lee (2006) said that having a variety of products saves time and improves consumer satisfaction. A study by Seo, Park, and Shin (2009) also showed that the customer's positive assessment of product placement among the e-store attributes affected their intention to repurchase. Due to the trend of preferring healthy foods, more and more companies

are emphasizing the safety of products such as eco-friendly agricultural products and locally produced products as characteristics of their products. A study by Gwon, Park, and Kim (2015) revealed that the safety of agricultural products is involved in satisfaction through the food quality and that the higher the satisfaction of the products, the higher the repurchase rate. San Yang's (2015) study also said that the safety of eco-friendly organic foods affects continuous purchases. The safety of products has been proven in other areas such as cosmetics brands (Kim, Jeon, & Lin, 2016) and instant food (Ryu, 2013). Based on these prior studies, the following assumptions can be proposed.

H3-1: Quality of the goods will have a positive effect on satisfaction in online fresh food delivery.
H3-2: Quality of the goods will have a positive effect on repurchase intention in online fresh food delivery.

2.2.4. Brand characteristic

When consumers decide to purchase goods and services online, their unique characteristics act as a basis for brand choice along with the quality of the products (Choi & Jun, 2007). In the market, the unique characteristics of a brand can be a differentiating means, thereby allowing users to experience the characteristics of that brand together when purchasing goods and services. Thus, in this study, factors representing brand identity, such as brand image, PB product sales, and eco-friendly management operation, were defined as brand characteristics and research was conducted. According to a study by Lim (2006), the overall image of the bakery brand has a positive impact on customer satisfaction, and a study by Choi and Jun (2007) also shows that brand images such as restaurant reliability, scale and friendliness have a defining effect on customer satisfaction and repurchase intentions. The study by Wang and Kang (2011) revealed that the product properties and perceived quality of PB products, which are self-branded products developed by large retailers, affected customer satisfaction. Kang and Kim (2004) found in their study that among the individual factors in the brand image, eco-friendliness affects customer loyalty generated by customer satisfaction, which motivates customers to buy again. Based on these prior studies, the following assumptions can be presented.

H4-1: Brand characteristics will have a positive effect on satisfaction in online fresh food delivery.
H4-2: Brand characteristics will have a positive effect on repurchase intention in online fresh food delivery.

2.2.5. Economic efficiency

In online open markets, economics can be defined at reasonable and low prices, ultimately meaning monetary savings. Cha and Lee (2018) stated in their social commerce

that price factors greatly affect the attraction of consumers and the achievement of final shopping objectives and that low prices and regular discount events have a definition of satisfaction that includes consumers' intention to repurchase. A study by Lee and Lin (2005) found that online shopping mall customer interaction factors have a positive and strong impact on customer confidence. Among them, the price at the product search and purchase stage affected the repurchase intention. In this regard, establishing a reasonable price policy is a prerequisite for attracting consumers.

In general, the company utilizes "compensation for oral activities" using membership rating hikes, coupons and reserves as a price policy to induce consumers online. Financial benefits from these pricing policies affect consumer satisfaction and willingness to repurchase (Cha & Lee, 2020). In addition, financial benefits defined as economic benefits affect consumers' intention to continue using O2O meal delivery platform services through trust with suppliers (dining companies) (Cha & Shin, 2019). Therefore, it can be seen that price policies can be used to secure loyal customers. Therefore, the following assumptions can be suggested.

H5-1: Economic efficiency will have a positive effect on satisfaction in online fresh food delivery.

H5-2: Economic efficiency will have a positive effect on repurchase intention in online fresh food delivery.

2.3. Satisfaction and intent to repurchase

Customer experience using products or services affects the organization's performance in a variety of ways, including satisfaction, repurchase, and loyalty. In particular, research has shown that customer experience affects satisfaction in a variety of areas, including retail, service and online. Customer satisfaction can be defined as the customer's emotional state (Anderson, Fornell, & Lehmann, 1994) from an overall assessment of the product or service, or as a cognitive assessment of perceived quality and emotional aspects (Ha & Jang, 2010) caused by consumption experience. Customer satisfaction with product or service quality plays an important role in future consumer behavior, i.e., repeat purchase decisions (Jin & Lee, 2012), not only to prevent customers escaping but also to enhance favorable oral activities to others to create new customers. In this study, based on the previous researches, the hypotheses are provided as follows.

H6: Satisfaction will have a positive effect on repurchase intention in online fresh food delivery.
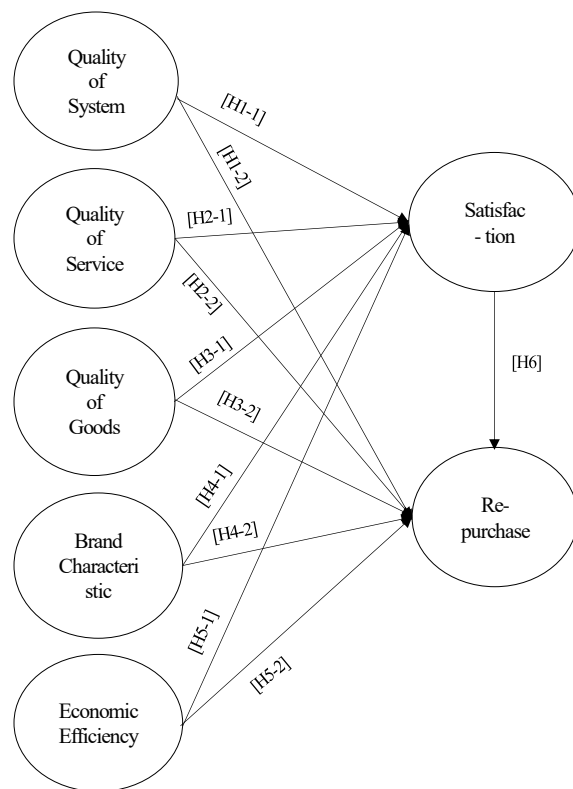

Figure 1: Research model

3. Research Method

3.1. Sampling and Survey Method

The survey items for the study have been modified and supplemented to fit the research from what existing researchers have used. The literature of prior research was reviewed and corrected to select and refine survey items. The survey was conducted from March 2020 to May 2020 via SNS, E-mail, etc. A total of 350 questionnaires were collected, and a total of 309 were used in empirical analysis after excluding 41 unfaithful or incomplete ones. This study was conducted using the following methods of analysis. In order to verify the convergent and discriminant validity of the number of measurement variables, exploratory factor analysis was conducted using SPSS, and the non-conforming elements were removed and confirmed factor analysis was conducted using Amos 20.0 again. Next, structural equation modelling was used as a statistical method for hypothesis testing in this study.

Table 1: Demographic Characteristics of Respondents

Variables	Measurement	No.of sample(per)	Percentage (%)
Gender	Male	101	32.7%
	Female	208	67.3%
Age	10's	22	7.2%
	20's	131	42.4%
	30's	90	29.1%
	Over 40's	66	21.3%
Income (Thousand USD)	< 500	19	6.2%
	500-1000	34	11.0%
	1001-3000	115	37.1%
	3001-5000	114	37.0%
	> 5000	27	8.7%
Occupancy	Student	118	38.2%
	Professional	49	15.9%
	Office worker	66	21.4%
	Housewife	47	15.2%
	Own Business	26	8.5%
	Mics.	2	0.8%
Food Expenditure per month (thousand USD)	< 50	6	2.1%
	50-100	40	12.8%
	101-300	36	11.7%
	301-500	147	47.5%
	> 500	80	25.9%

4. Empirical Analysis

4.1. Measurement Item Evaluation

First, a reliability and validity analysis was conducted on items measured in multiple items between the concepts of composition (Churchill, 1979). An exploratory factor analysis was conducted for reliability and validity analysis and the Cronbach's coefficient was reviewed. The factor extraction method was based on the principal component analysis, and the factor was extracted based on the eigenvalue of 1.

The factor rotation method applied VARIMAX. Cronbach's Alpha coefficient is all 0.7 or higher (Nunnally,

1967). Table 2, 3 show the result of exploratory factor analysis.

Table 2: Exploratory Factor Analysis

	Variables				
	SERV	GOOD	SYST	BRAN	ECON
SERV 1	.917				
SERV 2	.916				
SERV 3	.857				
GOOD1		.901			
GOOD2		.895			
GOOD3		.823			
SYST1			.890		
SYST2			.888		
SYST3			.857		
BRAN1				.871	
BRAN2				.860	
BRAN3				.816	
ECON1					.890
ECON2					.828
Variance (%): Total variance 84.05%	18.9	18.2	17.9	16.9	11.9
Cronbach's Alpha	.931	.912	.894	.864	.806

SERV = Quality of service, GOOD = Quality of good, SYST = Quality of system, BRND = Brand characteristics, ECON = Economic efficiency

Table 3: Exploratory Factor Analysis

	Variables	
	REPU	SATI
REPU1	.897	
REPU2	.877	
REPU3	.794	
SATI1		.884
SATI2		.847
SATI3		.829
Variance (%): Total variance 86.5%	43.6	42.9
Cronbach's Alpha	.917	.920

REPU = Repurchase, SATI = Satisfaction

The exploratory factor analysis confirmed some degree of discrimination and convergent validity and confirmed factor analysis was conducted using Amos 20.0 for statistical verification of validity.

Although the Chi-square value for the measurement model is significant (p < 0.001), it has been determined that it is reasonable to assess the suitability of the model by considering GFI, NFI, CFI, etc., because it is sensitive to model complexity and sample size, as shown in Table 4 (Bearden, Sharma and Teel 1982; Bagozzi and Yi 1988).

Overall model adequacy was assessed to be satisfactory with Chi-Square = 271.552 (df = 149), CMIN/DF =1.822, GFI = 0.920, NFI=0.95, CFI=0.977, RFI=0.936, TLI=0.97, IFI= 0.977, RMSEA=0.052 (p <0.001). The CR (composite reliability) and AVE (average variable estimated) meet the criteria set out by Bagozi and Yi (1988) (CR 0.6 or higher, AVE 0.5 or higher), and both loadings are statistically significant. Table 4 is a representation of the results of confirmatory factor analysis.

Table 4: Confirmatory Factor Analysis Result

Variables	Measure	Standardized Regression Coefficient	CR	AVE
Quality of system	SYST1	0.885	0.897	0.744
	SYST2	0.887		
	SYST3	0.813		
Quality of service	SERV1	0.917	0.933	0.824
	SERV2	0.988		
	SERV3	0.810		
Quality of goods	GOOD1	0.769	0.918	0.789
	GOOD2	0.927		
	GOOD3	0.958		
Brand characteristics	BRAN1	0.665	0.871	0.696
	BRAN2	0.899		
	BRAN3	0.915		
Economic efficiency	EFFIC1	0.901	0.813	0.687
	EFFIC2	0.750		
Satisfactio n	SATI1	0.898	0.921	0.795
	SATI2	0.870		
	SATI3	0.907		
Repurcha se	REPU1	0.964	0.928	0.814
	REPU2	0.967		
	REPU3	0.760		

Note1: SERV = Quality of service, GOOD = Quality of good, SYST = Quality of system, BRND = Brand characteristics, ECON = Economic efficiency, REPU = Repurchase, SATI = Satisfaction
Note2: Chi-Square = 271.552 (df = 149), CMIN/DF =1.822, GFI = 0.920, NFI=0.95, CFI=0.977, RFI=0.936, TLI=0.97, IFI= 0.977, RMSEA=0.052 (p <0.001)

The square root of the average variance extracted (AVE) was used to verify the discriminant validity between each factor with proven single dimensionality. As shown in the results, the value of AVE square root was greater than 0,5 and was both greater than the value of the correlation outside the diagonal line in the row and column involved. Therefore, it can be said that the corresponding differences in their measurement results between different constructions have been validated (Table 5).

Table 5: Discriminant Validity through Correlation Analysis

	SATI	SYST	SER	BRA	EFFI	GOO	REP
SATI	0.892						
SYST	0.660	0.862					
SERV	0.333	0.097	0.908				
BRAN	0.497	0.444	0.255	0.834			
EFFIC	0.565	0.457	0.260	0.490	0.829		
GOOD	0.496	0.237	0.528	0.258	0.374	0.889	
REPU	0.746	0.521	0.221	0.468	0.561	0.337	0.902

Note1: SERV = Quality of service, GOOD = Quality of good, SYST = Quality of system, BRND = Brand characteristics, ECON = Economic efficiency, REPU = Repurchase, SATI = Satisfaction
Note2: The values presented on the diagonal line are the square root of AVE.

4.2. The result of SEM

Verification of the research theory was made using Amos 20.0. Chi-square = 271.552 (df=149, p < 0.001), GFI=0.92, NFI=0.95, CFI=0.977, RFI=0.936 and RMSEA=0.052 for the study models, indicating satisfactory levels. Table 6 shows the hypothesis test results for the effects of hypothesis 1 through hypothesis 6. Hypothesis verification of effects showed that Quality of system, Quality of goods, Brand characteristics, and Economic efficiency had significant effects on satisfaction, meanwhile the quality of service had no significant impact on satisfaction. In addition, only economic efficiency was found to have a statistically significant effect on the path to repurchase.

This shows that it is the system quality, product quality, brand characteristics, and economic efficiency that play a major role in consumer satisfaction in online fresh food delivery, while the only significant route coefficient for repurchase intention was economic efficiency. This shows that in online food delivery, consumers are satisfied with system quality, quality of goods, brand characteristics and economics, but the intention of the repurchase is determined only by economics. The above verification results are expressed in figure 2. as follows.

Table 6: Results of Research Hypothesis

| hypothesis	Path	Standardized regression coefficient	*t* - value	Results
H1-1	Quality of system → Satisfaction	.462	8.083***	Accept
H2-1	Quality of service→ Satisfaction	.063	1.602	Reject
H3-1	Quality of goods→ Satisfaction	.218	4.612***	Accept
H4-1	Brand characteristics → Satisfaction	.108	2.221*	Accept
H5-1	Economic efficiency→ Satisfaction	.169	3.111**	Accept
H1-2	Quality of system → Repurchase	.011	.159	Reject
H2-	Quality of system → Repurchase	.030	.692	Reject
H3-2	Quality of goods → Repurchase	.053	.968	Reject
H4-2	Brand characteristics → Repurchase	.085	1.568	Reject
H5-2	Economic efficiency→ Repurchase	.195	3.138**	Accept
H6	Satisfaction→ Repurchase	.727	8.46***	Accept

p < 0.05 *, *p* < 0.01 **, *p* < 0.001 ***
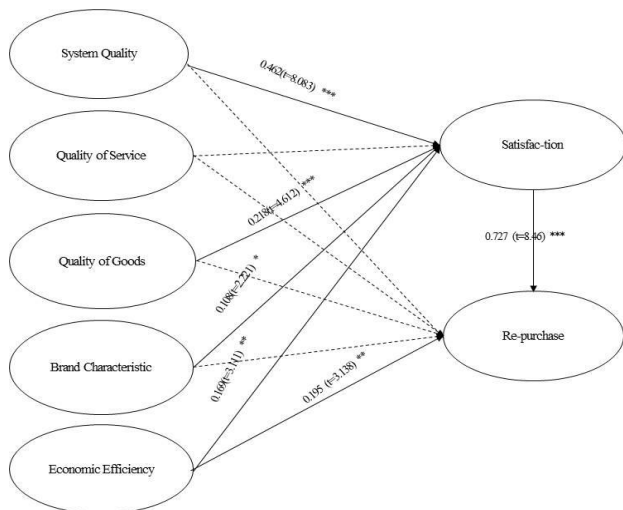
Figure 2: Results of the Research model

5. Conclusion and Implications

The study looked at the consumer's selective nature of online food delivery, which has recently become popular among consumers due to the Cobid19.

First, five of the consumer choice attributes of delivery food, especially fresh food, were reviewed from the survey of existing studies. In addition, the impact of such options on repurchase intentions was also considered.

Second, the causal relationship of satisfaction to the intention of repurchase was also analyzed.

The results showed that the quality of the system, the quality of the product, the characteristics of the brand, and the economic efficiency had a significant positive effect on the satisfaction. However, the effect of service quality on satisfaction was not shown to be statistically significant.

On the other hand, the path coefficient for which satisfaction leads to the intention of repurchase was shown to be statistically significant.

However, the factors that directly affect consumers' intention to repurchase were different from their satisfaction.

Of the five optional attributes of consumers, only economic efficiency has been verified to have a statistically significant impact on repurchase intentions.

Even before the Covid19 became popular in Korea and around the world, consumers had chosen to shop non-face-to-face online. However, the spread of the virus is now entering a global pandemic, and consumer fears are at an extreme level.

Therefore, non-face-to-face online purchases have been activated even for fresh foods which consumers have directly seen, touched before purchasing. Recently, that is why companies are investing heavily in fresh food delivery systems and products to meet the needs of consumers.

Thus, the implications of this study will enable companies to use marketing and product strategies as a basis for establishing strategies.

A growing number of people are discovering the importance of family time these days, and the fresh food delivery companies believe the service can contribute to that. The companies will continue to upgrade the service so customers can shop more conveniently across the country. With many delivery companies making strides in their delivery services, customers' transition to online shopping will be faster, especially after the COVID-19 pandemic. The same-day delivery service is an innovation which can change the whole paradigm of shopping. Korea is not seeing panic buying during the COVID-19 pandemic, and this is largely attributable to the country's advanced e-commerce industry.

This study currently provides beneficial implications for online food delivery by consumers under the Covid19 context. However, it has some limitations as follows.

First, the consumer selection attributes of the delivered food are limited to system quality, commodity quality, service quality, brand characteristics and economic efficiency, but there may be other factors such as discounts and events.

Second, the fresh food delivery service is a relatively early-stage business recently introduced by the company.

As a result, many consumers have not yet had access to the service, so relatively large samples were not available in the survey. Subsequent studies are needed to complement the limitations of the above-mentioned.

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