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Study on the improvement of online food information services

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Abstract Recently, food delivery apps are seeing rapid growth into a market worth 1 trillion won under a simple but unique business model of connecting nearby restaurants with consumers via smartphone. Though basic similarities with social commerce exists in aspects such as mail-order sales intermediaries, startups, types of services and market competition structure, food delivery apps resemble social commerce in many ways in that they use excessive marketing to secure market dominance, causing a spike in consumer complaints. If the excessive marketing and increase in customer complaints are not rectified, the food delivery app could also see rapid decline as it gradually grows distant from consumers, just like social commerce.

Accordingly, this study will identify the factors consumers recognize as important for continuous use vis-a-vis social commerce and food delivery apps to perform an empirical analysis on what areas need improvement. After deriving the four upper factors of product, information system and service along with eight sub-factors by referring to existing literature, the areas with opportunity for improvement were derived through satisfaction level and relative importance evaluation. The results of this study present a strategic direction for maintaining customers of social commerce and food delivery apps.

Key Words Social Commerce, Food Delivery App, Food Information, AHP, IPA

1 Introduction

In 2010, the distribution industry expanded the food market to allow the sale of cabbage, radish and apples through social commerce, as the online mart has received attention as place to be carrying food items in the future. Recently, a mobile platform has been set up to connect food delivery companies with customers by highlighting the advantage of food delivery apps, and the new mobile business model is seeing its market scale approaching a value of 1 trillion won. The apps are being used to attract customers through aggressive marketing and promptness/convenience, but face limits in securing customer loyalty and inducing continuous purchases because the business model fundamentally runs from the simple aspect of connecting restaurants to nearby consumers.

Meanwhile, although such apps have seen great success by increasing publicity and inducing profits by reconstructing the mobile platform of existing online shopping malls using social networking services, the apps' status is gradually falling considering the fewer number of participating companies and market scale. While social commerce companies have advanced to direct sales to raise turnovers under these circumstances, this has caused distrust in the traded quality of social commerce as well as consumer confusion toward the identity of social commerce and legal responsibility. Ultimately, the Korea Fair Trade Commission has recognized the legal status of a social commerce company as a mail-order sales company,

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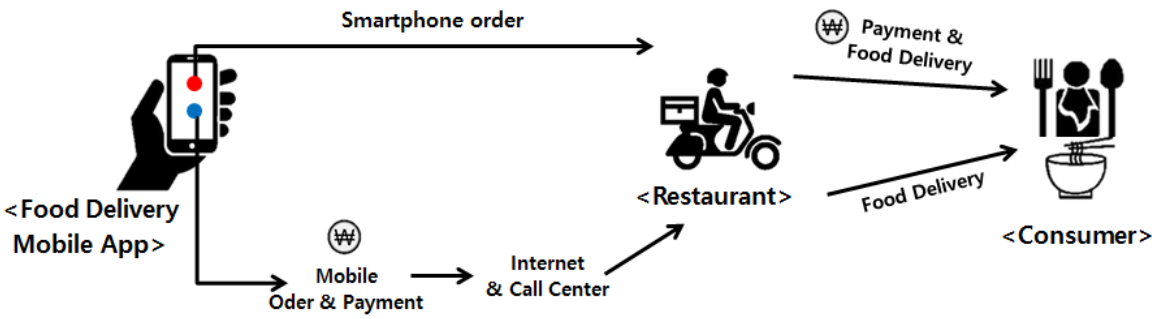

Figure 1 Service Structure of Food Delivery Apps

which is not a mail-order sales intermediary, to reach the point of imposing rights and duties.

The food delivery app is showing a development process similar to that in social commerce in various aspects. It extends service to perform up to direct sales through the app via a mobile prepayment system while playing the role of intermediary between the product sales company and consumers at the same time. But consumers are snubbing the service because of negative side effects such as insolvent companies, neglect in providing information and differences in service quality due to insufficient laws governing food delivery apps. Moreover, fierce competition causing excessive marketing, as was the case in social commerce in the past, could cause dissatisfaction and distrust toward the app service in the eyes of participating restaurants as well as consumers.

Accordingly, this study will explore the success factors behind online intermediary service based on existing studies and what the most important factors are vis-a-vis consumers. It will also discuss specific plans for the sound and continuous growth of social commerce and the delivery app market by analyzing vulnerable parts.

2 Online Service for Food Information

2.1 Service Trend

Recently, online services for food information are spreading quickly to all age groups due to the proliferation of smartphones. Especially, social commerce and delivery apps are getting the spotlight as online providers of food data.

First of all, social commerce is "the method of providing products at a great bargain in case a certain number of buyers or more are gathered as a type of e-commerce performed using SNS (social networking services)." In case of social commerce, the success of Groupon of the U.S. in 2008 fueled the rise from 2010 of Ticket Monster, Coupang and Wemakeprice in Korea. But while damage to consumers also increased along with the service expansion, the matter of liability remains unclear as the concerned party of transaction is not clearly defined, creating a problem. Accordingly, the Korea Fair Trade Commission has ruled that a social commerce company is a mail-order sales company per the Act on Consumer Protection in Electronic Commerce (E-commerce Act) to clarify the responsibilities and duties while giving a corrective order at the same time on violations of e-commerce in five major social commerce companies -- Ticket Monster, Wemakeprice, Coupang, Mzkor and Hello DC -- in May 2011.

On the other hand, delivery apps are rapidly expanding services as a new e-commerce model. The domestic market for food delivery is worth an estimated 20 trillion won, a huge leap from 600 billion won in 2001 due to rising incomes, living standards and the number of single households. Accordingly, mobile apps allowing direct food orders and payment via searches for restaurants that deliver nearby are rapidly growing. The country's food delivery market is worth an estimated 10 trillion won, and orders generated through delivery apps take up about 10 percent, or 1 trillion won. The first food delivery app was Baedaltong, which was released by the app developer Stonykids in April 2010. After that, Woowa Brothers jumped into the market in June 2010 and Yogiyo followed in August 2012. The three companies above control 90 percent of the market for food delivery apps. Though such apps had stopped at showing people by taking photograph of the pamphlet at the early stage, they have developed toward sending orders by phone or mobile device to the corresponding store if a consumer orders by phone, as app service companies use an independent call center. After Yogiyo started easy payment service in 2012, food delivery apps adopted an instant payment system, while most others operate easy mobile payment and phone orders at the same time.

2.2 Relationship between Social Commerce & Delivery Apps

Social commerce and delivery apps show similar appearance in trading structure, profit and market types and payment status. Despite this, they have differences in legal status, responsibilities and duties. In other words, the question of fairness in social commerce is gaining attention because of lack of proper means for legal protection given the rapid development and service extension of delivery apps. The similarities and differences between social commerce and delivery app are shown in <Table 1>.

In case of food delivery apps, the companies are neglecting to provide food information by naming themselves mail-order intermediaries per the E-commerce Act through the user agreement, because a clear legal status has not been established on the type of the newly appeared e-trade.

As shown in <Table 2> above, the clause on remedy followed by food defect or compensation due to physical damage is not specifically prepared in most delivery app user agreements, and unforeseen damage to consumers can be expected. And while the Act on Origin Labeling of

Table 1 Comparison of Social Commerce & Delivery Apps

Classification		Social Commerce	Delivery App
Similarities	Trade Structure	Consigned Sales	Consigned Sales
	Income Source	Commission/Advertisement Fees	Commission/Advertising Fees
	Market Form	Monopoly by Big 3 (Ticket Monster, Wemakeprice & Coupang)	Monopoly by Big 3 (Woowa Brothers, Yogiyo & Baedaltong)
	Direct Payment Status	Online/mobile payment possible	Online/mobile payment possible
Differences	Operational Method (Strength)	Selling discount coupons of restaurants that deliver	Providing information on nearby restaurants that deliver (Convenient order & payment)
	Classification per E-commerce Act (Legal Status)	mail-order sales company	mail-order sales intermediary
	Duties per E-commerce Act	Duty to report mail-order sales, indicate/notify information, cooperate with withdrawal of subscription, subscribe to consumer compensation insurance	Duty of notification and providing information by a mail-order sales intermediary, mail-order sales intermediary immunity regulations

Table 2 User Agreement & Place of Origin Indication Status Related to Food Information

Details	Study Results						
	Menu Box	Baedal 365	Woowa Brothers	Baedal 25	Baedal 114	Yogiyo	Baedaltong
Food defect remedy clause	None	Refund/exchange for spoilage or damage	None	None	None	Refund/exchange for spoilage or damage	Refund/exchange for spoilage or damage
Compensation of physical damage due to food defects	None	None	None	None	None	Exists (However, specify existence at affiliated store)	None
Clause on indication of place of origin on delivered food	None	None	None	None	None	None	None
Conditions of indicating place of origin	90% or more not indicated	90% or more not indicated	90% or more not indicated	90% or more not indicated	90% or more not indicated	90% or more not indicated	90% or more not indicated

Agricultural and Fishery Products, Article 5, Paragraph 1, also prescribes that the place of origin on raw ingredients of agricultural and marine products or their processed products must be indicated, a user agreement clause on place of origin labeling of delivered food is absent in most delivery apps, and 90 percent or more have been shown as failing to show place of origin.

2.3 Success Factor of Online Intermediary Service

Studies on the success factors behind e-commerce have been done on marketing and information systems. In studies on factors determining whether users will revisit an Internet portal site, reliability, promptness of information and interaction are considered important, while website quality is influential over repurchase intentions in the open market. In studies on the repurchase intentions of fashion product buyers through social commerce and service quality factors influencing repurchase intentions, the components of service quality -- reliability, responsiveness, sympathy and possibility of communication -- are presented as important.

This study summarized the success factors behind intermediary services as shown in <Table 3> based on the e-commerce success factors presented in existing studies.

The important factors for continuing to use social commerce and delivery apps have been classified as product, information (order/refund), system and service (Q&A). In studies on continuous usage of Internet shopping sites, classifications were made in product, site and service aspects while price, quality and diversity were used as important factors, especially in the case of products. The price factor, however, was excluded from the analysis in the process of research since it is difficult to know if price has a crucial effect on continuous use intentions from merely combining and providing the existing delivery food prices without discount in the case of delivery apps.

3. Empirical Analysis

3.1 Method of Research

In this study, AHP (analytic hierarchy process) and IPA (importance performance analysis) techniques were used to measure the effects of social commerce and the quality characteristics of delivery apps on continuous usage intentions.

AHP is a decision-making method used as an evaluation standard in uncertain situations. Using AHP, a hierarchy structure is made under a relationship called ultimate goal, evaluation criteria and alternative on the factors behind problems. And importance is calculated by performing paired comparison of the evaluation criteria, evaluation value is calculated by performing paired comparison between the alternatives in each evaluation criterion, and the overall evaluation value of each alternative is calculated. AHP is a problem-solving type of decision-making method where subjective judgment and a system-related approach have been merged well for analyzing problems. It is used for various purposes in economy, management, policy decisions and project selection, as it can clearly explain uncertain situations and be simply used by a decision maker.

IPA (importance performance analysis) is used to derive the field subject to improvement by comparing the importance of individual factors and satisfaction level, but this analysis method is for measuring user satisfaction level toward products and services. It is an evaluation technique to compare and analyze relative importance and satisfaction level of each attribute, as users study the importance of necessary attributes prior to use and evaluate

Table 3 Success Factors behind Intermediary Services

Level 1	Level 2	Previous Studies
Factor	Factor	
Product	Quality	Lee Seon Ro & Jung Yeon Oh (2008)
	Diversity	
Information	Accuracy	Park Jong Cheon (2011)
	Adequacy	
System	Stability	Seo Hyeon Seok, Ju & Hyeong Joon (2011)
	Convenience	
Service	Promptness	Lee Min Ji, Jung, Seong Ji & Jeon Yang Jin (2012) Kim Guk Seon & Lee Jong Ho (2012)
	Friendliness	

the performance (satisfaction level) on their own.

IPA is a useful analysis technique for practical workers with limits on cost and time because results can be derived quickly and easily using a matrix by simply calculating the mean value of an evaluation attribute, even without using statistical techniques such as advanced software, multi-dimensional scaling or discriminant or factor analysis.

3.2 Research Data

The main purpose of this study is to analyze what effect the quality characteristics of social commerce and delivery apps have on continuous usage intentions. As a result of performing online surveys June 1-15, 2015, with Google Docs to analyze this, out of 140 questionnaires, 76 on social commerce and 64 in delivery apps received responses. The 125 questionnaires excluding 15 whose respondents replied insincerely or had not used social commerce or delivery apps were used in this analysis.

If we examine the general status of the sample, social commerce had 32 males (43.8 percent) and 41 females (56.2 percent) while the delivery apps had 31 males (59.6 percent) and 21 females (40.4 percent). For the age group, 20-somethings showed the highest distribution with 67 people in social commerce (91.8 percent) and 48 in delivery apps (92.3 percent). In frequency of use, once a month took up 47.9 percent of the entire sample with 35 people in social commerce, but once every six months occupied 57.7 percent with 30 people in delivery apps. So the frequency of use of social commerce was relatively higher.(Refer to Table 4)

On asking type and status of social commerce and delivery apps, 45 people (61.6 percent) in social commerce and 44 (84.6 percent) in delivery apps replied “intermediary.” But on who is responsible in case of a defect in the purchased product, those who said both the manufacturer or seller and social commerce/delivery apps numbered 53 (72.6 percent) in social commerce and 33 (63.5 percent) in delivery apps.

3.3 Result of Analysis

3.3.1 Result of AHP Analysis

On continuous usage intentions of social commerce and delivery apps, factors users consider important were mostly identical. First in social commerce, important factors in continuous usage intentions were (in order) product quality, accurate information and product diversity. In use of social commerce, users named product factors as most important and the analysis found product quality had a decisive effect on inducing continuous usage. This shows the need for basic quality of traded articles or food through the corresponding service even if a social commerce site might be an intermediary. This problem is connected to accurate information, the second important factor, and shows the need for raising the repurchase rate of a product by matching user intentions with the product by providing accurate product information. This is because it is difficult to directly examine product quality due to the nature of no face-to-face transaction in social commerce. Also, in connection with the product validation issue in social commerce, since the scale of social commerce or participation level in transactions varies greatly depending on sold coupons or products, this could be understood as consumers demanding accurate information to resolve uncertainty followed by such mass transactions. In case of social commerce, which carries various products, realistic limitations exist in assigning product validation procedures in bulk,

Table 4 Demographic Characteristics of Sample

Classification		Social Commerce (No. of People)	Delivery Apps (No. of People)
Gender	Male	32	31
	Female	41	21
Age Group	Teens	1	2
	20s	67	48
	30s	5	2
Frequency of Use	Once a day	4	0
	Once every 2-3 days	1	2
	Once a week	16	6
	Once a month	35	14
	Once every 6 months	17	30

Table 5 AHP Analysis Results of Social Commerce/Delivery Apps

Level 1			Level 2			Total	
Factor	Social Commerce	Delivery App	Factor	Social Commerce	Delivery App	Social Commerce	Delivery App
Product	0.314	0.317	Quality	0.606	0.612	0.190	0.194
			Diversity	0.394	0.388	0.124	0.123
Info	0.278	0.265	Accuracy	0.600	0.609	0.167	0.161
			Adequacy	0.400	0.391	0.111	0.104
System	0.191	0.202	Stability	0.487	0.454	0.093	0.092
			Convenience	0.513	0.546	0.098	0.110
Service	0.217	0.216	Promptness	0.531	0.573	0.115	0.124
			Friendliness	0.469	0.427	0.102	0.092
Total	1	1	Total			1	1

pointing to the apparent need to assign product validation and information providing obligations through an overall consideration of transaction scale, participation level, technical/realistic possibility of verification or compliance of level validation procedure in social commerce. In other words, considering the results of AHP analysis and the latest consumption trends, the analysis results suggests efforts for quality management of products and providing accurate information to attract long-term customers. (Refer to Table 5)

In case of delivery apps, the factors shown to play an important role in continuous usage intentions are (in order) product quality, accurate information and prompt service. Due to the nature of delivered food, fresh ingredients, circulation period, flavor, scent and quantity are important factors. Such result is also similar with social commerce and could be considered as having a close relationship with the information provided to users. Especially, prompt service is crucial for food delivery apps. The service mentioned here refers to Q&A and is a more important factor since delivery apps have the characteristics of prompt and convenient order. Since information on restaurants near a user is consolidated to be provided based on a location-based service in case of delivery apps, it is difficult to provide detailed product (food) information compared to social commerce. So additional information on delivered food is provided to users via food review information or Q&A active in a delivery app. In other words, review information or Q&A service in the delivery app performs a similar function as providing product information in social commerce, and prompt service is key to continuous usage. This means implications for existing apps that intensively foster phone orders, introduction of mobile easy payment systems and marketing via advertising. Over the long run, the limitations of non face-to-face transactions must be overcome through higher quality of delivered food, providing accurate information to make this quality reliable, and review information and Q&A rather than convenience- related system.

4.3.2 IPA Analysis Results

IPA analysis was performed under relative importance according to the result of AHP analysis and responses to satisfaction level on individual fields in the questionnaire. Since the number of sub-factors used in the AHP analysis was 8, high or low importance was classified based on 0.125, the mean value of total weight. Since the inquiry was performed on a Likert five-point scale for satisfaction level, the median of three points was used as the standard value.

According to the IPA analysis result, importance and satisfaction standards were shown as above average to be included in the “Keep up the good work” area in product

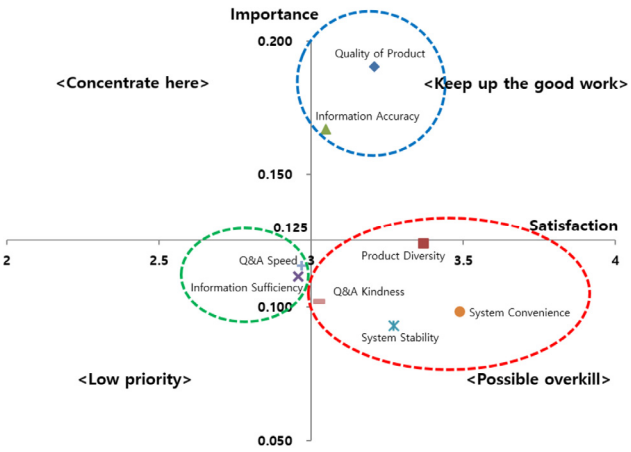

Figure 2 IPA Analysis Results of Social Commerce

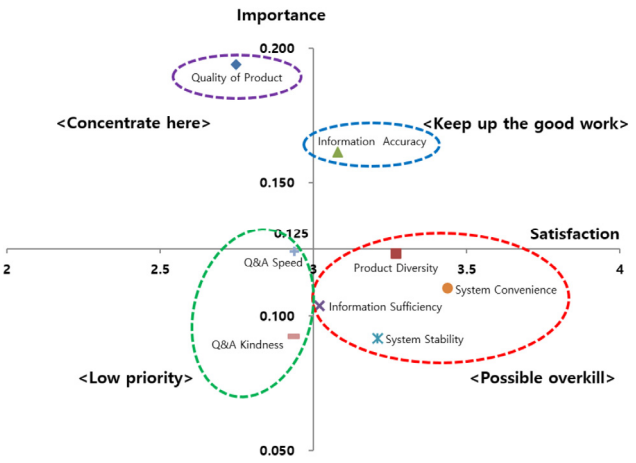

Figure 3 IPA Analysis Results of Delivery Apps

quality and accurate information factors in social commerce. But since the accurate information factor is near the median, improvement in this will be necessary. In case of Q&A speed or information sufficiency, importance and satisfaction were shown as being relatively low. The importance of these two factors are lower than the mean value, but since the relative importance is higher than system factors or Q&A kindness, improvement in this must be considered. Since social commerce is provided by selecting only limited information in general, this suggests the need to communicate with consumers by providing prompt Q&A or other information.(Refer to Figure 2)

In case of delivery apps, both satisfaction and importance were deemed high on information accuracy, but product quality saw low satisfaction compared to importance. Even when quality such as fresh ingredients, circulation period, flavor, scent and quantity were important due to the nature of delivered food, users were not satisfied with this. On the other hand, delivery apps were concentrated on improving stability or convenience of the system for the most part, and pursued diversity of delivered food continuously according to the business strategy of delivery apps. Since this value surpasses importance among users, if concentrated on places to improve service (Q&A), the satisfaction level of users is expected to rise and thus induce continuous usage. (Refer to Figure 3)

5 Conclusion

This study has examined what factors social commerce and delivery apps must concentrated on to steadily grow without falling behind in the fast changing e-commerce market. Especially, the study results can be practically utilized by service companies by comparing and analyzing the important factors of delivery apps, which are rapidly growing based on marketing based on advertising, along with social commerce, which is in a stabilization period, and satisfaction with them.

According to the analysis, many people recognize social commerce companies as directly selling at this time and the Korea Fair Trade Commission has acknowledged social commerce as mail-order sales companies, but such companies were still considered mail-order sales intermediaries in the case of social commerce. The high percentage of coupon sales without manufacturing products directly or selling by making food and commissions being their main source of income apparently have caused people to recognize social service as a mail-order sales intermediary. Worthy of note is user perception of the issue of responsibility separately even when users perceive social commerce and delivery apps as mail-order sales intermediaries. If classified as mail-order sales intermediaries per the E-commerce Act, relatively few responsibilities and duties are assigned compared to mail-order sales companies. In spite of this, users feel social commerce and delivery apps as mail-order sales intermediaries must assume the same responsibility as product (food) manufacturers and sellers. In other words, they feel the responsibilities and duties of a mail-order sales intermediary must be consolidated.

According to the results of AHP and IPA analyses, analyzed results of social commerce and delivery app showed a similar appearance for the most part, but significant differences arose. Both social commerce and delivery apps were greatly influenced by product (quality and diversity) and information factors (accuracy) in continuous usage intentions. Since user satisfaction in product factors is finally accomplished when the information provided and user intention concur, the need for consolidating the duty of providing information is raised. Though prompt service (Q&A) is required here for delivery apps, this seems to be because Q&A and review information have considerable roles in continuous usage to provide food information.

While the importance of and satisfaction with information accuracy were shown as high in the IPA analysis, they still seem excessively concentrated on various aspects of the system and product. Especially in case of delivery apps, users evaluated the importance of product quality as high in the AHP, but satisfaction with product quality was low. This is not simply a problem of only the quality of food made by the delivery food company, but one featuring complex reasons such as difference of quantity or quality from the regular order in case of using delivery apps, providing inaccurate and insufficient information

or manipulation of review information/sales problem.

In brief, the analysis found improvement in the level of information and service is still required, though social commerce and delivery apps could be said to be encountering a stabilization period from the system aspect. Unless this problem gets solved, user confidence of product quality cannot be secured. Also, the remedy plan and damage compensation clauses on food defects must be added in the user agreement, while place of origin labeling of food must be consolidated. Through this, social commerce and delivery apps must prevent unforeseen damage to consumers and promote transaction safety by diligently assuming an intermediary role.

The limits of this study were as follows. First, the users' situation could not be adequately reflected due to the inability to secure questionnaire responses from various age groups and concentration on people in their 20s. Second, while this study produced valuable results in practical affairs, the contribution from a theoretic aspect is lacking and must be improved in later studies. Finally, in the case of food delivery apps, since many users only search for information related to delivery food companies and place orders or make payments separately, failure to perform analysis of and discussion on these people is also identified as a limit to this study. In further studies, demographic variables need to be utilized to perform research by examining the scope of use in detail.

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