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An IPA-based Study on the Sextic Industry's Potential for Continued Development from Producers' Viewpoint*

Hoe-Chang Yang**, Woo-Taek Kwon***, Dong-Hwan Kim****

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Abstract

Purpose – This study is one of a series of studies on the successful Sextic industry, which was conceived because of the urgency of transforming agriculture to cope with global market-opening pressures as well as to solve domestic difficulties facing Korean rural areas.

Research design, data, and methodology – This study involved constructing a questionnaire based on evaluation standards proposed by prior research. Further, this study intended to lay the groundwork for the development of the Sextic industry through the use of IPA. It also sought to explore the possibility of developing scales capable of performing causality analysis. We conducted 149 effective questionnaires, and applied the paired t-test and IPA for the analysis.

Results – The results of the analysis indicated that the degrees of producers' perceptions regarding the importance and performance with respect to five variables of the performance indicators were different.

Conclusion – It was suggested that the implementing subjects of the Sextic industry should prevent possible problems relating to several factors by building close cooperative relationships with the interested parties of each industry.

Keywords: Sextic Industry, Environmentally Friendly Product, IPA, Producer, Agriculture And Animal Husbandry.

JEL Classifications: L11, L15, L66, M11, N55.

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** 1st Author, Assistant professor, Department of Distribution Management, Jangan University, Korea. Tel: +82-31-299-3133, e-mail: pricezzang@naver.com

*** 2nd Author, PhD Candidate, Dept. of Business Administration, Anyang University, Korea, Tel: +82-10-6372-3841, e-mail: kowntack@naver.com

**** Corresponding Author, Professor, Dept. of Business Administration, Anyang University, Korea, Tel: +82-31-467-0978, e-mail: dhkim@ahyang.ac.kr

1. Introduction

Amidst the worldwide tendency of being one big global market, the expansion of free trade has been accelerating the opening of market for products of primary industry. And among global issues of global warming, food crisis, and oil depletion, particularly food crisis is linked to food security in countries importing agricultural products and hunger in developing countries. Further, as market opening is expanded, countries importing agricultural products face growing problems such as shrunken agricultural production, reduced agricultural income, weakened food security, and expanded regional gaps (Kim et al., 2013).

It is true, however, that until recently agricultural and fishery communities in Korea have been treated as marginal areas to be changed into urban areas sometime, rather than being on an equal footing with urban areas, and that Korean policies for agricultural and fishery communities have been dealt with as complementary areas of agricultural policies, as shown in improvement in farmers' living environment and the promotion of increase in nonfarm income (Song & Kim, 2010). And yet, agricultural and fishery communities in Korea still account for considerable portions of the nation's total land area, and they should be given critical consideration as space for new industries that will be potential resources for national growth, such as citizens' leisure and recreational space and space for green growth (Song & Kim, 2010).

Korean agriculture and agricultural communities are faced with difficulties that threaten their existence, such as domestic problems of ageing, population drain, and vulnerable marketing structure in addition to global market-opening pressure. To solve the difficulties, it is judged that efforts should be made for the increase of farm income, the revitalization of rural economy, the promotion of urban-rural exchanges, product development, fostering of agricultural management manpower, and creation of new employment (Jo et al., 2013). In the meantime, the Central Government and local governments have promoted actively a variety of policies to solve the above problems, and particularly the Park Geun-Hye administration is pushing forward diverse strategies, claiming to advocate 'Turning agriculture, forestry, and animal husbandry into new growth drivers' as one of the mainstays of its agricultural administration (Yoo, 2013). The

strategies have exploded interest in turning agriculture into Sextic industry, and although academic approaches are still inadequate, relevant agencies and researchers (e.g., Hwang, 2011; Jo et al., 2013; Kim et al., 2013; NHERI, 2014; Yoo, 2013) have made many suggestions about the concept, process and project orientation of Sextic industry.

In an effort to seek a new hope for agriculture and agricultural communities out of a sense of crisis in agriculture, the agriculture-centered Sextic industry has been promoted to create new sources of income through the convergence of production, processing, manufacture, and service industries, which includes processing, distribution, tourism, and service beyond the existing production-centered agriculture. The Sextic industrialization of agriculture means industrialization of a macro goal to construct livable agricultural communities full of vitality (Byun, 2014).

However, for an industry to be successful as a business model, a review from a variety of viewpoints is needed. Particularly, as many researchers argue, the organic and comprehensive convergence of the primary industry, the secondary industry and the tertiary industry, not mere their aggregation, is the critical factor of successful Sextic industry. Thus, moral and ethical values like entrepreneurship are required of the persons concerned who lead each industry, and all should cooperate to create new values. On the other hand, business competitiveness can be secured only when a variety of devices and techniques, which can diagnose to which industrial area a problem belongs in case of its occurrence, are developed and prompt correction and a change of direction are carried out. In the case of current Korean Sextic industry, however, approach to the above has been insignificant though relevant projects have been evolved, and huge amounts of money and manpower have been invested only on the grounds of assertions that comprehensive convergence is necessary and of several successful cases in domestic and overseas agricultural communities. In fact, almost no indicator presentation or empirical analysis regarding policies or feasibility in connection with Sextic industry could be found, except Jo et al. (2013) and Kim et al. (2013).

Therefore, so as to establish the foundation for the continued success of Sextic industry, this study first intended to investigate producers with regard to potential for the development of Sextic industry, on the basis of the method for evaluating the Sextic industry suggested by Kim et al. (2013) and the questionnaire analyzed empirically by Jo et al. (2013). For this, FGI with marketing experts was conducted regarding evaluation method indicators suggested by Kim et al. (2013), and a questionnaire was constructed on the basis thereof. And then, a self-report questionnaire survey was conducted with producers, and the potential for the settlement of Sextic industry and the potential for its continued development were examined by means of IPA (Importance-Performance Analysis).

It is expected that the results of this study will suggest a direction in the development of diagnostic scales for industries that will be put in Sextic industry in the future from the viewpoint of convergence, as well as will provide clues to the pro-

posal of directions in policies about Sextic industry. Further, it is expected that the results will ultimately become the foundation for developing diverse scales, such as satisfaction scale with consumers, end users of Sextic industry. Particularly, the development of scales for quantitative causality analysis about the operator group and the consumer group for each industry will be able to suggest a variety of viable strategies for Sextic industry through quantitative analysis, not ephemeral phenomenon for catching a false image based on mere slogans, and thus it is expected that the results of this study will have very significant meanings.

2. Theoretical Background & Hypotheses

2.1. Concept of Sextic Industry

Kim et al. (2013) reported that the agricultural sector has emphasized the area of production in the narrow sense in the meantime, but that, from the expanded business viewpoint, the agricultural sector can create new value if agriculture develops diverse processed products in response to changes in food consumption patterns, makes a connection with the food service industry, or is applied to tourism, exchange, healing, welfare, and the like. The term Sextic industry was proposed by Professor Emeritus Imamura Naomi of Tokyo University, Japan, in the early 1990s. It implies the concept that agriculture needs to expand its areas to the secondary industry of processing agricultural and livestock products and the tertiary industry of agriculture and livestock product distribution and tourism, not being limited to the primary industry of producing agricultural and livestock products; and that new values can be created to rural areas only when making agriculture into comprehensive industry is carried out (Yoo, 2013; Jo et al., 2013 re-quotation). Therefore, the Sextic industrialization of agriculture refers to business led by local inhabitants including the aged for forming ecology, where production, processing, sales, and exchange are integrated vertically, and creating new value by utilizing agricultural products, natural resources, and other diverse resources such as talented manpower, history and culture (Kim et al., 2013). It may be said that Sextic industrialization was initiated by the attempt to internalize into agriculture or agricultural community jobs and value-added areas such as distribution, food service industry, and tourism, which are derived from agriculture or agricultural community, but flow out into the areas of urban manufacture or service industry (Kim et al., 2013). That is, the purpose of Sextic industrialization is to integrate processing and sales into production, using strategies for internalizing jobs and value-added, which used to flow out to the outside of agriculture, and to revitalize rural areas through creating jobs and value-added at rural areas by turning tourism or exchange/healing/welfare also into business (Kim et al., 2013). Therefore, given the essence of the activities, competent management bodies should be able to start business without difficulty, and a management body should be able to secure sustainable manage-

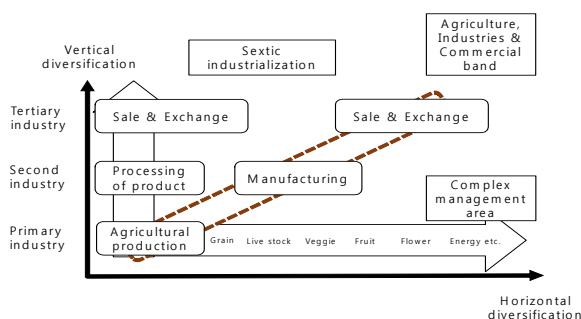
ment conditions once it was founded (Park, 2013). From this point of view, Sextic industry is based on the producer value chain model that farmers, who are producers, aim to increase income through creating value-added directly or indirectly related to the supply chain of food ingredients (Jo et al., 2013). From this, the diversification and complexation of agricultural management can be promoted, and the use of agricultural products within a given region can be facilitated as farmers discover and utilize resources directly and create new business (Jo & Nho, 2010).

2.2. Types and characteristics of Sextic industry

According to Jo et al. (2013), detailed Sextic industry promoted can be classified into several types according to the characteristics of business evolution. First, on the basis of the relations between the agricultural sector and other promotional subject, Sextic industry may be divided into the type of management diversification, a form where production, processing and sales in the agricultural sector are integrated, and the type of agricultural, commercial and industrial solidarity, a promotion type based on the solidarity and convergence of management bodies at each vertical stages of distribution including production, processing, retail distribution, and so on. On the other hand, on the basis of relations with region, Sextic industry may be divided into the industry/business-oriented type, which gives weight to competitiveness as industry and efficiency of business, and the region/community-oriented type, which gives weight to region and community and revitalizes local economy and society. In addition, in terms of differences in methods for product sales and service providing, Sextic industry may be divided into the distribution channel utilization type, which utilizes diverse distribution channels for delivery to customers and the exchange type, which invites customers and carries out product sales and service providing.

2.3. Directions for promoting Sextic industrialization

With respect to directions for promoting Sextic industrialization, Kim et al. (2013) suggested three directions for promoting Sextic industrialization: horizontal diversification, vertical diversification, and solidarity between industries of different types such as agriculture, industry and commerce.



Source: Kim et al. (2013).

<Figure 1> Direction of Sextic industrialization based on agriculture

To be concrete, first, horizontal diversification pays attention to the fact that the current local agriculture raises risk and has limitations in the development of diverse processed foods due to excessive monocropping for economy of scale. It switches from the formation of a chief producing district, which concentrates on a specific item, to the production of diverse agricultural products. Second, vertical diversification is Sextic industrialization in the narrow sense, and refers to the integration of the production sector and processing and sales sectors through expansion into the areas of processing and sales, led by the producer group. The realization of vertical diversification improves value-added within agriculture and agricultural community, and expects economy of scope to avoid risks within the production sector including climate disaster and price fluctuation. Lastly, solidarity between industries of different types expects economy of linkage through solidarity with a company that owns technology that can overcome limitations of agricultural management such as the development of a new product, the development of domestic and overseas markets, and local brand making. That is, economy of linkage can be secured through solidarity with other industry that has advantageous information or resources in terms of resource procurement, product development or service production & sales.

2.4. Methods for evaluating Sextic industry

As mentioned above, the methods for evaluating Sextic industry, which is the foundation of continued development led by producers, employed in this study is based on evaluation indicators suggested by Kim et al. (2013). With respect to the importance of evaluating Sextic industry, Kim et al. (2013) reported as follows:

First, the evaluation of Sextic industry generally has double-sidedness: evaluation in terms of economic aspects such as sales and rate of return, and evaluation in terms of social aspects such as the handling of community tasks, the inducement of inhabitants' participation, and the management of local resources. In addition, the project evaluation grasps performance and problems on the basis of business foundation goals; and the results of evaluation have critical significance for the economic performance of a project in terms of efficiency, the substantiality of social service in terms of public interest, and the permanent maintenance of a project in terms of continuity.

Given that Sextic industry aims at inhabitants' voluntary participation based on the utilization of local resources, they say, evaluation items of the following five areas can be established: the substantiality of business start-up plan, the participation of local inhabitants, the utilization of local resources, management performance, and contribution to community. More specifically, first, the substantiality of business start-up plan refers to the degree of thoroughness in preparation and planning in the process of business start-up; and evaluates whether a vision was presented after local common tasks are grasped, and strategies for the realization of the vision were worked out objectively and suitably

to local circumstances. Second, they said that the voluntary participation of local inhabitants is the key to maintaining business continuity and dealing with local tasks. Third, the utilization of local resources implies that new local value can be created by discovering and combining attractions inherent in currently utilized resources or potential resources that exist within the region such as talented people, products, funds, and information. Fourth, management performance may be divided into job creation consistent with the goal of business and improvement in value-added. Jobs have great significance for the fruitful and glad realization of self-satisfaction in local inhabitants who engage in business. And given that Sextic industry emphasizes inhabitants' participation and community recovery, they said, job creation for securing the employment of inhabitants and the disadvantaged has great significance. Improvement in value-added pertains to the settlement of financial problems through job or income creation, and may be construed as an attempt to settle the social problems of rural areas such as ageing and population drain. Lastly, contribution to community is divided into dealing with diverse social tasks caused by ageing and population drain; giving back to community part of profits or re-investment into the original business goal; and the creation of new value, given that the purpose of Sextic industry is to maintain balance between public interest and profitability and to deal with common community tasks through business. Evaluation indicators of Sextic industrialization by item proposed by Kim et al. (2013) are represented in Table 1.

3. Methodologies

3.1. Data collection

This study carried out survey with producers of agricultural and livestock products in Incheon-si and Gyeonggi-do for two weeks from April 7, 2014 to April 19, 2014. As for the methods of survey, questionnaires were put in mail boxes by site visit, and were collected the next day. A total of 151 questionnaires were collected, and 149 effective answers, with two insincere answers excepted, were used in the analysis.

As for the questionnaire, the foundation of Sextic industrialization was restricted to environmentally friendly products, in consideration of agricultural and livestock producers who were unfamiliar with the term of Sextic industry. And three questions on substantiality, three questions on inhabitant's participation, four questions on resource utilization, four questions on management performance, and six questions on contribution to community were prepared on a 7-point Likert scale, on the basis of the evaluation indicators in Table 1 proposed by Kim et al. (2013); and their face validity was secured by focus group interviews (FGIs) with experts including professors of marketing and distribution.

3.2. Methods

The contents of survey on importance consisted of questions related to necessity, for example, "Strategies for the production of environmentally friendly products should be very suitable," "The aged and women should also participate in the production of environmentally friendly products," for the Participation of local inhabitants, "Local facility resources should be utilized properly for the production of environmentally friendly products," for the Utilization of resources, "The production of environmentally friendly products should contribute to raising value-added," for the Management performance, and "The production of environmentally friendly products should contribute to enhancing local value," for the Contribution to community. And after asking about other matters related to the production of environmentally friendly products, three questions on Substantiality, three questions on Participation of local inhabitants, four questions on Utilization of resources, four questions on Management performance, and six questions on Contribution to community were again transformed into the degrees of evaluation on performance related to the current production of environmentally friendly products, and were measured. As for the methods for analysis, descriptive statistical analysis was first carried out to grasp the demographic characteristics of respondents, and importance-performance analysis (IPA) was carried out to find strategic clues to the continued development of Sextic industry from the producers' viewpoint.

According to Yang (2013), IPA was first formulated by Martilla & James (1977), who wanted to grasp the importance of car dealer's service, to compare and analyze the relative importance

<Table 1> Evaluation indicators of Sextic industry by item

Evaluation item		Evaluation indicator
Substantiality of business start-up plan		<ul style="list-style-type: none"> • Specificity of community task and vision • Adequacy of SWOT analysis and strategy • Incorporated or not
Participation of local inhabitants		<ul style="list-style-type: none"> • Participant number/ratio • Participant's activeness • Aged participants' ratio • Female participants' ratio
Utilization of local resources		<ul style="list-style-type: none"> • Utilization of local natural resources • Utilization of local facility resources • Utilization of local idle resources • Utilization of local traditional culture
Management performance	Job creation	<ul style="list-style-type: none"> • Number of local jobs created • Number of jobs created for the underprivileged
	Improvement in value-added	<ul style="list-style-type: none"> • Trend of value-added • Trend of sales
Contribution to community	Dealing with social tasks	<ul style="list-style-type: none"> • Dealing with community task • Service for the underprivileged
	Giving back to community	<ul style="list-style-type: none"> • Ratio of reinvestment to profit • Ratio of return to community to profit
	Creation of new value	<ul style="list-style-type: none"> • Enhancement of local value • Nurturing local talented people

Source: Kim et al. (2013).

and performance of 14 attributes; and has since been utilized in various service industry areas for choosing an area of concentration for competitiveness after analyzing customers' satisfaction factors and dissatisfaction factors, or for providing support for resource allocation in the implementation of strategies (Deng, 2007). Originally, IPA is a technique for measuring users' satisfaction; it measures the importance of each attribute before use and evaluates satisfaction after use, and compares and evaluates the relative importance and satisfaction of each attribute at the same time. Its basic assumption is to judge customers' levels regarding satisfaction attributes (Hammit et al., 1996; Yang, 2013 re-quotation). Here, the level of importance is measured on the basis of importance relative to various quality dimensions, and a quality dimension of high importance is judged to have great effects on end users' positive perceptions (Yang, 2013). Therefore, it was judged that IPA was the most appropriate for working out a strategy from the producers' viewpoint in terms of what factor among variables of Kim et al. (2013), which presented the evaluation indicators of Sextic industry, can contribute more to the success of Sextic industry.

4. Empirical Analysis

4.1. Demographic Characteristics

The results of analyzing demographic characteristics showed that males (75.8%, 113 persons) were absolutely more than females (24.2%, 36 persons), and that the age bracket of 46-55 (28.2%, 42) was most, followed by 36-45 (24.8%, 37), 25-35 (22.1%, 33), and 56-65 (16.8%, 25). As for marital status, it was found that the married were 104 (77.6%) and the unmarried 30 (22.4%), while 15 (10.1%) among the respondents did not answer. As for educational background, it was found that university graduates (45.3%, 67) were most, followed by high school graduates and under (39.9%, 59) and university undergraduates (12.2%, 18); and thus the respondents were found to be largely divided into the highly educated and the low-educated. On the other hand, as for income, it was found that the monthly income of below KRW 3 million (50.3%, 75) exceeded the majority, followed by KRW 3 million-4 million (26.8%, 40) and KRW 4 million-5 million (10.7%, 16). 10 high income earners of more than KRW 6 million (6.7%) were also found. The participants' demographic characteristics are represented in Table 2.

4.2. Reliability and Validity

This study used Cronbach's α to verify the reliability of scale variables, and confirmatory factor analysis to examine validity. As stated above, this study is not intended to develop a scale; and so, although the construct reliability for Participation of local inhabitants (C.R.=0.679) and Management performance (C.R.=0.69) is below 0.7 and the average variance extracted for Participation

of local inhabitants (AVE=0.415), Utilization of resources (AVE=0.487), Management performance (AVE=0.363), and Contribution to community (AVE=0.381) is below 0.5, it was expected that they would not have effects on IPA. But it is seen that research related to scaling should precede future studies intending to utilize the scale used in this study, and that additional analysis is necessary for validity verification. The results of analysis are represented in Table 3.

<Table 2> Demographic Characteristics

items	Sub-items	Frequency	Ratio (%)
Gender	Male	113	75.8
	Female	36	24.2
Age	26~35	33	22.1
	36~45	37	24.8
	46~55	42	28.2
	56~65	25	16.8
	66~75	11	7.4
	over 76	1	0.7
Marriage status	Married	104	77.6
	Unmarried	30	22.4
Level of education	High school or less	59	39.9
	In college	18	12.2
	College graduation	67	45.3
	More than Graduate	4	2.7
monthly earning (Won)	less than 3 million	75	50.3
	3~4 million	40	26.8
	4~5 million	16	10.7
	5~6 million	8	5.4
	more than 6 million	10	6.7

Note) Marriage status 15 participant, Level of education 1 participant missing.

<Table 3> Reliability and Validity

Variables		items	Reliability	Construct Reliability	AVE
Fidelity	Importance	3	0.890	0.787	0.553
	Performance		0.847	0.764	0.519
Participations	Importance	3	0.832	0.679	0.415
	Performance		0.819	0.707	0.447
Utilizing resources	Importance	4	0.887	0.789	0.487
	Performance		0.934	0.888	0.654
Performance	Importance	4	0.846	0.694	0.363
	Performance		0.880	0.761	0.444
Community contribution	Importance	6	0.900	0.787	0.381
	Performance		0.936	0.874	0.536

4.3. Results of IPA

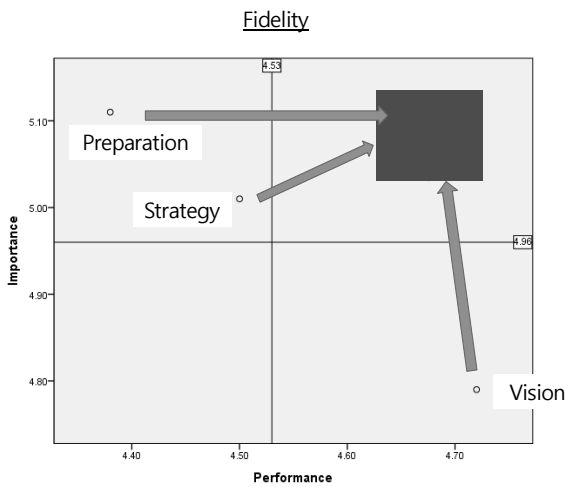
As a result of carrying out the paired sample t-test to analyze differences in importance and performance evaluation, it was found that t-value was .524 ($p=.000$) for Substantiality, 5.688 ($p=.000$) for Participation of local inhabitants, 6.081 ($p=.000$) for Utilization of resources, 4.902 ($p=.000$) for Management performance, and 4.826 ($p=.000$) for Contribution to community, respectively; and thus it was found that there was differences between importance and performance evaluation for each variable. The results of the paired sample t-test were rep-

resented in Table 4.

<Table 4> Results of Paired Sample t-test (n=149)

Variables	Compare between sub-items	Mean	S.D	t-value	p-value
Fidelity	Importance	4.96	1.38	4.52	.000
	Performance	4.53	1.13		
Participations	Importance	5.00	1.35	5.68	.000
	Performance	4.36	1.22		
Utilizing resources	Importance	4.92	1.28	6.08	.000
	Performance	4.24	1.26		
Performance	Importance	4.93	1.29	4.90	.000
	Performance	4.40	1.28		
Community contribution	Importance	4.71	1.27	4.82	.000
	Performance	4.18	1.25		

Note) S.D : Standard Deviation



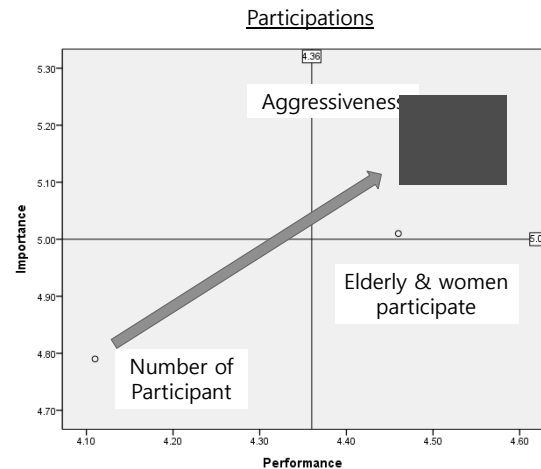
<Figure 2> IPA results for Fidelity

The interpretation of IPA results may be approached in terms of two viewpoints. First, they may be interpreted according to the criteria of quadrant approach arranged by Yang (2013), as follows: First, Quadrant I is an area of high importance and high performance, and contains elements highly regarded by producers. Therefore, it is desirable to maintain the elements continuously, and the elements may be actively utilized as elements of differential advantage for the success of Sextic industry. Quadrant II is an area of high importance and low performance. Its attributes are highly regarded by producers, but show low performance, and thus require immediate attention for improvement. Therefore, they are elements that require immediate investment with top priority. Quadrant III is an area of low importance and low performance. Producers show low importance and performance, both of which are below average, to its evaluation attributes; which indicates that current efforts are unnecessary. Thus, it is judged that there is a low necessity to invest additional resources into the attributes. Lastly, Quadrant IV is an area of low importance and high performance. It denotes attributes that are not highly regarded by producers, but

show excessive performance. Actually they are not very important attributes. Therefore, it is judged that efforts put in the attributes may be reduced or be stopped according to circumstances, and it is desirable to divert efforts to other area.

Figure 2 depicts IPA results for fidelity, based on the above evaluation criteria. Quadrant II, which requires immediate attention for improvement, shows the necessity for preparation and strategies for the development of Sextic industry. Therefore, it suggests the need of education and direction presentation for the producers of primary industry with regard to preparation and strategy formulation. On the other hand, in the case of vision, it belongs to Quadrant IV, which implies the possibility that vision regarding the success of Sextic industry may be working as mere vague hope. Therefore, it suggests that more realistic approach needs to be adopted for the development of Sextic industry.

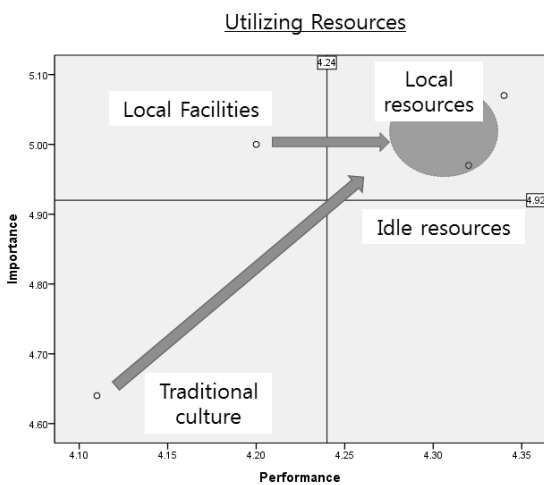
In the case of the second variable, Participation of local inhabitants, Quadrant I shows that participants' activeness and the participation of the aged and women are very highly regarded. Therefore, support strategies for active participation should be worked out, and institutional devices that allow the active participation of the aged or women will be needed. What is peculiar is that they don't recognize the number of participants, which is located at Quadrant III, as an element of success. From this, it may be interpreted that the producers think qualitative efforts are far more important than the quantitative number of people for the success of Sextic industry.



<Figure 3> IPA results for Participation of local inhabitants

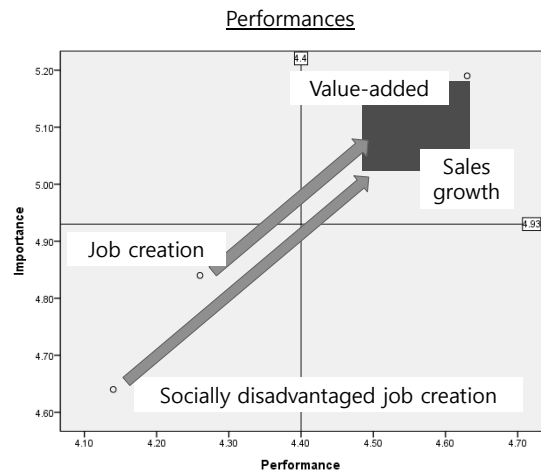
IPA results for the third variable, Utilization of resources are represented in Figure 4. First, Quadrant I shows that the utilization of local resources and the utilization of idle resources are very important. That is, the producers think that the active utilization of idle resources together with the utilization of natural resources is required for the development of Sextic industry. Therefore, it is necessary to work out strategies for the effective use of idle resources as well as to discover and maintain com-

petitive natural resources of a relevant region for the development of Sextic industry. On the other hand, Utilization of local facility resources located at Quadrant II suggests the need for immediate improvement. This means that the producers recognize or judge that the current facility resources are run-down or insufficient. Therefore, for the success of Sextic industry, business subjects will need to make decision and work out investment strategies on facility requiring intensive investment, by carrying out discussion and exchange with producers. What is peculiar is that Utilization of traditional culture in Quadrant III shows needlessness to invest additionally into traditional culture. The reason for this may need to be explored in diverse directions, but there is the possibility of relative fatigue due to the existing diverse investments or over-investment as a result of local governments carrying out storytelling strategies, and also the possibility of feeling no necessity for traditional culture cannot be ruled out. However, it cannot be ignored that traditional culture is very important factor of the business in the form of visit and exchange in tertiary industry among Sextic industry. Therefore, in the case of Utilization of traditional culture, efforts will be needed to find the balance between adequacy and investment performance.



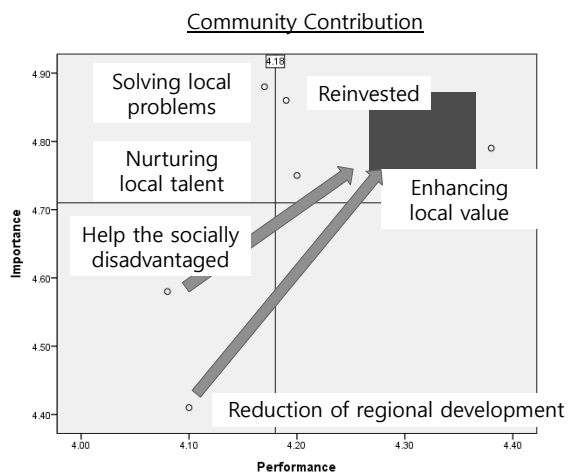
<Figure 4> IPA results for Utilization of local resources

Fourth, the results of IPA with respect to items of Management performance suggest that strategies should be operated centering around the direction of raising value-added and sales (see the results of Quadrant I). Therefore, from the producers' viewpoint, the key to the success of Sextic industry is the assurance that Sextic industry can raise value-added and sales. In this respect, it will be necessary to make efforts to propagate actively cases of successful Sextic industry throughout the community. On the other hand, it should be noted that they don't make much of the creation of local jobs or the creation of jobs for the underprivileged, which are located at Quadrant III. As for the elements located at Quadrant III, they will be focused on with the second method of interpretation.



<Figure 5> IPA results for Management performance

Lastly, the results of IPA with respect to Contribution to community show consensus that profits from the implementation of Sextic industry should be re-invested, that Sextic industry should contribute to the improvement of local value, and that local talented people should be cultivated (see Quadrant I). Therefore, the success of Sextic industry will require institutional support to promote the active re-investment of profits as well as plans to improve local value and nurture local talented people. On the other hand, it can be seen that local problems should be settled urgently for the success of Sextic industry. This suggests that flexible approach to solutions suitable for each community is required, considering problems that occurred or may occur to each community are not uniform. Meanwhile, it was found that they didn't recognize significance with regard to giving support to the underprivileged or giving back to community for its development (see Quadrant III).



<Figure 6> IPA results for Contribution to community

So far, this paper has analyzed IPA results, using the first approach of working out strategies according to quadrants. As

stated in Introduction of this paper, however, in case that a problem occurs while implementing Sextic industrialization through the convergence of industries, business competitiveness can be secured only when diverse devices and techniques, which can diagnose and find to what area of industry the problem belongs, have been developed and so prompt improvement and direction change can be carried out. Similarly, as derived from the above results, in case that Sextic industry is stagnated or regresses, new policy and strategy should be worked out and operated. Therefore, the second approach is strategic approach that moves elements in Quadrant III in the direction of the arrow to Quadrant I so as to solve problems occurring in association with Sextic industrialization.

For instance, in case that the results of Sextic industrialization are insignificant even though other improvements were made and sufficient investment was made into important elements, the probability for the success of Sextic industry will increase far more in view of the results of this study, if strategies for increasing the number of participants, promoting the utilization of traditional culture, making efforts to create local jobs and jobs for the underprivileged, helping the underprivileged, or giving profits from Sextic industrialization back to community for its development.

5. Discussion and Limitations

This study is one of a series of studies on successful Sextic industry, which began under the urgent situation that agriculture should also be transformed to cope with global market-opening pressure as well as to solve domestic difficulties facing Korean rural areas such as ageing, population drain and vulnerable marketing structure. It constructed a questionnaire on the basis of the evaluation factors of Sextic industry proposed by Kim et al. (2013) and a questionnaire empirically analyzed by Jo et al. (2013), and tried to find clues to the potential for the development of Sextic industry from the producers' viewpoint.

From this study, several theoretical implications and practical implications could be suggested as follows:

As for the theoretical implications, first, this study is the first one that approached Sextic industry by means of techniques for quantitative analysis. It is significant in that it carried out empirical analysis, while many other studies have so far consisted of successful cases or policy reports. Second, there is the probability that the questionnaire developed using the performance indicators suggested by Kim et al. (2013) will secure validity. As shown in Table 3, although the values of average variance extracted for Participation of local inhabitants, Management performance and Contribution to community and the values of construct reliability for Participation of local inhabitants and Management performance fell short of the suggested criteria, the results of reliability analysis showed that all the items were above 0.819, and that both Substantiality and Utilization of resources exceeded the suggested criteria; and thus the possibility

of scaling can be expected. The possibility of scale development has significance in that it is possible to develop and apply a causality model. The practical implications suggested by this study for the development of Sextic industry are as follows: As a result of conducting IPA of each variable from the producers' viewpoint, it suggested that sufficient preparation and strategies for the development of Sextic industry are urgent in the case of Substantiality. This indicates that the producers recognize shortages in preparation and strategies, though diverse policies have been applied and businesses have been attempted so far. Therefore, the subjects who promote Sextic industry should make thorough advance preparations for the realization of Sextic industry based on local primary industries, and sufficient publicity and education about strategies related to Sextic industrialization should be carried out.

Second, as for Participation of local inhabitants, it suggests that plans for encouraging participants' activeness and the active participation of the aged and women should be worked out. For instance, if educational programs angled towards the aged or women to facilitate their learning about the direction of Sextic industry and specific action plans or institutional plans for their contribution to Sextic industrialization are presented, their effects will be considerable.

Third, it can be seen from Utilization of local resources that the utilization of local resources and the utilization of idle resources are very important and that the improvement of local facility resources is urgently needed. Therefore, for the success of Sextic industry, business subjects will need to make decision and work out investment strategies on facility requiring intensive investment, by carrying out diverse discussions and exchanges with producers.

Fourth, as for Management performance, it can be seen that Sextic industry should evolve towards the direction that can raise local value-added and sales. In this respect, it is necessary to instill assurance that Sextic industry can raise value-added and sales, by making efforts to propagate actively cases of successful Sextic industries from other regions.

Fifth, with respect to Contribution to community, it was found that there had been formed consensus that profits from the implementation of Sextic industry should be re-invested, that Sextic industry should contribute to the improvement of local value and that it is necessary to cultivate local talented people, for the successful implementation of Sextic industry. On the other hand, it was suggested that for the success of Sextic industry, it is necessary to solve actively local problems that occur in different forms according to regions. Therefore, appropriate flexible approach to solving problems that occurred or may occur to each community will be needed.

Lastly, it was suggested that in case that Sextic industry is stagnated or regresses even when strategies were worked out and operated according to methods suggested by IPA, factors in Quadrant III should be noted. This is consistent with this study's expectations that diagnostic system may be established in connection with the implementation of business and that feedback may be implemented.

Although this study was able to suggest various theoretical and practical implications, it has several limitations, which should be improved by future studies. First, although this study attempted quantitative approach, it failed to realize statistically verified scaling. Therefore, future studies will need additional research, which will secure more respondents and will have the correct procedure and analysis of scale development so that more researchers may utilize the results in their causality models. Second, one of its limitations is that it carried out research with agricultural and livestock producers and was restricted only to "the production of environmentally friendly products" in anticipation of lack of recognition about Sextic industry. For there are differences in the production of environmentally friendly products from the viewpoint of agricultural products and livestock products, and also it is difficult to expect the development of Sextic industry from the production of environmentally friendly products alone. Therefore, future studies will need elaborate the producer group and include sufficient products that can be produced actually by them, so that respondents may provide more realistic data. Third, although this study restricted its scope of study to the producers' viewpoint, the ultimate confirmation of the feasibility of Sextic industry will need the expansion of research scope into the secondary industry centering around manufacture, and the tertiary industry based on sales and experience, as well as the preparation of methods for confirming the consumer group's response to Sextic industry. Lastly, this study failed to control the problem of common method variance and the possibility for respondents' committing the error of interpreting the questionnaire differently, for the data collection of this study relied on the self-report questionnaire despite diverse age brackets and the polarization of educational background, as shown by the demographic characteristics. Although this study used the methods of excluding the consistency of questionnaire arrangement and explaining matters difficult to understand during the survey, there are possibilities of overvaluation and responses out of learning effects, for the respondents evaluated the importance and performance of Sextic industrialization directly at the same time. Therefore, future studies will need to make supplementation with various methods such as interview, so as to improve the objectivity of data collection.

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