

Analysis of Factors Influencing Food Purchasing Behavior of Consumers In Mobile Shopping Malls : Focusing on the Comparison of Three Types of Mobile Shopping Malls

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ABSTRACT

This study focuses on finding ways to stimulate the growth of agricultural sectors in m-businesses, by analyzing and comparing the factors that influence the purchasing behavior of consumers in the open market, social commerce, and integrated shopping malls. Consumers at various mobile shopping malls answered a survey. Among the nine factors considered, one important factor was the frequency of purchasing agrifoods. Regression analysis produced three results. First, in the open market, in addition to various other advantages, the brand image, reasonable pricing, simple payment system, and convenience of using an app were important factors that influenced the purchasing behavior of the individual consumer. Second, in social commerce, the major factors influencing purchase were the reasonable pricing, quick delivery service, and convenience of using an app. Third, in integrated shopping malls, the brand image, guaranteed after-sale service, the variety of products, quick delivery service, and convenience of using an app were the significant factors.

Key words: Mobile Shopping, Food Purchasing Behavior, Open Market, Social Commerce, Integrated shopping malls

1. INTRODUCTION

For the last three years, average annual increase rate of mobile shopping turnover has been 93.1 percent which enlarged the volume of the mobile shopping business in 2015, 3.7 times bigger than that of 2013. Moreover, mobile shopping transaction share increased from 17.0 percent to 45.4 percent in three years since 2013 [1]. These statistics show not only the high growth rate of mobile shopping business but also it has become a significant shopping channel [2]. Various industries benefited from mobile shopping; particularly, the turnover of the food business sectors and agriculture sectors increased 3.5 times in the first quarter of 2016 compared to the first quarter

of 2014. The food products account for large portion of the sales share in the online shopping mall, and the turnover increased 5,945 percent in 2015 compared to that of 2001. It reveals the growth potential in the food sectors. However, unlike the offline food business sectors and agriculture sectors, the online food business sectors and agriculture sectors have perceived risk factors such as product quality dissatisfaction and psychological influence [3]. Furthermore, the online shopping customers expect fast delivery service and consider the food safety as a priority issue when it comes to ordering fresh food [4]. Therefore, the online food business sectors and agriculture sectors are still showing relatively slow development.

As the mobile shopping market has expanded, the number of competitors increased, which led to an expansion of choices for mobile shopping users. Mobile shopping users have many different reasons for using a certain mobile shopping malls. Various types of mobile shopping malls can be classified

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according to their business condition, such as the open market, social commerce, and integrated shopping malls [5]. Particularly, the open market and Social commerce take up 70 percent of transaction share in Korea mobile commerce. Specifically, three-quarter of sales share in Social commerce is purchased via mobile [6]. Social commerce is a new trend of the transactional method, it was made to commercially use the online platform, SNS. It led to the change of business paradigm in E-commerce [9]. Social commerce is the online marketplace that leverages social media contents to help consumers make the decision when purchasing product and service [10]. The open market is the online market place (It refers to the electronic virtual market where a larger number of sellers and customers carry out transactions) where consumer goods are mainly purchased promptly by the customers [7]. In the open market, the variety of products are sold within the legal parameter. It also includes C2C and B2C model [8]. One of the big differences between open-market and integrated shopping mall is the role of initiator and people who are engaged in transaction. The role of initiator in open-market is focused on mediating the deal, while in the integrated shopping mall it is to source and sell the online retailer product. Therefore, in open-market, people who are engaged in the transaction are seller and buyer. Whereas, in integrated shopping mall, people who are engaged in the transaction are the initiator and buyer [7]. Following Table 1 is a list of open-market, social commerce and integrated shopping mall that exist in Korea.

Table 1. Example of online shopping malls in Korea

Category	example
Open market	11st, Auction, G-market
Social commerce	Coupang, TicketMonster, WeMakePrice
Integrated shopping mall	CJ mall, GS shop, Shinsegae mall

Many studies have solely focused on the shopping patterns of smartphone users, while there are not enough studies regarding the objectives and shopping patterns changing according to different type of products that are purchased by smartphone users. Also there is a lack of study regarding the factors that change consumer's shopping patterns. Even the purchased products are identical, consumers' shopping patterns change according to different type of shopping mall. Therefore, this research will focus on examining the factors that influence consumer's food purchasing behavior in the open market, social commerce, and integrated shopping malls. It will also distinguish the differences between these factors, and by doing so, reveal a method to boost the growth of m-businesses in the food and agriculture sectors.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Even before the concept of the online and mobile shopping mall existed, researchers have conducted numerous studies to reveal the purchase impact factors. Among many factors, the price strongly affects consumer's shopping

behavior. The price perception plays a positive or negative role in the particular situation [11]. As a trade-off between perceived price and perceived quality affects perceived value, perceived value also has an effect on purchase intention [12]. Likewise, the price affects consumer's shopping behavior independently or with other factors combined together. Not only the price, but also the assortment of the product has been studied a lot for its effect on consumer's shopping behavior. When consumers do not have a certain preference to a certain product over others, they favor the situation where there are many options before making a purchase. Briesch even argued that the assortment of the product is more important than the retail price in general [13]. Another factor is the brand. A high brand equity affects a consumer preference and purchase intention [14]. Similarly, a perceived brand quality influences a perceived value which eventually affects a purchase intention [15]. Moreover, when making the online purchase, brand image minimizes the various risk perceptions and influences purchase intention [16]. Consumers' assessment of the product assortment and final purchase decision changes, depend on the range of the product assortment and the reputation of the brand [17]. Based on the previous studies, this research is conducted to examine the influence of three factors which are reasonable price, a wide assortment of the product and brand image on consumer's food purchasing behavior in open market, social commerce and integrated shopping mall respectively. The followings are hypothesis suggested in this research.

H1-1 Reasonable price will influence the consumer's food purchasing behavior in the open market.

H1-2 The variety of products will influence the consumer's food purchasing behavior in the open market.

H1-3 Brand image will influence the consumer's food purchasing behavior in the open market.

H2-1 Reasonable price will influence the consumer's food purchasing behavior in social commerce.

H2-2 The variety of products will influence the consumer's food purchasing behavior in social commerce.

H2-3 Brand image will influence the consumer's food purchasing behavior in social commerce.

H3-1 Reasonable price will influence the consumer's food purchasing behavior in integrated shopping malls.

H3-2 The variety of products will influence the consumer's food purchasing behavior in integrated shopping malls.

H3-3 Brand image will influence the consumer's food purchasing behavior in integrated shopping malls.

As the online shopping mall is widely used, new factors that influence purchase intention and purchasing behavior have been created and some factors have gained more importance. For example, a delivery service which has grown into the main shopping channel became critical criteria for customer satisfaction [18]. A quality of delivery service has a strong influence on customer satisfaction and repurchase intention from the same shopping mall [19]. Particularly, punctuality of the delivery service has a strong influence on customer satisfaction, frequency of customer revisit and repurchase intention from the same shopping mall [20]. Not only a

delivery service but also an after-sales service such as return or exchange of the item has an influence on customer satisfaction which can lead to repurchase [21]. Moreover, an after-sales service influences the loyalty since it is related to customer satisfaction [22]. Therefore, return or exchange of the product and money-back guarantee service are crucial factors for a success in the online shopping mall. Other critical factors for a success in the online shopping mall are providing discount coupon and incentives such as point accumulation for per purchase [23]. When consumers realize the cost-benefit of discount coupon, they are more likely to make a purchase of the product [24]. In the same manner, the promotion has positive effect on consumer's perceived value [25]. Thus, various advantages such as discount coupon and promotion event are important factors for consumers, when it comes to purchasing products. As the number of customers using mobile shopping mall has increased, the payment service also has been improved. When consumers experience the usefulness of the payment service, their loyalty toward the payment service and the mobile shopping mall increases [26]. A research examined that customer satisfaction increases when customers can comfortably use the payment system [27]. Easiness of use has positive effect on customer satisfaction on mobile commerce [28]. High system quality of mobile application has a positive influence on customer satisfaction and usability [29]. Based on the previous studies, this research is conducted to examine the influence of three factors which are reasonable price, a wide assortment of the product and brand image on consumer's food purchasing behavior in open market, social commerce and integrated shopping mall respectively. The followings are hypothesis suggested in this research.

H1-4 Quick delivery service will influence the consumer's food purchasing behavior in the open market.

H1-5 Guaranteed after-sale service will influence the consumer's food purchasing behavior in the open market.

H1-6 Various advantages will influence the consumer's food purchasing behavior in the open market.

H1-7 Simple payment system will influence the consumer's food purchasing behavior in the open market.

H1-8 The convenience of using an app will influence the consumer's food purchasing behavior in the open market.

H2-4 Quick delivery service will influence the consumer's food purchasing behavior in social commerce.

H2-5 Guaranteed after-sale service will influence the consumer's food purchasing behavior in social commerce.

H2-6 Various advantages will influence the consumer's food purchasing behavior in social commerce.

H2-7 Simple payment system will influence the consumer's food purchasing behavior in social commerce.

H2-8 The convenience of using an app will influence the consumer's food purchasing behavior in social commerce.

H3-4 Quick delivery service will influence the consumer's food purchasing behavior in integrated shopping malls.

H3-5 Guaranteed after-sale service will influence the consumer's food purchasing behavior in integrated shopping malls.

H3-6 Various advantages will influence the consumer's food

purchasing behavior in integrated shopping malls.

H3-7 Simple payment system will influence the consumer's food purchasing behavior in integrated shopping malls.

H3-8 The convenience of using an app will influence the consumer's food purchasing behavior in integrated shopping malls.

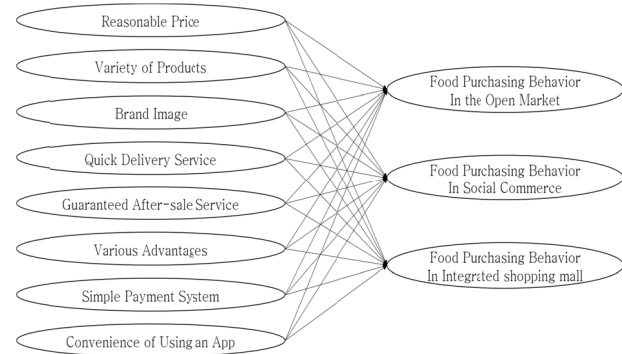


Fig. 1. Conceptual Research Model

3. RESEARCH METHODOLOGY

3.1 Measures

For the research, 1000 people responded the survey through a mobile application. The survey was conducted for two weeks, from 24th July, 2015 to 6th August 2015. Open survey panels' responses were collected via mobile application. This survey has a 95% confidence level with $\pm 3.10\%$ sampling error. Excluding eight respondents who do not use mobile shopping application, the survey result of 992 respondents was used for the research. The questionnaire items include a demographic question, status of mobile shopping application use. Questionnaire items inquiring a purchasing behavior in mobile shopping mall and factors that affect purchasing behavior were based on four-points Likert scale. For the analysis, PASW Statistic 18 program and the method of regression analysis was used. Following Table 2 is survey contents.

Table 2. Survey contents

Variable		Question number	Number of questions	Scale
Demo	Gender	1. (1)-(4)	4	Nominal
	Age			
	Region			
	Number of family members			
mobile	Number of mobile apps installed	2. (1)-(3)	3	Likert 4 points
	Frequency of accessing mobile apps			
	Frequency of in mobile app purchasing			

Brand image	3	1	Likert 4 points
Guaranteed after-sale service	4	1	
Reasonable price	5	1	
Variety of products	6	1	
Quick delivery service	7	1	
Simple payment system	8	1	
Convenience of using an app	9	1	
Various advantages	10	1	

3.2 Sample Description

The result of frequency analysis which was carried out to examine the quality of the respondents is shown in Table 4. The ratio of the male and female is 50.1% and 49.9% respectively, which is almost equivalent. Also, the ratio of each age group shows a slight difference, the twenties 33.4%, thirties 33.2% and forties 33.4%. However, residence distribution showed difference as 62.8% of respondents live in capital region and 37.2% of respondents lived in no capitol region. The number of the family member varies, but 4 people in a family accounted for 40.9% and 3, 2, more than 5, one person took up the rest of the percentage. Lastly, it shows the percentage result of the number of mobile application installed on their smartphone. 41.7% of the respondents installed 4~6 applications and 36.6% of respondents installed 1~3 applications, which means 78.3% of the respondents had installed 1~6 applications and 16.2% of the respondents had 7~10 applications, 4.1% of the respondents installed 11~15

applications and 1.3% of the respondents had more than 16 applications.

Table 4. Sample description

Measure	Items	Frequency	Percentage
Gender	Male	497	50.1
	Female	495	49.9
Age	20-29	331	33.4
	30-39	330	33.2
	40-49	331	33.4
Region	Capital	623	62.8
	Non-Capital	369	37.2
Number of mobile apps installed	1~3	363	36.6
	4~6	414	41.7
	7~10	161	16.2
	11~15	41	4.1
	More than 16	13	1.3
Number of family members	1	87	8.7
	2	147	14.8
	3	243	24.5
	4	406	40.9
	More than 5	110	11.1

Table 3. Correlation in open market

	1(r ²)	2(r ²)	3(r ²)	4(r ²)	5(r ²)	6(r ²)	7(r ²)	8(r ²)	9(r ²)
1.Food purchasing behavior	1.000								
2.Brand image	.040	1.000							
3.Guaranteed after-sale service	.042	.012	1.000						
4.Reasonable price	.063**	-.104**	-.008	1.000					
5.Variety of products	.016	-.062	-.018	.074*	1.000				
6.Quick delivery service	.038	-.128**	-.017	.026	-.016	1.000			
7.Simple payment system	.064*	-.020	-.004	-.037	-.057	-.038	1.000		
8.Convenience of using an app	.113**	-.020	-.052	-.144**	-.080*	-.025	.057	1.000	
9.Various advantages	.160**	-.061	-.016	-.014	-.067*	-.033	-.067*	-.039	1.000

Table 5. Correlation in social commerce

	1(r ²)	2(r ²)	3(r ²)	4(r ²)	5(r ²)	6(r ²)	7(r ²)	8(r ²)	9(r ²)
1.Food purchasing behavior	1.000								
2.Brand image	.000	1.000							
3.Guaranteed after-sale service	.020	.036	1.000						
4.Reasonable price	.108**	-.143**	-.059	1.000					
5.Variety of products	.015	-.047	-.066*	.021	1.000				
6.Quick delivery service	.155**	-.054	.001	-.026	-.071*	1.000			
7.Simple payment system	-.007	-.034	-.009	-.006	-.087**	-.071*	1.000		
8.Convenience of using an app	.036	-.034	.011	-.180**	-.033	-.091**	.042	1.000	
9.Various advantages	.114**	-.115**	-.016	-.016	-.059	-.123**	-.066*	-.072*	1.000

Table 6. Correlation in integrated shopping malls

	1(r ²)	2(r ²)	3(r ²)	4(r ²)	5(r ²)	6(r ²)	7(r ²)	8(r ²)	9(r ²)
1.Food purchasing behavior	1.000								
2.Brand image	.142**	1.000							
3.Guaranteed after-sale service	.160**	.174**	1.000						
4.Reasonable price	.084**	-.028	-.048	1.000					
5.Variety of products	.106**	.043	.055	.153**	1.000				
6.Quick delivery service	.154**	-.016	.051	.069*	.047	1.000			
7.Simple payment system	.072*	-.031	-.013	.023	-.033	.111**	1.000		
8.Convenience of using an app	.100**	.030	.004	-.025	-.016	.049	.153**	1.000	
9.Various advantages	.250**	.098**	.062	.141**	.057	-.006	.021	.020	1.000

4. RESULTS

4.1 Analysis of factors influencing food purchasing behavior in the open market

Table 2 is a result of regression analysis. Consumers' food purchasing behavior in the open market is a dependent variable; and brand image, guaranteed after-sale service, the variety of products, quick delivery service, simple payment system, the convenience of using an app, and various advantages are independent variables. Adjusted R² value is .065 and F-value is 5.590. Statistically, significant factors that influenced the food purchasing behavior in open market were brand image, reasonable price, simple payment system, the convenience of using an app, and various advantages. (p<.05)

Table 7. Open market

Factors influencing food purchasing behavior	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF
	B	Std. Error	Beta			
(constant)	.261	.275		.950	.342	
Sex	.093	.060	.050	1.545	.123	1.110
Age	.005	.004	.046	1.474	.141	1.046
Region	.079	.060	.041	1.314	.189	1.025
Number of mobile apps installed	.005	.034	.005	.163	.871	1.115
Frequency of accessing mobile apps	-.084	.030	-.091	-2.758	.006	1.145
Frequency of in mobile app purchasing	-.002	.031	-.002	-.064	.949	1.045
Number of family members	-.050	.026	-.060	-1.884	.060	1.055
Brand image	.091	.033	.087	2.727	.007	1.068
Guaranteed after-sale service	.124	.071	.055	1.755	.080	1.021
Reasonable price	.056	.024	.075	2.362	.018	1.065
Variety of products	.032	.027	.037	1.185	.236	1.047
Quick delivery service	.067	.035	.059	1.902	.057	1.031
Simple payment system	.095	.036	.083	2.647	.008	1.027
Convenience of using an app	.132	.032	.133	4.179	.000	1.063
Various advantages	.136	.024	.179	5.704	.000	1.046

4.2 Analysis of factors influencing the food purchasing behavior in social commerce

Table 3 is a result of regression analysis. Consumers' food purchasing behavior in social commerce is a dependent variable; brand image, guaranteed after-sale service, the variety of products, quick delivery service, simple payment system, the convenience of using an app, and various advantages are independent variables. Adjusted R² value is .067 and F-value is 5.750. Statistically, significant factors that influenced the food purchasing behavior in social commerce were reasonable price, quick delivery service, the convenience of using an app, and various advantages. (p<.05)

Table 8. Social commerce

Factors influencing food purchasing behavior	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF
	B	Std. Error	Beta			
(constant)	.200	.336		.596	.551	
Sex	-.026	.068	-.012	-.383	.701	1.104
Age	.009	.004	.067	2.090	.037	1.073
Region	.062	.068	.029	.919	.358	1.024
Number of mobile apps installed	.040	.038	.034	1.053	.292	1.118
Frequency of accessing mobile apps	-.047	.035	-.045	-1.344	.179	1.163
Frequency of in mobile app purchasing	.030	.036	.027	.858	.391	1.049
Number of family members	-.087	.030	-.092	-2.918	.004	1.057
Brand image	.060	.037	.053	1.636	.102	1.099
Guaranteed after-sale service	.081	.089	.028	.909	.363	1.018
Reasonable price	.111	.027	.131	4.067	.000	1.100
Variety of products	.055	.033	.053	1.684	.092	1.069
Quick delivery service	.184	.030	.194	6.071	.000	1.086
Simple payment system	.033	.044	.024	.760	.447	1.030
Convenience of using an app	.110	.037	.096	2.970	.003	1.101
Various advantages	.137	.029	.154	4.737	.000	1.118

4.3 Analysis of factors influencing the food purchasing behavior in the Integrated shopping mall

Table 4 is a result of regression analysis. Consumers' food purchasing behavior in integrated shopping malls is a dependent variable; brand image, guaranteed after-sale service, the variety of products, quick delivery service, simple payment system, the convenience of using an app, and various advantages are independent variables. Adjusted R² value is .126 and F-value is 10.480. Statistically, significant factors that influenced the food purchasing behavior in integrated shopping malls were brand image, guaranteed after-sale service, the variety of products, quick delivery service, the convenience of using an app, and various advantages. (p<.05)

Table 9. The integrated shopping mall

Factors influencing food purchasing behavior	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	VIF
	B	Std. Error	Beta			
(constant)	-.090	.211		-.428	.669	
Sex	.085	.052	.051	1.641	.101	1.093
Age	.005	.003	.045	1.456	.146	1.056
Region	.035	.052	.020	.668	.504	1.027
Number of mobile apps installed	.008	.030	.009	.281	.779	1.171
Frequency of accessing mobile apps	-.030	.026	-.036	-1.121	.263	1.170
Frequency of in mobile app purchasing	.047	.027	.053	1.733	.083	1.053
Number of family members	-.014	.023	-.019	-.612	.541	1.058
Brand image	.070	.024	.090	2.948	.003	1.065
Guaranteed after-sale service	.130	.035	.114	3.733	.000	1.061
Reasonable price	.027	.024	.034	1.119	.263	1.069
Variety of products	.056	.027	.063	2.065	.039	1.056
Quick delivery service	.165	.037	.134	4.439	.000	1.030
Simple payment system	.064	.044	.044	1.449	.148	1.047
Convenience of using an app	.095	.039	.074	2.416	.016	1.050
Various advantages	.144	.023	.197	6.222	.000	1.132

Table 10. The results of hypotheses testing

	independent values	Dependent values	Results
H1-1	Reasonable price	the consumer's food purchasing behavior in the open market	Accepted
H1-2	The variety of products		Rejected
H1-3	Brand image		Accepted
H1-4	Quick delivery service		Rejected
H1-5	Guaranteed after-sale service		Rejected
H1-6	Various advantages		Accepted
H1-7	Simple payment system		Accepted
H1-8	The convenience of using an app		Accepted
H2-1	Reasonable price	the consumer's food purchasing behavior in social commerce.	Accepted
H2-2	The variety of products		Rejected
H2-3	Brand image		Rejected
H2-4	Quick delivery service		Accepted
H2-5	Guaranteed after-sale service		Rejected
H2-6	Various advantages		Accepted
H2-7	Simple payment system		Rejected
H2-8	The convenience of using an app		Accepted
H3-1	Reasonable price	the consumer's food purchasing behavior in integrated shopping malls	Rejected
H3-2	The variety of products		Accepted
H3-3	Brand image		Accepted
H3-4	Quick delivery service		Accepted
H3-5	Guaranteed after-sale service		Accepted
H3-6	Various advantages		Accepted
H3-7	Simple payment system		Rejected
H3-8	The convenience of using an app		Accepted

5. CONCLUSION AND LIMITATION

5.1 Conclusion

Various industries have entered the mobile shopping mall market, which is growing very quickly. On the contrary, growth of the food sectors is rather slow. Therefore, this research aimed to determine the method to stimulate growth of the food sectors in mobile businesses by examining the factors that influence consumers' food purchasing behavior in the open market, social commerce, and integrated shopping malls. These diverse mobile shopping malls are classified according to their business condition. The result is as follows:

First, the food consumers' behavior in the open market, social commerce, and integrated shopping malls was influenced by the convenience of using apps and various advantages. It means that user-friendly apps and various advantages for inducing purchasing are essential when purchasing the food in mobile shopping malls.

Second, the food consumers' behavior in the open market and integrated shopping malls was influenced by brand image. It reflects that existing brand image is playing an important role in the open market, which was created in the initial stage of mobile shopping, and also in the integrated shopping mall, which is based on offline business environments.

Third, the food consumers in the open market were influenced by reasonable prices and simple payment system. The open market is based on the online, therefore consumers expect to buy the food at a reasonable price and pay with a simple payment system. In other words, the open market should be able to offer a reasonable price and constantly improve the payment system.

Fourth, the food consumers in social commerce were influenced by reasonable price and quick delivery service. Since social commerce is a relatively new type of business, which was created for group purchasing, people expect lower prices and fast shipments. Social commerce should keep the prices low and maintain the quick delivery service.

Lastly, the food consumers in integrated shopping were influenced by guaranteed after-sale service, the variety of products, and quick delivery service. As brand image is playing an important role in the integrated shopping malls, it has achieved higher credibility from consumers who expect better after-sale service. Contrary to customers in the open market and social commerce, integrated shopping malls customers are not influenced by lower prices, which indicates that they prefer more the variety of products and quick delivery service. It implies that integrated shopping malls should provide the variety of the food that can be trusted to arrive via fast shipments.

To sum up, when it comes to purchasing food from mobile the convenience using the mobile application is key factor, regardless of the different type of shopping mall. Also discount coupon and promotional event are significant factor that affect consumers' purchasing behavior. As reasonable price and quick delivery service are effective factors in social commerce, it is important to provide essential products that are easy to storage in reasonable price with quick delivery service in order to increase the sales of food product. In the integrated shopping mall, brand image, guaranteed after sales service, various type of product and quick delivery service are important factors. Therefore, rather than low cost products, various type of products should be provided with credibility in order to increase the sales of food product. Lastly, in open-market, reasonable price, simple payment system and brand image are significant factors. Thus, in order to increase the sales of food product, open-market should focus on not only providing products in reasonable price, but also establishing simple payment system which enables consumers to purchase products more easily.

Regarding the factors significantly influence the consumers' food purchasing behavior, various advantages influenced Open market and integrated shopping mall. And quick delivery service affected social commerce. The reasons for various advantages being the main factor that influences food consumers in the Open market and integrated shopping are economic recession and increased consumer's sensitivity regarding the price. As for the social commerce, consumers want their essential food products such as rice and water to be delivered quickly as possible. Therefore, quick delivery service is the most important factor that influences the consumers' food purchasing behavior in social commerce.

5.2 Limitation

The study cast light on how eight factors: brand image; guaranteed after-sale service; reasonable price; the variety of products; quick delivery service; simple payment system; the convenience of using an app; and various advantages that influence consumers' purchasing behavior in the open market, social commerce, and integrated shopping malls. However, this

research was conducted with the institution which analyzes the data of shopping patterns of smartphone users. Thus, there is a limitation that it is focused on the factors which institution and commerce website cooperating with the institution is interested in. Also, it is difficult to form latent variables, instead the research put more emphasis on how each factors are related.

In online shopping malls, the quality of the agri-food product is indeed a significant factor. But considering that the quality is a main factor, there are also other factors that were overlooked. Therefore, this research focused on the factors that were overlooked.

This study was conducted including all types of the food product rather than dividing the food products into specific categories such as processed food, fresh food and frozen food etc. Therefore, it is hard to generalize the findings in specific food products. In a follow-up study, it is recommended to specifically categorize the food products and focus on how eight factors and other variables influence consumers' purchasing behavior in the open market, social commerce, and integrated shopping malls. In addition, in the research adjusted R-square is low. I think the low adjusted R-square is due the other factors that were not clarified in the research. Therefore, follow up research should include additional factors. By doing so, it would accommodate the growth in agrifood sectors in M-business.

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