2011 International Conference on Social Science and Humanity
IPEDR vol.5 (2011) © (2011) IACSIT Press, Singapore

Development of marketing strategies for agro-products through T-Commerce in Korea*

Haeyoung Jeong, Junha Kim, Youngduk Yun
Department of Management Science
Korea Advanced Institute of Science and Technology
Daejeon, South Korea
byut88@kaist.ac.kr, mera@kaist.ac.kr
sorbus1988@kaist.ac.kr

Junghoon Moon**
Program in Regional Information
Seoul National University
Seoul, South Korea
moonj@snu.ac.kr

Jinki Kim
College of Business Administration
Korea Aerospace University
Goyang, South Korea
kimjk@kau.ac.kr

Abstract—**Although the IPTV industry in Korea has grown after the ease of regulations, the T-commerce has entered a phase of stagnation due to the lack of business models. Especially, T-commerce for agro-products is still on its early stage. In this paper, we explored methods how agro-products can be traded with the new business model of T-commerce, based on survey results from Korean consumers.**

Keywords-component; Agro-products, IPTV, Broadcasting Synchronized T-Commerce, Consumers Perciption

I. INTRODUCTION

In early 2008, Korean government finally enacted a new act under the name of 'Internet Multimedia Broadcasting Law' and amended existing Broadcasting Law, by which Internet Protocol Television(IPTV) service got official approval throughout the Korea. Since then, the number of IPTV subscribers in Korea showed rapid increase, exceeding 2.3million in total, by the fourth quarter of 2009[1].

However, it has been relatively difficult to find differentiated contents rather than VODs in IPTV due to the regulation, which resulted in temporary stagnation of T-commerce [1]. Thence, the new marketing plans are being required, as Product Placement (PPL) gets partially allowed in some programs in November 2009 to ease the existing regulation [2]. Consequently, there is a need to prepare strategies for Broadcasting Synchronized T-Commerce.

Nonetheless agro-products are expected to be one of the beneficiaries from this change, relatively little attention was paid to Broadcasting Synchronized T-commerce for promoting recognition and trading agro-products. In addition, the research on this subject is still in its early stage, although agro-products traded without direct verification by consumers show some unique characteristics of high heterogeneous products [3]. Therefore, in this study, we explore methods how agro-products can be more effectively traded through Broadcasting Synchronized T-commerce through IPTV.

We conducted a customer survey regarding their purchase of agro-products through Broadcasting Synchronized T-commerce. The results indicate the customers' recognition of this new method.

Based on the findings of this study, we attempt to draft a strategic plan for farmers to convert easily from e-commerce to T-commerce. We conclusively propose strategies and policies to successfully adopt T-commerce channel for agro-products.

II. T-COMMERCE WITH IPTV IN KOREA

A. The Growth of IPTV in Korea

The official launch of IPTV in Korea was far delayed until 2008, unlike elsewhere where IPTV replaced traditional analog television rapidly. The technological background hadn't lacked in Korea, however; Korea Telecom(KT) has been providing an internet based broadcasting service called *Mega-TV* over VDSL since the year 2005 [4]. The cause of this delay is mainly due to the outdated laws and regulatory dissonance among related government agencies [4], [5]. Furthermore, the issue of network neutrality came into question, regarding contents providers' free access and use of network infrastructure, which is mainly equipped by telecommunication companies.

The controversy between the regulatory and other minor setbacks imposed negative influences on IPTV related businesses and industries, which had been previously preparing to launch the service. This delay extended to the lack of competiveness in Korean IPTV industries against other countries. Eventually, IPTV service was officially launched in 2008, after the enactment of Internet Multimedia Broadcasting Law, along with the amendment of existing

* This work was carried out with the support of "Cooperative Research Program for Agriculture Science & Technology Development (Project No.: PJ006615201003)" Rural Development Administration, Republic of Korea
** Corresponding Author

[1] Retrieved from the Statistics of the Korea Association for ICT Promotion (KAIP) (2010)

Broadcasting Law. By the year 2013, IPTV and digital televisions in Korea are expected to completely replace traditional analog television service. The major IPTV companies in Korea are KT, SK Broadband and LG Dacom.

According to [6], IPTV in Korea is expected to generate $12.9 billion USD with employing more than 73 thousand people for the seven years span starting from 2006. It is also forecasted that IPTV will positively affect related parts and services market. It is expected that IPTV will generate about $3.3 billion USD in equipment sector, 1.5 billion USD in Set-top box sector, and 1.7 billion USD in interactive service sector. Particularly, the ETRI expected that the domestic IPTV contents market alone will increase up to $417.6 million USD by 2010, which matches the past market size of the total digital contents in Korea, in the year of 2005.

B. *Current Trends of T-commerce in Korea*

From the early 2000s, when the traditional broadcasting cable began digitalizing and convergence among technologies emerged, T-commerce has drawn attention as a new 'growth engine' for digital broadcasting.

T-commerce is an interactive commercial service provided by digitalized broadcasting service such as IPTV, Satellite Television and digitalized cable television.

Although all the referred platforms can provide T-commerce service, the expected market growth is biggest in IPTV [6]. Therefore, in this study, the scope of definition of T-commerce will be limited to that of IPTV. In these days, not only pre-IPTV VOD services but also real-time shopping programs are being provided in five T-commerce channels.

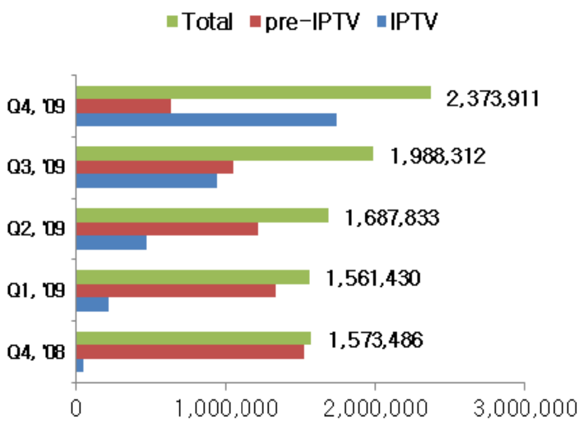

Figure 1. Increase Trends of IPTV Subscribers in Korea

Oh [7] classified T-commerce by the independency of channel in the recent research. According to this research, T-commerce can be divided into Direct Trading T-commerce and Broadcasting Synchronized T-commerce. Most of the existing T-commerce channels in Korea belong to the Direct Trading T-commerce under this classification. For instance, NS T-shop has been providing agro-products T-commerce since 2007, based on digital cable TV at the beginning[2].

However, except for the payment method using remote controller, current T-commerce services are not providing differentiated contents from traditional home shopping. For this reason, T-commerce formed less than one percent of the sales revenue, even in the most active T-commerce program provider in Korea [8]. In addition, although user behavior may be different between E-commerce and T-commerce, T-Commerce service providers still follow 'push-forward' strategy for their interactive services, without enough understanding of viewers' needs [9].

According to [1], out of the people who subscribed to IPTV, Satellite TV or Digital Cable TV, only 35.6 percentages of people actually attempted to use T-commerce. The research states the following as main reasons for the hesitation: low awareness of the service, lack of attractive contents, difficulty of paying, and the inconvenience of the paying device, the remote controller.

Competition with internet shopping websites is an additional factor in the underdevelopment of the T-commerce. Compared to the tremendous variety of products provided in the internet shopping websites, television screens where IPTV channels are shown lack competition in view of the number of products which can be shown in one page, and the number of channels [7]. To resolve these difficulties, regulations of the industry was partially eased in late 2009, allowing also the Broadcasting Synchronized T-commerce.

C. *Uniquness of Agro-products in View of Comsumers' Perception*

The uniqueness of agro-products are briefly noted by M. Chung, J. Moon, B. Yoo, and Y. Choe [10] and Y. Choe, J. Park, M. Chung, and J. Moon [11] in terms of their heterogeneity characteristics. Fresh agro-products are highly heterogeneous, creating different consumer perceptions of the products' quality [10]. Such complexity in describing highly heterogeneous products increases the level of difficulty for consumers to experience the products [11]. Based on this awareness, the effect of information quality of products on consumers' willingness to purchase in E-Commerce circumstance came into question. It was discovered that customers are willing to pay extra for more information, although taking into consideration of the uncertainty of risk arising from heterogeneity of the product, given the sufficient level of premium information [10]. In addition, it was found that consumers' perceived risk and fear of seller opportunism were reduced when given more information from sellers [11].

These referred studies are applicable to the case of T-commerce, from the viewpoint that consumers cannot actually verify or feel the quality of the heterogeneous products including agro-products, resulting in information quality problem.

---

[2] Retrieved from http://www.nshomeshopping.com/jsp/cintro/newbusiness.jsp

Nevertheless apparent limit still exist on the quantity and quality of information of agro-products traded through Direct Trading T-Commerce, the research on this subject is still in its early stage.

Therefore, this study have investigated producers' and consumers' attitude in order to ferret out ideas of how agro-products can be more effectively traded through Broadcasting Synchronized T-commerce in IPTV.

III. Data Collection And Analysis

A. *Data Collection and Sample Characteristics*

Data was collected from Korean females who are subscribing IPTV service currently. A web-based survey questionnaire was used and a total of 500 usable responses were received.

The ages of responders were varying from 25 to 59. They were 39 years old on average, and 85.8% of them were married. In addition, their average household income was $4,500 USD per month, and they spent 10% of their income on average to purchase foods.

Table 1 briefly presents a demographic distribution of survey respondents. Most of them were housewives, reflecting the reality that they are the major food purchasers in Korea. Also, many of them were in their late 30s or early 40s, implying that this age group buys food most often and will likely to use T-commerce service through IPTV. Finally, many were found to spend from 1 to 3 hours watching IPTV during weekdays and from 3 to 6 hours during weekends.

TABLE I. SURVEY RESPONDENTS DEMOGRAPHIC DISTRIBUTION

Criteria	Group	Frequency	%
Age	25-34	160	32
	35-44	200	40
	44-60	140	28
Marital Status	Married	429	85.8
	Not married	71	14.2
Occupation	Housewife	243	48.6
	All others	257	51.4
IPTV View Hours(weekdays)	1~3 hours	152	30.4
IPTV View Hours(weekends)	3~6 hours	155	31

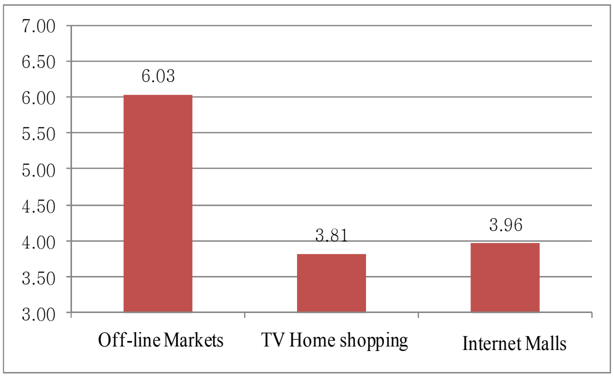

Figure 2. Preference of Agro-products Purchasing Channels

Currently, the respondents prefer off-line markets such as large-scale discount stores or traditional markets for purchasing agro-products. Figure 2 shows the results of the question, answered with 7 point Likert scales from 1- 'not true of me at all' to 7-' extremely true of me'. In here, off-line markets got the highest score of 6.03.

The preference tendency can be explained with the heterogeneity of agro-products. Because agro-products are heterogeneous, consumers want to see the products firsthand, and then make purchasing decisions for the freshness or quality of what they choose.

To help respondents understanding Broadcasting Synchronized T-commerce, two scenarios were shown in the questionnaire. One is T-commerce through entertainment TV program in which famous Korean celebrities experience various rural communities around the country. In this scenario, consumers can order the agro-products which the celebrities eat in the program. The other is T-commerce through TV cooking show program that introduce dishes of the season and their recipes. In case of the first scenario, consumers can order certain amount of the agro-products that are introduced in the show.

And then, purchasing intention through T-commerce, preference of selling product, purchasing criteria, preference of payment plan, and preference of selling channels of future T-commerce services were asked.

B. *Survey Results*

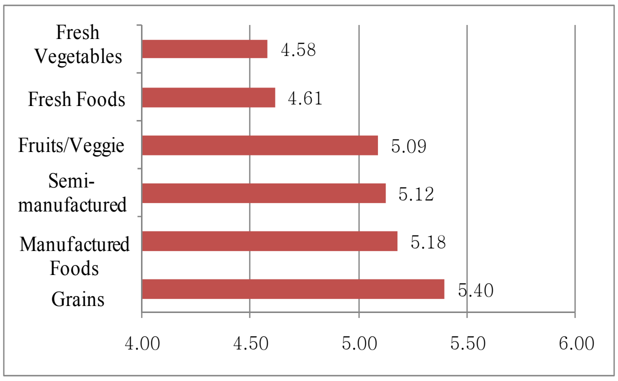

Figure 3. Preference of Selling Products of Agro-products T-commerce

Figure 3 illustrates the preferences of different items being sold, if these kinds of broadcasting synchronized services are actually launched. The result showed that fresh vegetables and other fresh foods were less preferred.

Fresh vegetables or other fresh foods have relatively high possibility of spoils during delivery processes whereas semi-manufactured, manufactured foods and grains are not. Freshness is considered relatively less crucially in purchasing these items than fresh foods purchasing, which also makes consumers prefer these items.

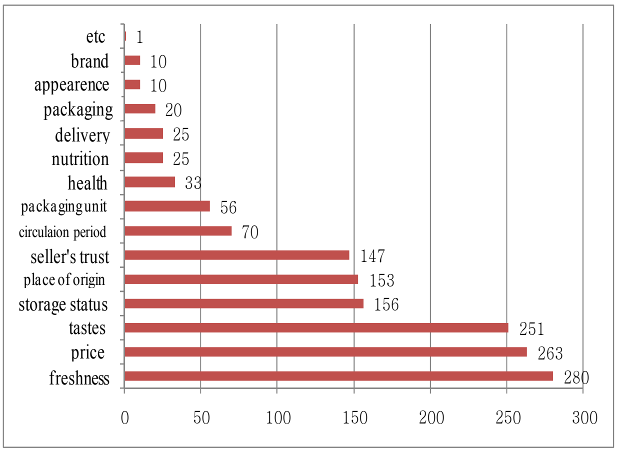

Figure 4. Key Criteria for Agro-Products Purchasing Decision in T-commerce

Figure 4 shows the consumers' key criteria for selection and purchasing decision of agro-products when they use T-commerce service.

The respondents were asked to select most critical three criteria for their purchasing decision if they use T-commerce service. Freshness was the most frequently selected key criteria (280 times) followed by price and tastes.

The consumers' preference of payment or information provision plan of T-commerce is shown in Figure 5.

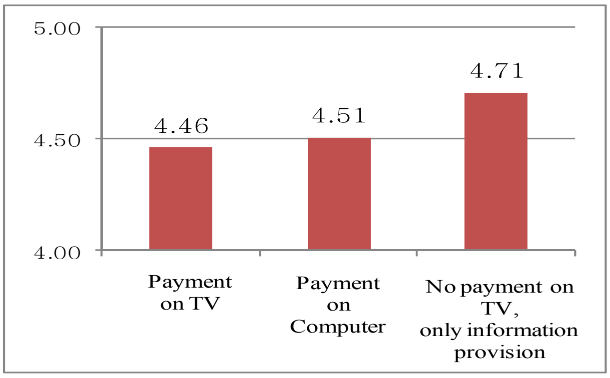

Figure 5. Preference of Payment Plan of Agro-products T-commerce

The preference of 'no payment, only get information on TV' is higher, meaning that the consumers don't prefer direct payment on TV. They seem to make purchasing decision after examining the detailed information about selling products.

The results from t-test of preference difference of payment or information provision plan, the preference difference between 'no payment, only information model on TV model' and 'payment on TV model' are both statistically significant at the level of 0.01; thus consumers prefer 'no payment, only information model' to 'payment on TV model'. Also the difference between 'no payment, only information on TV model' and payment through computer is statistically significant at the level of 0.01; thus consumers prefer 'no payment, only information provision model' to 'payment on computer model'. These preference differences are supposed to result from consumers' unfamiliarity with payment on TV. Because the payment method is not common yet, consumers may feel big concerns, or high inconvenience.

Figure 6 represents the each preference of four selling channel candidates of agro-products T-commerce. The linked shopping malls with local government and agricultural business bodies such as KG Farm in Korea were mostly preferred(scoring 5.39). And it was followed by offline markets, huge home shopping, and Internet open market in order. The preference differences among the four selling channels were statistically significant at the level of 0.01. This result can be interpreted as consumers' trust to the quality of agro-products and the provider is increased when the selling channel is related with officially approved organization. Even if Internet open market can provide agro-products with low price, consumers showed low preference(scoring 4.15). They seem to consider more the guarantee of quality or freshness in agro-products than the price buying decision.

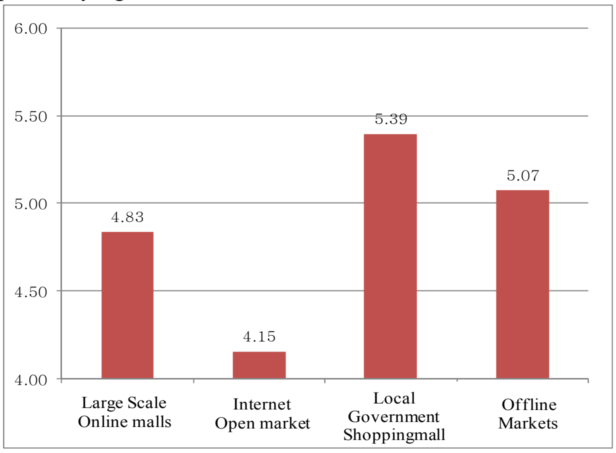

Figure 6. Preference of Selling Channels of Agro-products T-commerce

There are no statistically significant preference and expected purchasing pattern differences between married and unmarried groups. Comparing just the averages from the respondents, the expected average expenditure at one time is also higher in unmarried group.

In addition, there is no significant preference or expected purchasing pattern of T-commerce differences among the different ages. Just comparing the averages from the respondents, age group between 55 and 59 has the highest intention and expected average expenditure of agro-products purchasing services through T-commerce. And between 40 and 44, they have the highest expected average frequency of purchasing through T-commerce.

The differences in expected agro-products purchasing frequency through T-commerce among the different monthly income groups are statistically significant at the level of 0.05. Households that have \$8,000 USD - \$9,300 USD monthly income show the highest expected frequency of agro-products purchasing through T-commerce; 4.6 times a month.

C. Conclusion and Limitations

Based on the results of survey, the strategies for effective trading of agro-products through Broadcasting Synchronized T-commerce in IPTV are suggested.

First of all, semi-manufactured food groceries were found to be better items for T-commerce than fresh foods that can easily spoil. And the freshness of products is the key factor to determine the agro-products purchasing, agricultural business bodies should prepare for packaging or delivery process that can keep the freshness of their agro-products. Furthermore, advertisements or explanations emphasizing the freshness or their products should be offered to consumers.

At the early stage of T-commerce, consumers are not familiar with payment through remote controller on TV, thence reluctant to use it. Thus, a test or adoption period that only provides information of the products: quality, tastes and selling place on TV(no payment system on TV) is recommended before large scale launch. Through that period, consumers can become familiar with and trust commerce on TV, thence provide full T-commerce services including payment system on TV.

In the aspect of product providing channels, consumers more trust the local governments–linked shopping malls. They want some kinds of officially approved organization that can guarantee the quality and freshness of the products they bought. These can reduce consumers' uncertainties that derived from the heterogeneity of agro-products.

1) Consumer Targeting: The middle-classes families and especially housewives in their 40-50's, who have \$8,000 USD - \$9,300 USD monthly income can be the main target of Broadcasting Synchronized T-commerce through IPTV. These groups have high intention to use T-commerce services for agro-products purchasing, and enough abilities to pay. Therefore, various TV program contents for T-commerce should be developed according to their tendencies. And the selling items had better to be customized for the middle-class households.

2) Limitations of this Research: This research has a few limitations that should be considered in the future studies. The sample may not represent the responses of a whole population of IPTV T-commerce users, thence may be biased. In addition, more clear and effective segmentation would be required for appropriate customer targeting.

REFERENCES

[1] J. W. Lee et al., "A research on institutionalizing TV home shopping channels". Korean Broadcasting and Communication Committee: 2008(In Korean).

[2] H. C. Choi, M. H. Yang, E. J. Kim, and H. R. Seo, "A research on the introduction effect of PPL (Product Placement)". KOBACO: , 2010(In Korean).

[3] Y. C. Choe, D. Hwang, M. Kim, and J. Moon, "Product Heterogeneity: Moderating Effect on Online Consumer Behavior", in System Sciences, 2007. Proc. HICSS 2007. 40th Annual Hawaii International Conference on, p.153a, doi: 10.1109/HICSS.2007.449 .

[4] R. Tadayoni, A. Henten, and K. E. Skouby, "IPTV regulation: Challenges of the new era - Based on case studies from Europe. South East Asia and the US", Jul. 2008.

[5] D. H. Shin, "Socio-technical analysis of IPTV: a case study of Korean IPTV," Emerald Group Publishing Limited, vol. 9, no. 1, 2007, pp. 65-79, doi: 10.1108/14636690710725076.

[6] M. Kim, Y. Park, and S. Go, "A study on the trend and forecast of IPTV service," ETRI, vol. 21, no. 2, pp. 53-65, Apr. 2006(In Korean).

[7] J. S. Oh, "Current T-Commerce in Korea: As a retail distribution channel," Broadcasting and Communications Policy, vol. 22, no. 7, pp. 1-17, Apr. 2010(In Korean).

[8] K. Shin, "Is T-commerce On Its Track?," 22-May-2009.

[9] H. Y. Kwon, "Recent trends in IPTV and correspondence Strategy," KT Management and Economics Institute, April 2010(In Korean).

[10] M. Chung, J. Moon, B. Yoo, and Y. Choe, "Paradox of Information Quality: Do Consumers Pay More for Premium Product Information on E-commerce Sites?," Proc. AMCIS 2006, Aug. 2006, pp. 418-424

[11] Y. Choe, J. Park, M. Chung, and J. Moon, "Effect of the food traceability system for building trust: Price Premium and buying behavior," Information Systems Frontiers, vol. 11, no. 2, Jul. 2008, pp. 167-179, doi:10.1007/s10796-008-9134-z.