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Author(s)	Fujita, Masahisa
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Economic Development Capitalizing on Brand Agriculture: Turning Development Strategy on Its Head

Masahisa FUJITA*

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Abstract

This paper explores the possibilities of two unique Japanese concepts – the One Village One Product Movement (OVOP) and Michino Eki (or Roadside Stations) – as potential tools for bridging the gap between cities and rural areas through community-driven development. From the viewpoint of spatial economics and endogenous growth theory, this paper considers both OVOP and Michino Eki as rural development strategies of a broader nature based on "brand agriculture." Here, brand agriculture represents a general strategy for community-based rural development that identifies, cultivates and fully utilizes local resources for the development of products or services unique to a certain "village." Selected examples of OVOP and Michino Eki from Japan and developing countries are introduced.

Keywords: rural development, brand agriculture, OVOP

JEL classification: O13, Q10, Q16

* Institute of Economic Research, Kyoto University, Yoshida-Honmachi, Sakyo-ku, Kyoto-shi, Kyoto 606-8501, Japan, and Institute of Developing Economies, JETRO, 3-2-2, Wakaba, Mihama-ku, Chiba-shi, Chiba 261-8545, Japan. Phone: (81-75) 753-7122, Fax: (81-75) 753-7198, e-mail: fujita@kier.kyoto-u.ac.jp

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INSTITUTE OF DEVELOPING ECONOMIES (IDE), JETRO
3-2-2, WAKABA, MIHAMA-KU, CHIBA-SHI
CHIBA 261-8545, JAPAN

Economic Development Capitalizing on Brand Agriculture: Turning Development Strategy on Its Head

MASAHISA FUJITA

Challenging the common literature of economic growth and development that tends to assign the agrarian sector the backseat, this paper seeks to move agriculture and rural development to the forefront through a community-based strategy designed to cause major innovation dynamics and human capital accumulation to occur. Specifically, this paper explores the possibilities of two unique Japanese concepts advocating community-based rural development -- the One Village One Product Movement (OVOP) and Michino Eki (or Roadside Stations) -- initiated in the peripheral regions of Japan in the early 1960s and the mid-1990s, respectively. Both OVOP and Michino Eki have attracted widespread attention in many developing countries as potential tools for bridging the gap between cities and rural areas through community-driven development, and are being implemented in many countries. From the viewpoint of spatial economics and endogenous growth theory, this paper considers both OVOP and Michino Eki as rural development strategies of a broader nature based on "brand agriculture." Here, brand agriculture represents a general strategy for community-based rural development that identifies, cultivates and fully utilizes local resources (including natural, historical, cultural and human resources) for the development of products or services unique to a certain "village" or geographical area. In the context of brand agriculture, selected examples of OVOP and Michino Eki from Japan and developing countries are introduced, with special attention given to the role of various types of infrastructure in the effective promotion of OVOP and Michino Eki.

Masahisa Fujita is Professor of Economics at Kyoto University, and the President of the Institute of Developing Economies (IDE) at the Japan External Trade Organization. The author would like to thank Megumi Muto of the Japan Bank for International Cooperation (JBIC), Kazuhisa Matsui of IDE and Jacques Thisse for their valuable help in developing this paper. The author is grateful also to four anonymous referees, as well as to Maria P. Makabenta-Ikeda and Nobuaki Hamaguchi for their helpful comments on a preliminary draft.

If farmers are rich, then the country will be prosperous. If villages are stable, then the society will also be stable.

— President Hu Jintao, China
(*TIME*, 13 March 2006, 22)

Agriculture as the Front Runner behind Two Laps

In common perception, economic development is supposed to proceed with the transformation of the main sector of the economy from agriculture to industry, and then to services. The principal role of rural areas is, therefore, to provide cities with food, while excess labor gradually migrates from rural to urban areas. The engine of economic growth resides in cities where most innovation and learning activities take place. In accordance with such common perception of economic development, most existing textbooks in development economics posit for the agrarian sector a role that consists of producing generic commodities or foods under constant returns to scale, paying little attention to product differentiation, endogenous innovations or knowledge externalities that might take place in the agrarian sector or rural areas.[1] Furthermore, to a remarkable extent practical consideration is hardly given to the location of agrarian activities except in general studies on the dichotomy of urban/rural areas or North/South regions.

In this paper, I dare to challenge such common perception and treatment of the agrarian sector in development economics. This is no mere academic exercise. Indeed, if we were to grant the generally accepted hypothesis regarding the role of the agrarian sector as absolutely true, the agrarian sector and rural areas would have no choice but to remain forever in the backseat of economic development. If we assume constant returns and perfect competition in the agrarian sector, then as pointed out by Romer (1992, p.85), all of agricultural output will have to be paid as returns to input factors; nothing will remain as possible compensation for technological innovations. Thus, productivity enhancement and product innovation could be achieved only through public investments in infrastructure and R&D, leaving no possibility for endogenous innovation dynamics to arise inside the agrarian sector or rural areas. Furthermore, if farmers were to continue producing only generic goods, they would have no way of escaping from the direct competition in price and cost. Then, given the increasingly more severe competition in the commodities markets due to globalization and expanding domestic markets, farmers (except those in the most advantageous locations)

[1] For a comprehensive modern textbook in development economics, see, for example, Ray (1998).

would be able to survive only under increasing subsidies and protection, while suffering from the gradual decline in their wages and incomes.

Needless to say, from the viewpoint of domestic and international economic policy, the revitalization of the agrarian sector and rural areas is of great importance not only for developing countries but also for developed countries. As illustrated in Figure 1, not only in developing countries but also in many developed countries, sizeable segments of the populations continue to reside in rural areas. Rural areas, of course, are not entirely populated by full-time farmers. Yet, given that most people in rural areas are directly or indirectly connected to the agriculture or local-resource-based activities there, and given that the majority of the poor in the developing world reside in rural areas, the revitalization of agriculture and related activities is essential for invigoration of rural economies.

Figure 1. Rural Population Share in Selected Countries

Historically speaking, although the population share of full-time farmers has become very low in most developed countries, the share of the rural population continues to be significant in most countries. For example, in the US, over the past two hundred years the farming population has fallen from 70% to 2%, while the non-farming segment in rural areas has stayed remarkably stable at about 20% (Kilkenny 2004). Likewise, in France, although the number of farmers has fallen dramatically, non-farming rural population has remained around eight million since 1850 (Ravignan and Roux, 1990). For another example, let us consider Latin America and the Caribbean which together represent a highly urbanized region. In this region, the projections for the year 2020 by the World Bank (2006) show that while the urbanization trend will continue, the absolute number of people living in rural areas will remain roughly the same. Thus, for the sake of a balanced growth in both rural and urban areas, invigoration of rural economies remains an issue of crucial importance for both developing and developed countries.

For the invigoration of rural areas, many things should and/or could be done, possibly including the development of the following with appropriate timing:

(a) Infrastructure
  (a-1) hard: electricity, water, sanitation, transportation, telecommunications
  (a-2) soft: administration, management, financing, marketing, technical and technological assistance, R&D institutions

(b) human capital: health, education, training
(c) industries
    (c-1) agriculture (including local resource-based industries)
    (c-2) services
    (c-3) manufacturing

Given that each rural area is unique in many aspects, it would not be very productive to discuss in a single paper general strategies for rural development. Rather, we propose, in this paper, to focus on the development of rural areas that locate in the "periphery." By periphery we mean those areas that are inherently disadvantageous in the cultivation of generic agrarian commodities such as wheat, rice and other standard products. Disadvantages may arise either from steep topography, mountainous land, scarce water supply, extreme weather, or poor transportation access to major markets. Most countries abound in such peripheral areas. Furthermore, in landlocked parts of Asia, Africa and Latin America, many countries are almost entirely in the periphery.

Growing generic agrarian commodities in the periphery entails a population of poor farmers and a constant need for heavy subsidies, assuming the country can afford such subsidies. Meanwhile, in the face of a gloomy outlook for the future under such a development strategy, the country or region is being gradually deserted by her young people. This is true even in rich countries. In 2003, for example, all of the 20 poorest counties (in terms of average wages and salaries) in the US, located on the eastern flank of the Rockies and on the western Great Plains, were engaged in the production of agricultural commodities, their farmers continuing to specialize mostly in wheat, soybeans and cattle (*Economist*, 10 December 2005, pp. 38-39). In addition, the federal government spent an average of US$9,000 per person in North Dakota counties in 2003, mostly in the form of farm subsidies, while the agriculture in the region has entirely failed to adapt to a world of cheap grain and cattle.

Japan, perhaps, is the worst example among nations whose agricultural policy has almost entirely failed in adapting to the globalizing world. Since the early 1960s, Japanese agriculture has been heavily protected through subsidies, tariffs and other policy measures. In particular, in terms of PSE (producer support estimate), the protection degree of Japanese major crops (rice, wheat for food, etc.) has been "extraordinarily" high either in international comparison or absolute terms (Hayami and Koudo, 2002, p.178). Not surprisingly, such Japanese agricultural policy has heavily distorted the working of normal mechanisms in the agricultural and related markets, while impeding the modernization and adaptation of Japanese agriculture in

the globalizing world.

Despite such a misguided agricultural policy, however, the future of agriculture and rural development in Japan is not entirely hopeless. Indeed, since around the early 1960s, a grassroots movement for rural development has spontaneously arisen in many villages located in the periphery of Japan. Although each movement has evolved in a unique way, all successful rural development programs have been sharing the common basic strategy that identifies, cultivates and utilizes fully the local resources (including female labor and elderly people) for the sustained development of a greater variety of unique local products and services (often including local tourism). Through increasingly sophisticated marketing, these unique local products have been sold in larger markets, often establishing distinctive regional brand names identifying the local manufacturers of these products.

Such grassroots movement has arisen despite, and often acting in an opposite direction to, the national agricultural policy for the promotion of rice production everywhere in Japan. Given that the continued production of rice in inherently disadvantageous locations has provided no hope for the future, such grassroots action originated in Japan's remote villages invariably out of their desperate struggle to escape from the increasing poverty and depopulation of their areas. The movement suddenly became popular and accelerated further shortly after Mr. Morihiko Hiramatsu, then governor of Oita prefecture (located in the western periphery of Japan, shown in Figure 4), gave it the attractive name of *One Village One Product Movement (OVOP)* in 1979. Abroad, since its introduction in China in 1983, OVOP has attracted the serious attention of many developing countries. And it has actually been implemented in many countries including Malaysia, Thailand, the Philippines, Indonesia, Cambodia, Laos, Mongolia and Malawi (Africa). The potential attractiveness of OVOP for rural development in developing countries lies in the fact that it has been initiated spontaneously by local communities in the "peripheries" of Japan with little help from the national government. As explained in the fourth section, OVOP implementation experience varies substantially from country to country.

In the early 1990s, another unique concept for local community development called *Michino Eki* (roadside stations) was initiated in Japan. The Michino Eki roadside service stations are uniquely different from highway or motorway service areas or rest areas in other parts of the world for three reasons (World Bank, 2006). First, although the Michino Eki stations in Japan are under the general guidance of the Ministry of Land, Infrastructure and Transportation (MLIT), the actual planning, implementation, operation and management of each Michino Eki are left almost entirely autonomous in

the hands of the local community. Thus, not surprisingly, Michino Eki provides much stronger links between local communities and the users of the highways, while competing with one another on the basis of their uniqueness in terms of the design of their buildings as well as the functions and services they offer. A typical Michino Eki sells a large set of unique local products developed and produced either within the vicinity of the Michino Eki or in the surrounding rural communities. Hence, local residents are provided opportunities for entrepreneurship to increase their income, thereby empowering themselves (in particular women and elderly people). Second, in addition to economic services through market functions, Michino Eki serves as venue for the provision of a wide variety of public services to the local community such as sanitation, health care, education and training, as well as cultural activities. Third, while a normal way station or service area is intended primarily for highway users, focusing on traveler services, a Michino Eki targets the local residents as well who come either in vehicles, on foot or bicycle. Since the first group of Michino Eki was implemented in 1993, there exist today more than 830 Michino Eki throughout Japan (all outside major metropolitan areas).

Like OVOP, the Michino Eki idea has attracted the curious attention of many developing countries. And, under the guidance of Japanese MLIT, Japan Bank for International Cooperation (JBIC) and the World Bank, Michino Eki is now being implemented or in the phase of pilot study in many developing countries such as Thailand, India, China, Turkey, Kenya, Yemen as well as in Mexico.[2]

Both OVOP and Michino Eki have a high potential to be used as an effective strategy or tool for bridging the gap between cities and rural areas in developing countries through community-driven development. However, their attractive names tend to disguise the actual complexity of the concepts behind them, often resulting in misunderstanding. The purpose of this paper is to present a comprehensive understanding of the concepts behind OVOP and Michino Eki from the viewpoint of spatial economics and endogenous growth theory, while illustrating such concepts through actual examples of OVOP and Michino Eki both in Japan and developing countries. Special attention is paid to the role of various types of infrastructure in the effective promotion of OVOP and Michino Eki.

From the viewpoint of economic theory, this paper considers that both OVOP and Michino Eki belong to a broader category of rural development strategy based on “brand agriculture.” Here, brand agriculture represents a general strategy for

[2] For a comprehensive introduction and guidance re Michino Eki, see World Bank (2006).

community-based rural development that successively identifies, cultivates and fully utilizes local resources (including natural, historical, cultural and human resources) for the continual development of an increasingly greater variety of unique local products and services (including local tourism). At the same time, through increasingly sophisticated marketing, these unique local products will be sold in larger markets, gradually establishing local brands to identify them. In so doing, the community will accumulate technical skills, know-how and practical knowledge learned by inference through experience (otherwise known as tacit knowledge) while developing their human resources that are essential for sustained or continual innovation of their unique local products and management system.

In the next section, based on spatial economics and endogenous growth theory, the framework for the analysis of brand agriculture is presented. Then, in the context of brand agriculture, OVOP and Michino Eki in Japan are introduced. The paper concludes with the discussion of policy implications and possible strategies for successful promotion of brand agriculture in developing countries.

Economic Theory and Brand Agriculture

At this point, we may ask what are the essential differences between agriculture and manufacturing or services. It is true that each person has one stomach and hence the capacity for food consumption is limited. But the same is true for manufacturing and services. Each person has a single body and thus the capacity for the consumption of basic products such as clothes for daily wear, TV sets and cars is limited. Likewise, each person cannot watch TV programs, play video games and read books more than 24 hours a day. At the same time, however, one would be delighted in buying new fashionable clothes, a new digital TV set, and the newest version of BMW or Toyota. And, some people can hardly wait for new Korean soap operas (which are now enormously popular in Asia), new games with Play Station 3, and the next version of Harry Potter. Likewise, one would love to try new varieties of fruits and sweets, to receive gorgeous bouquets occasionally, and to visit an *onsen* (a hot spring resort) and enjoy a $100 dinner from time to time.[3] And, some people are ready to pay almost any

[3] This is true also for basic foods. For example, even in the production of the most basic crop, rice, in Japan, after just 10 years since the partial deregulation of its markets, more than a hundred varieties of rice for daily consumption are being cultivated in Japan today, some of which are exported overseas. In my recent trip to Thailand from Japan, the back cover of my air ticket happened to print the PR of one rice brand, Koshihikari cultivated in Minami Uonuma (in Niigata Prefecture), which commands the price of ¥7,660 per 10 kg, which is more than double the average price of rice in Japan.

price for organically-grown, pesticide-free crops and vegetables.

After basic needs have been satisfied, people have almost limitless potential desires for new things. The essence of economic development, thus, lies in the sustained development of new products (both tangible and intangible ones) that cultivate and fulfill such potential desires. This is true not only in manufacturing and services but also in agriculture.

There exist, of course, fundamental differences between agriculture and manufacturing or services. Here and throughout this paper, we consider agriculture broadly to include forestry, fishery and stock-raising as well as all local resource-based industries and activities such as local food processing, crafts, restaurants and tourism. Almost by definition, then, the basic characteristics of agriculture are:

1. It is bound to land and nature, and thus agrarian activity is rather specific to region.
2. Because of land constraint, its activities are geographically dispersed, and thus cannot form a large dense concentration.
3. People engaged in agriculture are also bound to land, working and living together in a rural a community and forming a rather closed society.

As we will see in the rest of the paper, such characteristics of agriculture affect the innovation dynamics and resource development in rural areas differently from cities. This paper suggests that when such innovation dynamics and resource development are appropriately managed and supported by infrastructure, agriculture can become again the front-runner in economic development.

Brand Agriculture and Local Resources

To understand the OVOP and Michino Eki in the broader context of brand agriculture, this paper appeals to the theoretical framework of spatial economics combined with the endogenous growth theory.[4] In the same manner that spatial economics and endogenous growth theory put special emphasis on *product differentiation*, so does brand agriculture. As noted previously, in order to attain higher value-added in the increasingly competitive domestic and global markets, it is essential for producers to differentiate their products from others and avoid direct competition in price and cost. At the same time, such a sustained development of differentiated

[4] Spatial economics is often called the New Economic Geography (NEG). See Fujita, Krugman and Venables (1999) for a comprehensive exposition of the NEG. See also Fujita and Thisse (2002) and Baldwin et. al. (2003) for the recent development of the NEG. For the endogenous growth theory, see, for example, Grossman and Helpman (1991), Barro and Sala-I-Martin (1995) and Aghion and Howitt (1998).

products constitutes the engine of economic growth.

Unlike the manufacturing and service industries in standard spatial economics, however, product differentiation in agriculture does not lead to the formation of big agglomeration of producers and consumers. Indeed, this is not possible by the very nature of agriculture using land extensively. Rather, the key question in the theory of brand agriculture is how to achieve the sustained development of rural areas in dispersed environments. The answer lies in the role that product differentiation plays in the symbiotic evolution of local resources, local products and infrastructure, leading to the sustained development of rural communities. Figure 2 presents schematically the evolutionary process of brand agriculture through double-loop processes.

Figure 2. Evolution of Brand Agriculture through Double-Loop Processes

To explain Figure 2, let us consider a hypothetical story, representing a typical example of OVOP. Focusing first on the outside loop in Figure 2, suppose that, in a village, a group of farmers get together and try to develop unique products which will eventually supplant the traditional crops grown there. This may be caused by a certain catastrophic event that renders the growing of traditional crops there hopeless. Accordingly, the first step is to identify the existing *local resources* (both tangible and intangible ones) that the village has. In the absence of any extraordinary or precious local resources, communities need to focus on developing a few *local products* in which they have comparative advantages under the given set of local resources. Moreover, they will endeavor to produce better products at lower costs. Given that their products are still not very competitive in the national market, they will aim at *regional markets* located relatively nearby while trying at the same time to establish a *brand reputation* for their products through stable and continuous supply.

The experience and know-how gained through this initial period of operations will further enrich the local resource base (including various skills and know-how) and *management capacity* of the group. At the same time, the group may become larger with the subsequent attraction of new participants from the same village. This larger group of farmers, then, will take a fresh look at initial products and try to refine them further, while adding a few new products (some of which may be processed products of local materials). Consequently, the group is better able to exploit the economies of scale/scope better, leading to the supply of a larger variety of products with higher quality at lower costs. One concomitant outcome from such developments would be a more stable supply and a higher reputation of their products in larger markets. In this manner, the brand

agriculture of the village gradually evolves, and in the course of that evolution the village usually introduces a new set of core products periodically. Eventually, the growing reputation of the village will pave the ground for promoting local tourism earnestly. Furthermore, as previous experience has shown, several full-fledged companies using local resources may appear, selling their brand products nationwide and, perhaps, overseas. In this way, the village will become a more invigorated place with increasingly higher local pride.

While a good story this hypothetical example may tell, it is hardly complete. In particular, such evolution of brand agriculture in the village cannot proceed smoothly without consecutive improvement of various kinds of infrastructure surrounding the village in timely manner, which is represented by the inside loop in Figure 2. First of all, the availability of various kinds of basic infrastructure such as water, road and electricity is a prerequisite to the initiation of such an evolutionary process, although the determination of what is basic depends to a great extent on the general environment of the society. Furthermore, although too much assistance from outside agents (assistance, for example, in the form of subsidies) often turns out to be harmful, timely help in developing key new infrastructure such as better access-roads and telecommunication system as well as technical and marketing support will yield enormous benefits in accelerating the process of brand agriculture, for such infrastructure will yield the sustained positive externalities.

Thus, a successful evolution of brand agriculture will follow the double-loop processes of local resource/product development and infrastructure development.

A few additional comments are in order with regard to the hypothetical example above and the key terms in Figure 2.

Local resources: Although some villages may be endowed with truly valuable resources, most rural areas seem to be devoid of any such resource. It is therefore encouraging to see that many successful cases of OVOP and Michino Eki, as will be illustrated later, have managed to change the seemingly ubiquitous resources such as ordinary plants and elderly people into great assets. In this sense, rich local resources cannot be deemed as heaven-sent but rather as having to be created or cultivated through sheer struggle. This also suggests that unique brand agriculture could be developed in almost any region. Furthermore, in identifying valuable local resources in a region, the different thinking and fresh viewpoint of people from other places often turn out to be of great help, as will be elaborated later.

Lock-in effects of local resources: It often happens that successful manufacturing industries (in particular, footloose ones) eventually move out of the original region and

relocate in big cities, seeking better access to markets. Fortunately, however, since a successful brand agriculture is deeply rooted in specific local resources cultivated in the community, it tends to continue to develop in the same region. This represents the great advantage of rural development based on brand agriculture.

Shipped-to products vs. shopped-for products: As is well-known in location theory, the effective marketing strategy for "shipped-to products" is quite different from that for "shopped-for products." Here, shipped-to products represent those goods that are delivered to consumers (e.g. typical products of OVOP sold through ordinary distribution channels), whereas shopped-for products are those goods or services that consumers come to purchase (e.g. local tourism and products sold at Michino Eki). This point is elaborated further in the following sections.

Scale economies in brand establishment: It is well-known in the literature that establishing brand on an agrarian product requires a certain scale in terms of the number of farmers and land size involved in the operation.[5] In particular, a certain scale is necessary to achieve a stable and continuous supply of the products to key markets while attaining the continuous refinement of the product through a cooperative and competitive organization. This is aside from the economies of scale in mechanization.

Scope economies leading to centipede agriculture: Successful brand agriculture often proceeds with the successive introduction of new products, leading to the so called "centipede agriculture."[6] This is due to the accumulation of local resources (including skills and know-how) and the enhancement of management capacity, yielding scope economies in product development and marketing. In particular, as emphasized in endogenous growth theory, the cost of developing a new product tends to become lower with the increasing cumulative number of related products developed in the region in the past. Furthermore, with the establishment of a regional brand, the marketing of new products become easier.

Transfusing new blood into the community, while keeping the social capital: Finally, it must be observed that an initially successful brand agriculture often stops developing, leading to the stagnation of the community. This tends to happen from the very nature of rural society, where the same group of people live and work together in a rather closed community. In such a society, *mimesis* tends to be directed towards the past, custom rules and society becomes static (Toynbee, 1946). "The cake of custom" may

[5] For concrete examples of necessary scales in establishing local brand on agrarian products, see Kojima (2003).

[6] The term *centipede agriculture* is from Matsui (2006).

be broken by creative personalities who initiate the brand agriculture in the village. Furthermore, in order to sustain the village in dynamic motion of brand agriculture, the society needs to develop an organizational system that encourages the constant transfusion of new blood in terms of new personalities and new knowledge, while developing the networks of mutual learning with other groups of brand agriculture in the nation and abroad. For this purpose, it is useful, as illustrated later by actual examples, to set up a corporate organization composed of various experts that will coordinate the activity and operations of independent farmers in the village, and also motivate the support of various local institutions such as technical centers and universities.

Location of Brand Agriculture: The Potential Function Approach

In the previous section, we discussed generally the possible evolution of brand agriculture in a given region or village. In this section, we examine more precisely the location of brand agriculture, asking what type of brand agriculture will be most profitable where.

In the past, the location of agriculture has been studied by using the *bid rent approach* originated by von Thünen (refer to Chapter 3 in Fujita and Thisse, 2002). The von Thünen model, however, is based on the same theoretical framework as the neoclassical economics, assuming the perfect competition in the markets of agrarian products together with the assumption of constant returns in production. In contrast, as explained in the preceding subsection, the theory of brand agriculture emphasized the *product differentiation* involving *increasing returns to scale* in production, leading to *imperfect competition* in the product markets. Thus, we need a new tool for the study of the location of brand agriculture.

In this paper, for the study of the location of brand agriculture, we use the *potential function approach* in spatial economics. This approach was developed by Fujita, Krugman and Venables (1999) originally for the study of the location of manufacturing activities involving product differentiation and increasing returns. Here, we apply it for the location of brand agriculture.

In order to derive the *potential function* for each type of brand agriculture, which measures the *profitability of each location* in the operation of each specific type of brand agriculture, we adopt the *monopolistic competition model* used in spatial economics and endogenous growth theory. (For the details of the analysis below, please refer to the Appendix. To do so, let us divide all possible types of brand agriculture into H types, denoting each by index $h = 1,2,\ldots,H$. In each type of brand-agriculture, a large variety

of products are produced, which are differentiated from each other but share the same basic characteristics in terms of the consumers' tastes, location of markets and transport costs, and production technology.

First, consumers' tastes on type h products are specified by the *substitution parameter*, σ_h, which represents the *elasticity of substitution* between any two varieties in type h, which in turn shows the *price elasticity* of each product in type h. The parameter σ_h takes a value greater than 1. A value of σ_h close to 1 means that type h products are highly differentiated from each other, and hence have a low price-elasticity. In contrast, when σ_h has a large value, type h products are not much differentiated from each other (i.e., highly substitutable to each other), and hence have a high price-elasticity.

Next, concerning the geography and transport costs, in order to make the discussion in this paper concrete, let us consider a specific *spatial structure of the economy*, represented by the bottom horizontal axis in Figure 3.

Figure 3. Potential Curves for the Three Types of Brand Agriculture

The representative foreign country locates at point F, whereas the domestic economy extends linearly from point M to the right hand side along the horizontal axis r. The major market of the domestic economy is concentrated at point M (metropolis), while small regions of about the same size (in terms of area and income) locate contiguously along the axis r. The foreign country at F is connected with the domestic economy through the port at M. This spatial structure represents roughly the economic geography of many countries dominated by major port-cities, such as Japan and many developing countries. The focus of our analysis is the possible location of each type's brand agriculture inside the domestic economy along the axis r. The transport cost per unit of product between each pair of regions is given exogenously for each type of products. (Possible fixed costs in transportation are considered later.)

Turning to the production side, we assume here that, across all regions, all varieties in the same type have the same production technology involving the economies of scale. Here, the economies of scale are at the level of variety. (Economies of scope are considered later.) Specifically, in any region, each *marginal input* of the composite of one unit of land and c_h units of labor yields b_h units of a type h product; in addition to such marginal inputs, the production of any variety requires the *fixed* f_h units of the same composite of land and labor. By assumption, the production technology is of constant returns in terms of marginal inputs. However, since the costs of fixed inputs

f_h are spread over the total output, the unit production cost becomes lower as the output level increases. Thus, on the whole, the production of any variety exhibits economies of scale. Indeed, we have introduced here the fixed-cost term in order to represent in the simplest way the scale economies in production. (In practice, in the following discussion, fixed costs can include all the costs associated with the economies of scale in product-development, management, production and transportation.)

In this paper, we study the location of brand agriculture in the context of a *partial equilibrium framework*.[7] That is, as the base line of the analysis, we assume that, prior to the location of brand agriculture to be chosen, the agricultural land in the hinterland of the metropolis M is occupied by standard agrarian activities (together with their workers) producing generic commodities such as rice, wheat and soybeans. Let W_r be the wage rate of farm-workers and R_r the land rent in each region r, which are supposed to reflect the zero-profit equilibrium conditions in the production of generic agrarian commodities in each region. In this context, if a type h variety is cultivated in region r, its marginal cost is given by $c_h W_r + R_r$ whereas the fixed cost is $f_h(c_h W_r + R_r)$, implying that both costs are evaluated in terms of the wage rate and land rent prevailing in each region before brand agriculture takes place. Reflecting the standard results of von Thünen model for the location of generic agrarian activities, we assume that both the wage rate W_r and land rent R_r decrease monotonically with the distance from the metropolis M, implying that the same is true both for the marginal production cost and for the fixed cost.

When we calculate the value of the potential function, Ω_r^h, for each type h in each region r, for convenience, we divide a priori the entire markets of the economy into the following two:

M : the metropolitan market (combined with the foreign market)

$\widetilde{r}_h$: the local markets surrounding region r

Here, we assume that the local market, $\widetilde{r}_h$, of region r for each product-type h has been specified appropriately, which includes region r itself and an appropriate set of regions adjacent to region r. For simplicity, the effective demand in markets elsewhere is assumed to be negligibly small, and hence we drop it.

In this context, Figure 3 shows the *potential curves* Ω_r^h for three representative

[7] For the study of the location of brand agriculture in a *general equilibrium framework* (involving the migration of farm-workers and the endogenous determination of W_r and R_r, see Fujita and Hamaguchi (2006). The main conclusions of this paper on the location of brand agriculture are confirmed again in Fujita and Hamaguchi (2006).

types of brand agriculture ($h = 1,2,3$).[8] In this figure, the value of Ω_r^h shows the profitability of cultivating a type h variety in region r. It is a *normalized measure of profitability* such that when the production of a type h variety in region r just breaks even, the value of Ω_r^h equals 1; when it yields a positive profit (resp., a negative profit), Ω_r^h is greater than 1 (resp., less than 1). Thus, by examining in each region r how much different from 1 is the value of potential Ω_r^h, we can judge the profitability of type h brand agriculture in each region.

Before examining the location of brand agriculture in a more specific context, let us recall that prior to choosing the location of brand agriculture, each region is occupied by the most profitable generic agrarian activity (e.g., rice) under the zero-profit equilibrium. By definition, then, the potential function of (the most profitable) generic agrarian activity in each region is unity. Thus, in Figure 3, the horizontal line crossing the vertical axis at 1 represents the potential curve (or line) of the generic agrarian activity.

Now, using Figure 3, we discuss the location of the three types of brand agriculture in turn, for convenience, first *type 1*, then *type 3*, and finally, *type 2*.

Type 1: Cultivating highly unique products targeting the metropolitan market

When products are highly differentiated from each other (i.e., σ_h is small) and hence their price-elasticity is low, the demand is less sensitive to the *marginal supply cost* which is the sum of the marginal production cost and transport cost. Thus, even a rather high transport cost does not decrease much the effective demand at the destination. In contrast, the fixed cost of production must be borne entirely by the producer as a direct cost. And, by assumption, the fixed cost of production (as well as the marginal production cost) decreases monotonically towards the periphery. Thus, when the major market of the products is at the metropolis M, and when transport costs to the market are not exceedingly high, the associated potential curve (measuring the normalized profitability at each location) increases monotonically towards the periphery, implying that the periphery is the best location for this type of brand agriculture. And, when the demand for this type of products at the market M is sufficiently large, the associated potential curve will exceed 1 in the periphery, as shown in Figure 3, implying that this type of brand agriculture can actually grow there. The majority of highly unique agrarian products belong to this type. We may call this type of agriculture *the type 1 brand agriculture*.

Type 3: Cultivating rather homogenous products with high transport costs while aiming

[8] For the explicit mathematical expression of the potential function, see the equation (A.26) in the Appendix.

at the metropolitan market

Suppose again that the major market of the products is at the metropolis M. As a converse to *type 1*, however, let us assume that the products of the type in question are not much differentiated from each other, and the transport cost of the products increases rapidly with the distance from the market M. Then, the effective demand at the market for each product is quite sensitive to its marginal supply cost; thus, the effective demand for a product diminishes rapidly as the transport cost from the production site to the market M increases. Thus, for this type of products, the associated potential curve, Ω_r^1, decreases monotonically from the metropolis, implying that suburbs of the metropolis is the best location for this type of brand agriculture. Cultivating standard fresh vegetables in greenhouses belongs to this type of brand agriculture, which tends to locate just outside the metropolis. We may call this type of agriculture *the type 3 brand agriculture*.

Type 2: cultivating the products aimed at the local markets

Take the intermediate case between *type 1* and *type 3* where the degree of product differentiation as well as the transport cost is rather intermediate so that the negative effect of higher transport cost to the market M and the positive effect of lower production cost (as the production location moves away from M) tend to cancel out each other. In such a case, as depicted in Figure 3 by the curve Ω_r^2, the associated potential function tends to achieve the maximum at a middle location where the local demand for that product is large. This may happen when the newly started brand agriculture is not yet very competitive in the metropolitan market, and hence its main target is the local markets nearby. For another example, a successful Michino Eki tends to be at an intermediate location where motorists wish to make a brief stop to rest. We call this type of agrarian activity *the type 2 brand agriculture*.

We have identified the above three representative types of brand agriculture. Figure 3 shows the location where each of the three types will most successfully thrive. The periphery has the comparative advantage in type 1, the middle location in type 2, and the suburbs of the metropolis in type 3. The remaining areas will continue to be occupied by the traditional agriculture cultivating generic commodities. Given that the main concern of this paper is the development of rural areas in the “periphery” through the development of unique local agrarian activities, and given that the *type 3* brand agriculture cultivates rather homogeneous products near the metropolitan areas, in the rest of the paper we focus on *types 1* and *2* brand agriculture.

Strategies in Promoting Brand Agriculture and the Role of Infrastructure

In deriving the three basic types of brand agriculture using the potential functions above, both the fixed input parameter f_h and the productivity parameter b_h have been assumed to be independent of region r. In practice, however, these parameters may be different among regions, affected by local nature as well as by local nurture. Thus, we replace parameter f_h by f_r^h, and b_h by b_r^h, indicating by index r the possible differences of their values among regions. In this more general context, first, we discuss briefly the infrastructure- and related policies affecting the values of these parameters and hence influencing potential functions. Our focus is on the possible infrastructure policies which enhance the potential functions of *type 2* and *type 3* in the peripheral regions. In so doing, however, we do not consider explicitly the costs of infrastructure improvement. Neither do we consider the general equilibrium effects. Thus, the discussion below is only suggestive of the possible directions in the promotion of brand agriculture in a given region.

First, the productivity parameter b_r^h can be enhanced by improving the hard infrastructure in region r such as electricity and irrigation and/or by improving the soft infrastructure such as the management and marketing systems and technical assistance. The improvement of telecommunication infrastructure will also enhance the productivity through better management and marketing. Finally, human capital development in terms of health, education and training will certainly improve the productivity parameter b_r^h in the long-run.

Next, concerning the fixed-input parameter f_r^h, we can consider this parameter to represent actually three different things. If we consider f_r^h to represent the private infrastructure (for a group of farmers producing together an agricultural brand product) such as water pumps and private roads, it can be partly replaced by more effective public infrastructure, making f_r^h smaller. When f_r^h represents the minimum input scale of land and farm-workers for the stable and continual supply of an agricultural brand product, it can be reduced by appropriate assistance provided by public organizations such as agricultural cooperation and public distribution systems. Lastly, in a dynamic context, if we consider f_r^h to represent the costs (or necessary inputs) for the development of a new agricultural product, it can be reduced by public assistance in technical development and R&D. We may also note that such development costs can be reduced through the accumulation of learning-by-doing experiences in the region, and through the development of mutual learning networks with other brand-agricultural groups as well as with other learning/academic institutions both in

the same country and abroad. This point is elaborated later by using actual examples.

Turning to the transport-cost parameters affecting the potential functions, these can possibly be reduced in many different ways. Improving transport infrastructure such as roads/highways, railways, ports and ships, and airports and airways will certainly reduce transport costs. Introducing modern communication/information systems such as telephones (traditional as well as wireless ones), computers and internet connections, and setting up home pages and portal sites will also reduce transport costs (broadly defined) through better management, marketing and distribution. Promoting brand reputation will also contribute to lowering transport costs.

These transport policies apply to both "shipped-to products" and "shopped-for products." However, establishing Michino Eki (highway stations) and Satono Eki (village stations) are most effective in reducing transport costs for shopped-for products such as local tourism and restaurants as well as those products sold at the stations. Furthermore, cooperation (as well as mutual differentiation) among nearby Michino Eki stations will also effectively reduce transport costs by attracting more "shopping-for people" to the region.

Furthermore, as we can see from Figure 3, for the sustained development of brand agriculture in the peripheral regions, it is essential to gradually upgrade the products from *type 2* to *type 3*, or, from generic products to *type 3*, by continual refinement of existing products and the introduction of new unique products. Finally, for the nationwide promotion of brand agriculture, it may be useful to introduce appropriate commercial laws protecting regional brands on agrarian products (while keeping in mind that such protective laws may also cause some negative effects in the long-run.)[9]

Evolution of Brand Agriculture in Japan: One Village One Product Movement and Michino Eki

We have seen in the preceding section that, even in the absence of particular natural resources, the brand agriculture cultivating highly unique products *(type 1)* could be developed in the peripheral regions. In the first subsection below, through the history and examples of OVOP movement in Japan, we show that this is indeed the case. We have also seen in the preceding section that the brand agriculture cultivating the

[9] For example, a new trademark law was recently introduced in Japan which permits trademarks with a combination of regional name and product/service name. This is both for the protection of well-recognized regional products and for encouraging the development of new regional products. Although the law is rather restrictive, permitted only to regional groups (not individual producers), the Japanese Patent Office estimates that there exist more than 10,000 products are potentially qualified to be regional trademarks (Nihon Keizai Shinbun, 3 April 2006).

products aimed at the local markets *(type 2)* could be developed in the middle regions that have a good access to large local markets. In the second subsection below, through the examples of Michino Eki in Japan, we also show that this is indeed the case.

OVOP initiatives in Japan

As noted previously, since around the early 1960s, grassroots movements for rural development have spontaneously arisen in many villages located in the periphery of Japan, sharing the common basic strategy that cultivates and utilizes fully the local resources for the sustained development of an increasingly greater variety of local unique products. Such grassroots action has arisen invariably out of the desperate struggle of village people to escape from the increasing poverty and depopulation of their villages which are located in the remote areas inherently disadvantageous in growing generic commodities such as rice and wheat.

Figure 4. The MAP of Japan with Cited Locations

One of the earliest grassroots movements occurred in Oyama Cho, a small mountain village deep inside Oita Prefecture in Kyushu Island (refer to the map in Figure 4).[10] In 1961, the conversion of rice fields to orchards for plums and chestnuts started in Oyama Cho under the leadership of Mr. Harumi Yahata, the then president of the agricultural cooperative of Oyama Cho. This movement, the so-called *NPC movement* (New Plum and Chestnut movement), was initiated mainly by young farmers despite the strong opposition of elderly farmers (who inherited their rice fields from ancestors) and against the agricultural policy of Oita prefecture and Japanese government for the promotion of rice production. The NPC movement occurred, again, out of the farmers' desperate struggle to escape from increasing poverty, and apart from the continued production of rice, there provided no other hope for the future. Plums and chestnuts were chosen because they were the ubiquitous wild fruits in the village at the time. It is interesting to note that the NPC movement was initiated with the slogan, "Let's go to Hawaii by cultivating plums and chestnuts." In the early 1960s, it was virtually a pipe dream for the people in Oyama village to visit Hawaii for sightseeing. (Surprisingly, in 1967, 16 farmers of the village actually visited Hawaii for the first time.)

Despite many ups and downs, the NPC movement in Oyama Cho grew constantly by

[10] Refer to Matsui (2006) and Oita OVOP 21 Promotion Committee (2000) for a comprehensive discussion of OVOP movement in Japan as well as outside Japan, including the discussion below about Oyama Cho.

adding new local products such as big grapes, watercress, various kinds of herbs and mushrooms, while gradually expanding their markets. In particular, the cultivation of mushrooms started in 1973 by utilizing sawdust (which was abundant in the mountain village) in order to yield a constant income through constant work throughout the year turned out to be a great success. In 1993, for example, while the total sales value of agricultural products of Oyama Cho (with the population of about 4,000) was about 2.4 billion yen, the sales value of velvet shanks alone was about 1.2 billion yen. The transformation of agriculture in Oyama Cho from traditional to various specialty crops such as fruits, herbs and mushrooms not only increased the income of farmers but also reduced the burden of agricultural work, contributing greatly to the empowerment of female workers. Recently, Oyama Cho has been promoting also various projects of eco-tourism in the village, attracting 1.9 million visitors and earning 1.4 billion yen in 2003, for example.

Although we have focused on Oyama Cho above, similar grassroots movements arose in many other remote villages in Oita Prefecture (as well as in a large number of villages throughout Japan) since the early 1960s. As noted previously, the movement suddenly became popular and accelerated further shortly after the then governor Mr. Hiramatsu gave it the attractive name of *One Village One Product (OVOP) Movement* in 1979. After carefully examining the grassroots movement in several villages (including Oyama Cho) in Oita Prefecture, he developed the *Three Principles of OVOP* for the success of such a movement (Oita OVOP 21 Promotion Committee, 2000):

(1) *Local yet global:* Creating globally accepted products that reflect pride in the local culture

(2) Self-reliance and creativity: Realization of OVOP through independent actions utilizing the potential of the region,

(3) Human resource development : Fostering of people with a pioneering and creative spirit.

In particular, Mr. Hiramatsu put great emphasis on human resource development, saying that OVOP's ultimate goal was fostering global-minded, pioneering leaders who could drive OVOP into further success. For this purpose, a number of regional training schools were funded in Oita Prefecture to educate potential leaders, including the promotion of OVOP Woman's 100 Member Group. According to Oita OVOP International Exchange Promotion Committee, in 2002, 10 years after the schools first opened, there were 1,991 graduates, all actively involved in OVOP in their respective regions.

During his 24-year tenure (from 1979 to 2003) as the governor of Oita Prefecture,

the OVOP movement was actively promoted in 58 villages, towns and cities in Oita, triggering its gradual spread throughout Japan. Figure 5 shows the designated OVOP initiatives in Oita in 2000, indicating that the OVOP movement in Oita covered a wide range of activities from community promotion activity (103 projects) to specialties (329 projects). On the whole, the specialties ranged from agricultural products (157) to handicrafts and other items (33). Many of these projects and specialties are quite popular in Japan. For example, although shochu (distilled Japanese liquor) was traditionally made of sweet potatoes and sold mostly to aficionados at cheap prices, OVOP in Oita developed a new kind of shochu made of wheat, which is much smoother and conducive to health than traditional ones. This new shochu greatly changed the traditional image of shochu in Japan, contributing to the surprising fact that the sales value of shochu in Japan has recently exceeded that of sake. For example, in 2004, the sales value of Sanwa Shurui (a brewery in Oita, producing the famous "Iichico") is 59 billion yen, while that of Nikaido (in Oita, producing "Nikaido") is 20 billion yen. In eco-tourism, Yufuin town (with a population of 10,000) in Oita succeeded in developing its rustic hot springs as a popular getaway, attracting about four million visitors in 2004. With respect to specialty products, Figure 6 shows the growth of OVOP in Oita Prefecture from 1980 to 1999, indicating that the number of designated specialty products increased from 143 to 329 over the period, with a corresponding jump in sales value from 35 billion yen to 142 billion yen.

Figure 5. Designated OVOP Initiatives in Oita Prefecture in 2000

Figure 6. Growth of OVOP in Oita Prefecture (specialty products)

Although not as systematic as in Oita Prefecture, OVOP initiatives have spread to hundreds of villages and towns in other prefectures of Japan, many of which are quite unique and interesting.[11] As an example of such unique initiatives, the development of *Irodori Project* in Kamikatsu Cho is explained below.[12]

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[11] Given that the definition of OVOP is not very clear, it is not easy to estimate the number of such movements in Japan initiated in the 1960s. However, given that Oita Prefecture (a rather small prefecture in Japan) alone has 766 designated OVOP initiatives in 2000 (Figure 5), the total number nationwide may be in the order of thousands. Furthermore, as noted in footnote 9, the Japanese Patent Office estimates that there exist in Japan more than 10,000 agricultural products potentially qualified as regional trademarks.

[12] Information on Irodori Project is available at the website of Irodori, Inc. at http://www.irodori.co.jp/ (English/Japanese). See also Japan International Cooperation Agency (2005).

Kamikatsu Cho is located deep in the mountains of Tokushima Prefecture, about 40 kilometers from Tokushima City (refer to Figure 4). It used to represent a typical depopulated rural town in Japan, where the population of 6,200 in 1955 has dropped to nearly 2,100 today,,46% of which is over 65 years old. Despite its daunting demographics, Kamikatsu Cho is well-known in Japan as *the town that changed leaves into money* because of its *Irodori Project* (Colorful Decoration Project). The main products of the Irodori Project, a town enterprise, are the so-called *tsumamono*, or seasonal tree leaves and small flowers that are used as decoration and garnish for dishes mostly served in Japanese restaurants. Figure 7 shows three examples of Irodori's products (the top and middle rows from the left: bamboo leaves, cherry sprigs, and maple leaves), and illustrates how they garnish Japanese dishes.

Figure 7. Products of Irodori Project: Tsumamono for Japanese Dishes

Irodori Project, together with four other related initiatives in the town, has succeeded in turning the once hopeless town to an invigorated place, attracting about four thousand visitors in 2005, from other parts of Japan as well as from abroad, curious about its unique products.

The town of Kamikatsu marks 1979 as its key turning point upon the arrival of Mr. Tomoji Yokoishi, then a fresh graduate of the Tokushima Prefecture Agricultural College who came to work as an agricultural cooperative extension worker. Upon reaching the gloomy town, where farmers earned meager income out of small rice fields and forestry in the deep valleys, he started asking himself how to prevent the imminent demise of the town. The crisis worsened when the citrus tree orchards, a vital source of income supplement for the farmers perished in a severe snowstorm in 1981. The answer came to him while he was in Osaka on business in 1985. While dining in a sushi restaurant, his attention was caught by young girls in a nearby table who were quite excited about something. To his surprise, they were excited not about the sushi but about the small colorful leaves served as artful garnish. When they started wrapping the leaves carefully with their handkerchiefs, the idea of the Irodori Project hit him like a revelation. Kamikatsu has beautiful tree leaves in abundance, whereas a wide variety of tree leaves and small flowers seems to be in demand among high-end Japanese restaurants as *tsumamono* for dish presentation throughout the year. In addition, unlike heavy oranges, leaves can be easily handled by Kamikatsu's elderly population. Mr. Yokoishi knew that he could engineer the town's turnaround with this novel idea.

However, his plan to sell leaves to Japanese restaurants was resisted by Kamikatsu

townsfolk and elicited various negative reactions such as: “If one can make money by selling leaves, everybody in rural areas in Japan would be rich!” “Who would ask for money in exchange for leaves? We are not beggars!” “Leave our town immediately!”

This phenomenon seem to illustrate the point made by A. Toynbee about rural societies such as Kamikatsu: mimesis tends to be directed towards the past. The so-called “cake of custom” needs to be broken by creative individuals such as Mr. Yokoishi. Unfazed and determined, Mr. Yokoishi continued to campaign for support especially among the elderly female farmers. In 1986, Mr. Yokoishi together with some supporters initiated the Irodori Project as a town cooperative. The sales value of the initial year, however, was only 1.2 million yen. With untiring efforts in gathering information and spending most of his salary in expensive Japanese restaurants in Tokushima, Osaka and Kyoto, Mr. Yokoishi gradually learned product development and marketing techniques, and quickly worked together with his supporters to improve Irodori products. As the group accumulated the necessary know-how on product development, quality control, distribution and marketing, the number of participants gradually increased and the brand image of the Irodori Project began to take shape. The sales value of the project increased to 50 million yen in five years, and to 170 million yen in ten years.

Today, Irodori Project consists of 190 members of independent farmers (mostly senior females), the entire activity of which is coordinated by the Irodori Cooperative consisting of just three persons: Mr. Yokoishi, the director and his two young assistants. The average age of Irodori members is 67 years old, while the eldest member (female) is aged 92. In 2005, the total sales of Irodori Project amounted to 270 million yen, or approximately 1.4 million yen per member. Before the initiation of the Irodori Project twenty years ago, they depended solely on cultivating generic commodities such as rice, wheat and oranges, earning annually less than 0.2 million yen per farming household. Thus, considering that more than one member of a farming household regularly participates in the project, in average, farmers participating in the project increased their annual income about ten times over the 20-year period. Given that most participants of Irodori Project are females and that female workers in traditional farming were no more than helpers earning meager cash income, this fact indicates the great contribution of the project to the empowerment of females in Kamikatsu. Figure 8 illustrates how the typical members of the project work in fields for collecting leaves and flowers showing us why Kamikastu is called today “the smiling town.” Needless to say, the beautiful smiles in the picture are not necessarily because of their cash windfall. Most of these senior citizens of the Irodori Project experience difficulties in spending

their income, often resorting to sending money to their children and grandchildren in cities. There is reason to believe that their smiles seem to arise from working in the midst of beautiful nature while actively participating in society through their work.

Figure 8. Irodori Project in Action with All Smiles

Using Figure 2, it has been explained previously that a successful evolution of brand agriculture will follow the double-loop processes of local resource / product development and infrastructure development. This is no exception for Irodori Project. The operation of Irodori Project today is supported by a highly modern and complex system of soft-and hard-infrastructure that has been developed gradually over the 20 years. Figure 9 illustrates the information-transportation system of Irodori Project today.

Figure 9. Information-Transportation System Supporting Irodori Project

In each season, Irodori provides about 300 different products for nearly 90 whole sellers located in major cities throughout Japan (including Tokyo and Osaka). The actual decision for what and how much of each product to be supplied each day is made by individual farmers (i.e., members) who cultivate trees and flowers on their land, while the total supply of each product is to be controlled by the Irodori Cooperative. Furthermore, farmers must make also longer-term decisions for what and how many of trees and flowers to be grown on their land. Thus each farmer needs a lot of newest information (e.g., yesterday's prices) as well as long-term information (i.e., past trend and future projection). Such information is collected and processed by the Irodori Cooperative, and is provided for individual farmers though the computer system (in combination of a special fax-machine system) shown in the panel (a) in Figure 9, while Irodori Co. regularly provides seminars for all members to learn how to read and utilize the information in their daily business. In each morning, watching the computer screen and fax information, each farmer decides how much of each product will be supplied, and notifies the Cooperative of their decision. Farmers operate their computers using the special (simple) keyboard and big mouse shown in panel (b), which were developed specifically for elderly people. Then, as shown in panel (c), each farmer collects leaves, sprigs and flowers from its land, and packs them for shipping. All the packages are collected at the Agricultural Cooperative of Kamikatsu before 4 PM. Then, using special trucks shown in the panel (d) of Figure 9, they are transported to Tokushima airport and sent by airplanes to Tokyo and other remote cities. Or, they are sent directly to

nearby cities by trucks.

In this way, the entire operation of the Irodori Project is supported by the modern information-transportation infrastructure. In particular, the special computer system shown in panels (a) and (b) in Figure 9 was developed in 1999 at the cost of about 300 million yen (supported partly by the national government and partly by Kamikatsu Cho), boosting the sales value of Irodori Project by nearly 50%. It is also interesting to note that, each evening, the ranking of all members in terms of sales value is announced to individual members through the computer system. But, given that each member is notified of her / his ranking only, but wants to know others' ranking too, a delicate communication game takes place soon. Each day ends with a handwritten facsimile letter form Mr. Yokoishi, which summarizes in friendly and encouraging tone the results of the Irodori activity for that day, together with his suggestions on tomorrow's activity.

As noted previously, the annual sales value of Irodori Project increased over 20 years from 1.2 million yen to 270 million yen. This has been accompanied with a constant increase in the number of products, from a few dozens of basic products initially to about 300 products in each season now. All new products have been developed by individual farmers by utilizing local resources that are mostly ubiquitous in the town. Partly because all members of Irodori are closely connected with the markets in major cities of Japan through the daily management of their activities, and partly because they frequently visit high-end Japanese restaurants in various cities in order to find how their products are actually used and what kind of products is appreciated there, they can rethink about their resources always with a fresh outlook, leading to the sustained development of new products. For example, one day, walking along a byway, a lady (in her mid 80s) got the idea of making miniature boats out of tall green grass. They turned out to be very popular to hold wasabi and other condiments, which encouraged her to develop further a variety of similar miniature items for decorating dishes. Another lady, then, created a variety of colorful miniature items out of leaves and berries for decorating tables. In this way, Irodori members are constantly stimulated mentally and physically, which sustains the well-being of the elderly, as illustrated in the pictures of Figure 8. It would be interesting to note that there are only two bedridden villagers to date among Kamikatsu's elderly (65 years and above age group) which comprise 46% of the village's 2,100 total population.

In short, out of desperation, a young outsider (Mr. Yokoishi) together with local people succeeded in developing a unique OVOP movement (Irodori Project) in a remote town (Kamikatsu) through sustained efforts over 20 years, in which unique products

(tsumamono items) have been constantly developed by utilizing creatively the seemingly ordinary resources (leaves, senior citizens, and land in deep mountains). Given that uniquely differentiated products with brand reputation (Irodori brand) can absorb high transport costs to major markets (Tokyo and Osaka) without losing demand much, the remoteness of location has not hindered the development of a successful OVOP movement, provided it has been supported by appropriate infrastructure (computer-fax system, special trucks, and access roads to an airport). The key for the sustained development of such OVOP movement has been the innovative environment in which all individual participants are well-connected to the rest of the world.

Certainly, the story of Kamikatsu village above is very unique. But, so is each story behind the hundreds of other successful OVOP initiatives. This simply illustrates that basically the same strategies of successful brand agriculture can materialize in a huge variety of hidden or unexpected factors.

Michino Eki initiatives in Japan

As noted in the first section, since 1993 more than 830 Michino Eki (roadside stations) have been developed throughout Japan (excluding metropolitan areas) under the general guidance of MLIT. In essence, a Michino Eki is a merger of three different functions: a highway service or rest area, OVOP initiative center, and community center. However, given that the actual implementation and management of each Michino Eki is almost entirely autonomous in the hands of the local community, most of these structures and the underlying organizations are highly unique in terms of their design, functions, services and management. As a case in point of uniqueness, the example of Michino Eki Tomiura is discussed below.[13]

Michino Eki Tomiura is located along a national highway near the southern end of the Chiba Prefecture peninsula, about a 3.5-hour drive from Tokyo (refer to Figure 4). As shown in panels (a) and (b) in Figure 10, its main building (containing several shops and restaurants) is attractively designed in a North-European style taking advantage of a nice landscape. Michino Eki Tomiura has also earned the monicker “Loquat Club,” since a large variety of OVOP products sold at its shops are mostly made of loquats grown in the surrounding regions (refer to panel (d) in Figure 10). It is managed by Tomiura Inc., a town enterprise with nine members, funded and supported by the Tomiura Cho government, hiring about 60 local workers (mostly females, including part timers) which amount to 1% of the town population. Since it was opened in 1993 as the first group of Michino Eki in Japan, the number of annual visitors to the Loquat Club

[13] Refer also to the website, http://www.town.tomiura.chiba.jp/top/biwakurabu/.

increased from 220,000 in 1994 to approximately 700,000 in 2003, while its annual sales from 384 million yen in 1994 to 631 million yen in 2003, significantly contributing to the local economy today.

Figure 10. Michino Eki Tomiura / Loquat Club (Chiba Prefecture)

Spearheading the development of the Loquat Club is Mr. Fumio Kato. In 1991, then a young official of Tomiura, he was selected by the then town chieftain as the person-in-charge of the revitalization of Tomiura, a typical depopulated remote town. Suffering through sleepless nights for over a year, he learned about the new idea of Michino Eki being developed by the national government. He immediately realized its potential usefulness to achieve his objective. Although a main national highway encircling the large peninsula (mainly for tourism with its beautiful beaches and rich nature) passes through the center of the town, most cars and buses simply ran through the town creating noise and air pollution. If an attractive Michino Eki at Tomiura could make them stop and spend their time and money while refreshing themselves there, the town's capacity to generate income and employment would be increased significantly. In addition, the attractive Michino Eki could serve also for promoting the town nationwide. Furthermore, the new Michino Eki could become the focal point of the town, functioning as the community center. Integrating all his ideas, Mr. Kato developed his concept of Michino Eki presented in Figure 11, which consists of three core functions: refreshing place, community development, and information/cultural center.

Figure 11. The Concept and Functions of Michino Eki Tomiura

In 1993, when the town launched the Michino Eki under Kato's initiative, the immediate focus of the members was on developing an attractive place as a refreshing place, which resulted in the unique building complex shown in Figure 10. Meanwhile, given that they were ordered by the then town chieftain to make the Michino Eki financially profitable as soon as possible, they also started researching on the function of Community Development, in particular, on developing unique local products (i.e., OVOP initiative) to be sold at the Michino Eki. They soon reached the idea of using loquats as the main material for developing unique specialties. They focused on loquats partly because they were rather ubiquitous wild fruits in the region, and partly because most people associated little commercial value on these items. In fact, when Mr. Kato asked the Agricultural Cooperation of Tomiura for the permission to sell loquats at the

Michino Eki, the answer was, “Who cares about loquats?”

They soon started selling loquats grown in the region at the Michino Eki as well as through wholesalers in Tokyo (and through the internet nationwide now). However, by nature, most loquats were either with defects or of low grade with little commercial value. Even perfect loquats are not much appreciated by consumers because each loquat contains large seeds with little pulp. Besides, loquats are available only in the early summer. Thus, their major efforts were on developing new products using damaged or low-grade loquats as well as leaves of loquat trees, which were previously thrown away as waste. For product development and for processing loquats, a large factory was built inside the Michino Eki. The Michino Eki started developing a large variety of loquat products with the support of local small manufacturers and management consultants. Today, the main shop of the Michino Eki is full of loquat products. Figure 12 shows representative examples, including a variety of popular products made of loquat leaves (such as shampoo and tea) illustrated in the bottom left. Among the products, one of the early favorites was the soft ice cream made of loquat puree (shown in the middle left portion of Figure 12), of which total sales at the Michino Eki amounted to about 24 million yen in 2005. With the support of Tokyo Electric Power Co., a large wet-air cooling room was built to keep the freshness of loquats for more than half a year and at the same time contribute to job stability at the factory throughout the year.

Figure 12. Examples of Loquat Products

In the sites surrounding the main building, the Michino Eki also developed several greenhouses in which visitors can enjoy harvesting a variety of fruits and flowers throughout the year. Since the operation of the Michino Eki became financially stable in 1995, various cultural and educational activities such as galleries for local artists, puppet shows, concerts, and cultural forums (which today are performed mainly in the cultural center built in the adjacent site) were also initiated.

In addition to the above main activities of the Loquat Club, the Michino Eki Tomiura also inaugurated the sister Michino Eki called “Flower Club”, in the same year (1993) at a location about four kilometers away, In the Flower Club, a variety of exotic flowers mainly imported from Africa are grown in big greenhouses, where upon paying an entrance fee, visitors can roam around and pick flowers. The two clubs complement each other in various ways, and attracted nearly one million visitors in 2005 alone. In attracting such a large number of visitors, the “information management system” of the Michino Eki has been playing a major role. In particular, it organizes bus-tour trips

from Tokyo and other nearby cities to Tomiura town (in cooperation with a major tourist company in Tokyo), and arranges for tourists to visit not only the two clubs but also various sightseeing places, souvenir shops and restaurants throughout the town. In 2005, for example, the Michino Eki attracted nearly 3,000 tour buses (or about 100,000 people) from Tokyo and neighboring cities. The central key player in developing this information management system left his previous job as a marketing manager in one of Japan's largest retail companies and returned to the home town to become Michino eki Tomiura's new manager. Under his initiative, in 2001, the Michino Eki started operating a portal site in which any person in the town can post a link to his / her own business website or other business contact details free of charge. In this way, Michino Eki Tomiura has been contributing greatly to the invigoration of the entire town.

Again, the story of Michino Eki Tomiura above is unique. But, so is each story behind the hundreds of other successful Michino Eki initiatives in Japan. In essence, however, all successful Michino Eki as well as OVOP initiatives share the same basic strategies for the revitalization of remote towns and villages through community-driven development. In terms of location theory, however, main products of OVOP are *shipped to* remote markets, while customers come from remote cities to a Michino eki to *shop for* unique products and services. Thus, as illustrated by the story of the Loquat Club above, the successful development of a Michino Eki needs to be designed and implemented to make it a uniquely attractive place worth visiting from remote cities.

For the Successful Promotion of Brand Agriculture in Developing Countries

Both of OVOP and Michino Eki have already attracted widespread attention in many developing countries as potential tools for bridging the gap between cities and rural areas through community-driven development. As mentioned previously, since the mid 1980s, OVOP has actually been implemented in many countries including China, Malaysia, Thailand, the Philippines, Indonesia, Cambodia, Laos, Mongolia, Kazakhstan, Malawi and Uganda. Also, Michino Eki is currently being implemented or in the pilot study phase in many developing countries such as Thailand, India, China, Turkey, Kenya, Yemen as well as Mexico. In promoting both OVOP and Michino Eki in most of these countries, Japan often together with the World Bank has been actively cooperating with the national and local governments in each country through ODA-related agencies such as the Japan International Cooperation Agency (JICA), JBIC and Japan External Trade Organization (JETRO), as well as through many Japanese NGOs, local governments and individual volunteers. Actual experiences vary substantially from country to country, although Thailand has been most eager and

successful in promoting both OVOP and Michino Eki to date. Without going into details of individual cases, a discussion of policy implications and possible strategies for successful promotion of brand agriculture based on developing countries experiences in general is presented in the rest of the paper.[14]

As a reminder, brand agriculture represents a general strategy for community-based rural development that successively identifies, cultivates and fully utilizes local resources (including natural, historical, cultural and human resources) for the continual development of an increasingly greater variety of unique local products and services (including tourism). At the same time, through increasingly sophisticated marketing, these unique local products will be sold in larger markets, gradually establishing local brands to identify them. In so doing, the community will accumulate technical skills, know-how and practical knowledge learned by inference through experience (otherwise known as tacit knowledge) while developing their human resources that are essential for sustained or continual innovation of their unique local products and management system.

The brand agriculture strategy is potentially useful in invigorating the seemingly hopeless places, especially villages and towns in remote areas, which are found almost ubiquitously in the world. In order for the strategy to be successful, however, a place needs to have the following three basic ingredients:

(i) people who are highly motivated and willing to fully utilize their brains in addition to their bodies;

(ii) some specific resources based on nature; and

(iii) socioeconomic setting connected to the rest of the world.

These ingredients are potentially available in many places. First, concerning (i), every person is endowed with physical and mental capabilities. When people in a village or town come to share the common dream of escaping from a seemingly hopeless future, even the elderly or senior citizens are prepared to fully activate their brains towards the fulfillment of a common cause as we have seen in the case of Japan's Oyama Cho in the 1960s and Kamikatsu Cho in the 1980s. The same would be true for the people in villages and towns all over the world.

Second, concerning (ii), a rich resource base is certainly helpful in the beginning. However, brand agriculture does not represent a single-time project but a sustained movement forward. When one climbs up an endless cliff, starting with a higher position

[14] For actual experiences of OVOP and Michino Eki initiatives, refer to Matsui (2006), Yokota (2006) and Department of Industrial Promotion and Tourism Authority of Thailand and JBIC (2004).

does not necessarily assure the capability to progress. Likewise, being endowed with rich resources is neither the necessary nor sufficient condition for successful brand agriculture. Rather, the essential ingredient for successful brand agriculture is the sustained efforts for developing unique products out of seemingly ubiquitous resources, such as leaves in Kamikatsu village and loquats in Tomiura town in Japan, bamboos in northern villages in Thailand (yielding unique bamboo wares), and high-mountain weather in Uganda (yielding high-quality roses exported to Europe). In this respect, it is instructive to read the following quotation from the answer of Mr. Mizoguchi when he was asked what was the secret in the successful development of Yufuin town (a highly popular hot spring getaway in Oita): “Nothing is particularly special in Yufuin. But, because of this, we can do virtually anything. This is the very source of energy for creating new things.”

The last condition (iii) is clearly the most difficult to be met. But, this can be achieved through the help of a small number of young outsiders, as in the case of Kamikatsu village. In addition or alternatively, this condition can be achieved by creative insiders (often young persons) who have had chance to visit and learn the successful initiatives in other villages or towns. In either case, it is also essential for all members of the initiative to be connected to the rest of the world through marketing and learning networks. In this respect, as illustrated in Figure 13, it is important to develop and promote learning networks not only within a country, but also between advanced and developing countries as well as among developing countries. In particular, given that the brand agriculture in developed countries is often highly advanced (in terms of technology, management and marketing), the South-to-South networks are also very useful. In this respect, various development agencies (including NGOs as well as individual volunteers) throughout the world can play vital roles.

Figure13. Knowledge Externalities and Learning Networks in Multiple Layers

When these three conditions are met, any village or town could be able to become an exciting place through brand agriculture, provided it is supported by timely and well-focused infrastructure development.

In conclusion, the factors that will bring backward areas to the forefront are the same as those that are at work in the heart of prosperous metropolitan areas: *product differentiation*, *innovation* and *information*. Happily enough, the same basic strategies can materialize under a huge variety of surprising situations—whether in manufacturing, in services, or in agriculture.

Appendix: Potential Function Approach to the Location of Brand Agriculture

In the second section of the text, we have studied the location of brand agriculture by utilizing the concept of potential function. In this appendix, based on a monopolistic competition model of brand agriculture, we derive the potential function explicitly, and examine the location of brand agriculture more precisely.

Let $h = 1,2,\ldots, H$ represent each type of differentiated agrarian goods or brand agrarian products (B-products). Each type of B-products is characterized by the combination of consumers' tastes, transport costs, and production technology.

Utility and Demand

Let B_h represent all possible agrarian products belonging to type h. For mathematical convenience, B_h is assumed to consist of a continuum of an infinite set of varieties, which are *potentially* available. Each $i \in B_h$ represents a specific variety of type h.

All consumers of the economy share the same tastes, or *subutility function*, on B_h-products given by

$$U_h = \left[\int_0^{n^h} x(i)^{\rho_h} di \right]^{1/\rho_h} \qquad (0 < \rho_h < 1) \tag{A.1}$$

where n^h is the range of B_h-varieties produced in the economy, or the "number" of varieties actually available, and $x(i)$ the quantity of variety i consumed. The parameter ρ_h represents the intensity of the preference for variety in type h products. When ρ_h is close to 1, differentiated products are nearly perfect substitutes for each other; as ρ_h decreases towards 0, the desire to consumer a greater variety of type-h products increases. If we set

$$\sigma_h \equiv \frac{1}{1-\rho_h} \qquad (1 < \sigma_h < \infty) \tag{A.2}$$

then σ_h represents the *elasticity of substitution* between any two varieties in type h.

Given income Y and the share α^h of income Y to be spent on type h products, the budget constraint of the consumer for type h products is

$$\int_0^{n_h} p^h(i) x(i) di = \alpha^h Y . \tag{A.3}$$

where $p^h(i)$ is the price of variety i in type h. Here, we consider α^h to be a given parameter. Then, maximizing the subutility (A.1) subject to the budget (A.3) yields the consumer's demand $x(i)$ on each variety $i \in [0, n^h]$ as

$$x(i) = \alpha^h Y p^h(i)^{-\sigma_h} (P^h)^{\sigma_h - 1} \tag{A.4}$$

where P^h is the *price index* of type-h products, given by

$$P^h \equiv \left[\int_0^{n^h} p^h(i)^{-(\sigma_h - 1)} di \right]^{-1/(\sigma_h - 1)} \tag{A.5}$$

Location and Transport Costs

Let $r = 1,2,\ldots,N$ represent each region in the economy (possibly including overseas). Let Y_r be the income of region r, and α_r^h the share of region r's income to be spent on type-h products (both Y_r and α_r^h are treated here as given parameters).

Concerning the transportation of products, to avoid modeling a separate transport industry, we assume the "iceberg" form of transport costs introduced by von Thünen and Paul Samuelson (1952). Specifically, if a unit of any variety in type-h is shipped from a region r to another region s, only a fraction, $1/T_{rs}^h$, of the original unit actually arrives; the rest perishes away en route. The constant T_{rs}^h represents the amount of a type-h product dispatched per unit received, where $T_{rs}^h > 1$ for $r \neq s$. We call each T_{rs}^h a transport parameter. A larger T_{rs}^h means a higher transport cost for type h product from region r to region s.

Let p_r^h be the ($f.o.b.$) price of a type h variety produced in region r (which turns out to be the same all type h products produced in region r). Then, the transport technology implies that the delivered ($c.i.f.$) price, p_{rs}^h, of that variety at each consumption region s is given by

$$p_{rs}^h = p_r^h T_{rs}^h \tag{A.6}$$

Let n_r^h be the number of type h products produced in region r. Then, using (A.5), the price index of type h products in region r is obtained as

$$P_r^h = \left[\sum_{s=1}^{N} (T_{sr}^h)^{-(\sigma_h - 1)} n_s^h (p_s^h)^{-(\sigma_h - 1)} \right]^{-1/(\sigma_h - 1)} \tag{A.7}$$

Thus, using (A.4) and (A.6), the consumption demand in region s for a product produced in region r is given by

$$\alpha_s^h Y_s (p_r^h T_{rs}^h)^{-\sigma_h} (P_s^h)^{\sigma_h - 1} \tag{A.8}$$

This gives the consumption in region s, but to supply this level of consumption, T_{rs}^h times of this amount has to be shipped. Summing across N regions in which the product is sold, the total sales of a variety produced in region r, denoted x_r^h, therefore amount to

$$\begin{aligned} x_r^h &= \sum_{s=1}^{N} \alpha_s^h Y_s (p_r^h T_{rs}^h)^{-\sigma_h} (P_s^h)^{\sigma_h - 1} T_{rs}^h \\ &= (p_r^h)^{-\sigma_h} \sum_{s=1}^{N} \frac{\alpha_s^h Y_s (P_s^h)^{\sigma_h - 1}}{(T_{rs}^h)^{\sigma_h - 1}} \end{aligned} \tag{A.9}$$

In this expression, the term $(P_s^h)^{\sigma_h - 1}$ in the numerator represents the inverse measure of the severeness of competition in the market of type h products in region s; higher price index P_s^h means a weaker competition in region s, thus easier to sell a type h product in that market.

Production of B-products

Suppose that each variety of type h is produced by a single farm located in a specific region. In a given region, the production technology is the same for all type h varieties, which involves the economies of scale. These economies of scale arise at the level of variety. Specifically, in region r, each *marginal input* of the composite of one unit of land and c_h units of labor yields b_r^h units of a type h variety; in addition, *fixed* f_r^h units of the same composite of inputs are required for the production of any variety. (Here, subscript r on parameters b_r^h and f_r^h is introduced in order to discuss later the impact of infrastructure improvement in each region.) As is well-known, fixed inputs f_r^h lead to scale economies.

Let W_r be the wage rate of farm-workers and R_r the land rent in region r. In the present context of partial equilibrium analysis, the values of W_r and R_r are supposed to be given exogenously, reflecting the zero-profit conditions of the generic agrarian sector in each region. Then, with a *f.o.b.* price p_r^h, the profit of the farm producing a type h variety in region r is given by

$$\pi_r^h = p_r^h x_r^h - \frac{c_h W_r + R_r}{b_r^h} x_r^h - (c_h W_r + R_r) f_r^h \tag{A.10}$$

where x_r^h represents the sales level of the farm's product, given by (A.9). We assume that the farm takes each price index P_s^h in (A.9) as given, and chooses monopolistically the *f.o.b.* price p_r^h so as to maximize (A.10), which yields

$$p_r^h = \frac{c_h W_r + R_r}{b_r^h \rho_h} \tag{A.11}$$

This price is the same for all type h varieties produced in region r. Since the marginal cost is $(c_h W_r + R_r)/b_r^h$, equation (A.11) means that each farm uses a relative mark up equal to $1/\rho_h$. Smaller ρ_h (i.e., smaller σ_h) means a higher degree of product differentiation in type h products, leading to a higher mark up.

Substituting (A.11) into (A.9) yields

$$\tilde{x}_r^h = \frac{(b_r^h \rho_h)^{\sigma_h}}{(c_h W_r + R_r)^{\sigma_h}} \cdot \sum_{s=1}^{N} \frac{\alpha_s^h Y_s (P_s^h)^{\sigma_n - 1}}{(T_{rs}^h)^{\sigma_n - 1}} \tag{A.12}$$

which represents the total sales of the farm under the equilibrium price (A.11).

The Potential Function

Substituting (A.11) into (A.10) and using (A.2) yields

$$\pi_r^h = \frac{c_h W_r + R_r}{b_r^h(\sigma_h - 1)}\left(x_r^h - (\sigma_h - 1)b_r^h f_r^h\right) \tag{A.13}$$

If we assume free entry and exist in response to profits or losses, in the long-run, the equilibrium profit becomes zero. Thus, setting $\pi_r^h = 0$ in (A.13), the equilibrium output of each active farm producing a type h variety in region r is

$$x_r^{h*} = (\sigma_h - 1)b_r^h f_r^h \tag{A.14}$$

and the associated equilibrium labor input, l_r^{h*}, and land input, g_r^{h*}, are respectively

$$l_r^{h*} = c_h x_r^{h*} / b_r^h + c_h f_r^h = c_h \sigma_h f_r^h \tag{A.15}$$

$$g_r^{h*} = \sigma_h f_r^h \tag{A.16}$$

In practice, however, reaching the equilibrium will take a time. Hence, the actual sales $\tilde{x}_r^h$, given by (A.12), of a farm producing a type h variety in region r is not necessarily the same as the equilibrium output given by (A.14). In order to examine how appropriate is region r for the production of type h products, we take the ratio of the actual sales $\tilde{x}_r^h$ over the equilibrium sales x_r^{h*}, and define

$$\Omega_r^h \equiv \frac{\tilde{x}_r^h}{x_r^{h*}} = \frac{\tilde{x}_r^h}{(\sigma_h - 1)b_r^h f_r^h} \tag{A.17}$$

which we call the *potential function* of type-h brand agriculture in region r ($r = 1,2,\ldots,N$). It is obvious by definition that

$$\pi_r^h \gtreqless 0 \quad \text{as} \quad \Omega_r^h \gtreqless 1 \tag{A.18}$$

Hence, when the potential Ω_r^h is greater than 1 (resp., less than 1), type-h brand agriculture is profitable (resp., non-profitable) in region r, and hence it will grow (resp., decline) there. Therefore, by examing how close to 1 is the value of potential Ω_r^h in region r, we can judge the appropriateness of each type of brand agriculture in region r.

To be explicit, substituting (A.12) into (A.17) and using (A.2), we have

$$\Omega_r^h = \frac{K_r^h}{f_r^h \cdot (c_h w_r + R_r)^{\sigma_h}} \cdot \sum_{s=1}^{N} \frac{\alpha_s^h Y_s (P_s^h)^{\sigma_h - 1}}{(T_{rs}^h)^{\sigma_h - 1}} \tag{A.19}$$

where K_r^h is a region-specific constant given by

$$K_r^h \equiv (b_r^h)^{\sigma_h - 1}(\sigma_h - 1)^{\sigma_h - 1}\sigma_h^{-\sigma_h} \tag{A.20}$$

Thus, using this potential function, we can investigate for each type of brand

agriculture the region in which it is the most appropriate. Furthermore, notice that each parameter, b_r^h (productivity parameter), f_r^h (fixed costs parameter) and T_{rs}^h (transport parameter), will be affected differently by various infrastructure projects. Thus, we can also investigate the possible infrastructure policy for improving the conditions for each type of brand agriculture in each region.

To do such location and policy analyses, however, the potential function (A.19) is too general. Thus, we introduce below a more specific case assuming a simple spatial structure of the economy, which we use in the text.

Specification of the Spatial Structure

To be specific, let us consider an economy which has a one-dimensional landscape as represented by the bottom horizontal axis in Figure 3 (in the text). The entire economy consists of the foreign and the domestic. The foreign economy locates at point F, whereas the domestic economy extends from point M to the right hand side along the horizontal axis r. The major market of the domestic economy is concentrated at point M (metropolis), while small regions of about the same size (in terms of area and income) locate contiguously along the axis r. The focus of our analysis is the possible location of each type of brand agriculture inside the domestic economy along the axis.

In the calculation of the potential function Ω_r^h for each region r, first we divide the entire markets of the economy (at which the products of region r are to be sold) into the following four:

F : the foreign market

M : the metropolitan market

$\tilde{r}$: the local market of region r

$r\_$: the rest of all regional markets

In the definition of $\tilde{r}$ (and hence $r\_$), we assume that the "local market" of region r has been appropriately determined already, which includes region r itself and an appropriate set of regions adjacent to region r.

In this geographical context, we rewrite the potential function (A.19) as follows:

$$\Omega_r^h = \frac{K_r^h}{f_r^h \cdot (c_h W_r + R_r)^{\sigma_h}} \cdot \left\{ \frac{\alpha_F^h Y_F (P_F^h)^{\sigma_h - 1}}{(T_{rF}^h)^{\sigma_h - 1}} + \frac{\alpha_M^h Y_M (P_M^h)^{\sigma_h - 1}}{(T_{rM}^h)^{\sigma_h - 1}} + \frac{\alpha_{\tilde{r}}^h Y_{\tilde{r}} (P_{\tilde{r}}^h)^{\sigma_h - 1}}{(T_{r\tilde{r}}^h)^{\sigma_h - 1}} + \varepsilon_{r\_}^h \right\} \quad \text{(A.21)}$$

In this expression, each component in the third term in the braces (related to $\tilde{r}$) are assumed to have been calculated by taking appropriate means. In particular, $T_{r\tilde{r}}^h$ represent the "average transport cost" from region r to $\tilde{r}$. The last term $\varepsilon_{r\_}^h$ is

assumed to be negligibly small, and hence we mostly neglect this term in the rest of analysis.

For convenience, let us disaggregate the transport cost parameter T_{rF}^{h} (from region r to region F) as follows,

$$T_{rF}^{h} = T_{rM}^{h} T_{MF}^{h} \tag{A.22}$$

which is always possible mathematically. Then, we can rewrite the potential function (A.21) as

$$\Omega_r^h = \frac{K_r^h}{f_r^h \cdot (c_h W_r + R_r)^{\sigma_h}} \cdot \left\{ \frac{\alpha_M^h Y_M (P_M^h)^{\sigma_h - 1} + \alpha_F^h Y_F (P_F^h)^{\sigma_h - 1} / (T_{MF})^{\sigma_h - 1}}{(T_{rM}^h)^{\sigma_h - 1}} + \frac{\alpha_{\tilde{r}}^h Y_{\tilde{r}} (P_{\tilde{r}}^h)^{\sigma_h - 1}}{(T_{r\tilde{r}}^h)^{\sigma_h - 1}} + \varepsilon_{r\_}^h \right\} \tag{A.23}$$

where the term $\varepsilon_{r\_}^h$ has been neglected. In this expression, after discounted by $1/(T_{MF})^{\sigma_h - 1}$, the foreign market is put together with the metropolitan market.

To simplify the expression of function (A.23), let us define

$$D_M^h \equiv \alpha_M^h Y_M (P_M^h)^{\sigma_h - 1} + \alpha_F^h Y_F (P_F^h)^{\sigma_h - 1} / (T_{MF})^{\sigma_h - 1} \tag{A.24}$$

$$D_{\tilde{r}}^h \equiv \alpha_{\tilde{r}}^h Y_{\tilde{r}} (P_{\tilde{r}}^h)^{\sigma_h - 1} \tag{A.25}$$

In these expressions, D_M^h represents the "potential demand" for a type h variety at the metropolis (including the discounted "potential demand" of the foreign market), and $D_{\tilde{r}}^h$ that of local market $\tilde{r}$. Furthermore, assuming the productivity parameter b_r^h and the fixed-input parameter f_r^h are independent of regions, we set $b_r^h = b_h$ and $f_r^h = f_h$ for all r. Then, rearranging terms, the potential function (A.23) can be restated as

$$\Omega_r^h = \underbrace{\frac{K_h}{f_h \cdot (c_h W_r + R_r)}}_{\text{fixed cost advantages}} \cdot \left\{ \underbrace{\frac{D_M^h}{[(c_h W_r + R_r) \cdot T_{rM}^h]^{\sigma_h - 1}}}_{\text{effective demand at market } M} + \underbrace{\frac{D_{\tilde{r}}^h}{[(c_h W_r + R_r) \cdot T_{r\tilde{r}}^h]^{\sigma_h - 1}}}_{\text{effective demand at local markets}} \right\} \tag{A.26}$$

where K_h is now given by

$$K_h \equiv (b_h)^{\sigma_h - 1} (\sigma_h - 1)^{\sigma_h - 1} \sigma_h^{-\sigma_h} \tag{A.27}$$

In this expression, the value of Ω_r^h shows the profitability of cultivating a type h variety in region r. It is a *normalized measure of profitability* such that when the production of a type h variety in region r just breaks even, the value of Ω_r^h equals

1; when it yields a positive profit (resp., a negative profit), Ω_r^h is greater than 1 (resp., less than 1). Thus, by examining in each region r how much different from 1 is the value of potential Ω_r^h, we can judge the profitability of type h brand agriculture in each region.

In the first term in the right hand side of equation (A.26), the denominator represents the fixed cost of production. Thus, the first term together shows the *fixed-cost advantages* of region r in type h brand agriculture, which is larger as the fixed cost is smaller. In the first term inside the braces in equation (A.26), the potential demand D_M^h for type h products at the market M is divided by the term $[(c_h W_r + R_r) \cdot T_{rM}^h]^{\sigma_h - 1}$ in which

$$(c_h W_r + R_r) \cdot T_{rM}^h \tag{A.28}$$

represents the *marginal cost in supplying a unit of type* h *variety from region* r *to* M. Thus, the first term inside the braces shows the *effective size of the demand at market* M which is discounted by the marginal supply costs. Likewise, the second term inside the braces represents the *effective size of local demands* discounted by the associated marginal supply costs.

Let us observe in equation (A.26) that the fixed cost

$$f_h \cdot (c_h W_r + R_r) \tag{A.29}$$

affects the potential function in a different way from the marginal supply cost (A.28). This is because the fixed cost (A.29) must be bone entirely by the producer in region r as a direct cost there. In contrast, the marginal supply cost (A.28) is transferred entirely to consumers at the market M as a part of the delivered price of the product. Hence, its value influences the profit of the producer only *indirectly* through affecting the effective demand at market M. Thus, in the denominator of the first term inside the braces in equation (A.26), the marginal supply cost (A.28) is powered by $(\sigma_h - 1)$, i.e., the price elasticity of type h products minus one. This implies that as the price elasticity σ_h becomes lower (i.e., closer to 1), the effective demand at M becomes less sensitive to the marginal supply cost, and hence also to the transport cost parameter T_{rM}^h.

Before examining the location of brand agriculture in a more specific context, let us recall that prior to the location of brand agriculture to be chosen, each region is occupied by the most profitable generic agrarian activity (e.g., rice) under the zero-profit equilibrium. By definition, then the potential function of (the most profitable) generic agrarian activity in each region is unity. Thus, in Figure 3, the horizontal line crossing

the vertical axis at 1 represents the potential curve (or line) of the generic agrarian activity.

Now, to examine the location of brand agriculture specifically, first let us take a simple case where, inside the braces in equation (A.26), the second term of effective local demand is much smaller than the first term of effective metropolitan demand, and hence we drop it. Then, equation (A.26) is simplified as

$$\Omega_r^h = \frac{K_h}{f_h \cdot (c_h W_r + R_r)^{\sigma_h}} \cdot \frac{D_M^h}{(T_{rM}^h)^{\sigma_h - 1}} \tag{A.30}$$

Furthermore, reflecting the standard results of von Thünen model for the location of generic agrarian activities, let us assume that both the wage rate W_r and land rent R_r decreases monotonically with the distance from the metropolis M. Instead of introducing a functional form individually for each W_r and R_r, let us assume simply that

$$c_h W_r + R_r = (c_h W_M + R_M) e^{-a_h r} \tag{A.31}$$

meaning that the marginal production cost for type h varieties decreases negative-exponentially at the rate a_h towards the periphery. In addition, let us assume that

$$T_{rM}^h = e^{\tau_h r} \tag{A.32}$$

implying that the transport cost parameter T_{rM}^h increases exponentially at the rate τ_h with the distance r to the metropolis. Then, substituting (A.31) and (A.32) into (A.30) yields

$$\Omega_r^h = (K_h / f_h) \cdot D_M^h \cdot (c_h w_M + R_M)^{-\sigma_h} e^{[\sigma_h a_h - (\sigma_h - 1)\tau_h] r} \tag{A.33}$$

Since the first three terms in the RHS is independent of distance r, the last term determines the relative value of the potential among locations, leading to the following three type of brand agriculture.

Type 1: cultivating highly unique products targeting the market M

Suppose it holds that $\sigma_h a > (\sigma_h - 1)\tau_h$, i.e.,

$$a_h > \frac{\sigma_h - 1}{\sigma_h} \tau_h, \tag{A.34}$$

Then, as depicted by the curve Ω_r^1 in Figure 3, the associated potential curve increases exponentially towards the periphery, implying that the most periphery is the best location for this type of brand agriculture. And, when the potential demand D_M^1 for type 1 products at market M is sufficiently large, then the associated potential curve will exceed 1 in the periphery, as shown Figure 3. Thus, type 1 brand agriculture can

grow in the periphery.

Given a value of transport parameter a_h, condition (A.34) is likely to hold when σ_h is close to 1, i.e., when the type h represents the group of agrarian products that are highly differentiated from each other, while the transport parameter is not quite large. When products are highly differentiated and hence their price-elasticity is low, even a rather high transport cost does not decrease much the effective demand at the destination; thus this type of agriculture tends to locate in the periphery where the fixed cost (A.29) is low. (In practice, fixed costs represent all the costs associated with the development of unique local products and establishing the brand name.) The majority of highly unique agrarian products belongs to this type. We may call this type of agriculture *the type 1 brand agriculture*.

Type 3: cultivating rather homogenous products with high transport costs aiming at the market M

Conversely, suppose it holds that

$$a_h < \frac{\sigma_h - 1}{\sigma_h}\tau_h \tag{A.35}$$

Then, as depicted by the curve Ω_r^3 in Figure 3, the associated potential curve decreases negative-exponentially from the metropolis, implying that just suburbs of the metropolis is the best location for this type of brand agriculture. Condition (A.35) is likely to hold when σ_h is large, i.e., when type h products are not much differentiated form each other, and also the transport cost parameter is large. Cultivating rather standard fresh vegetables in green houses belongs to this type of brand agriculture, which tends to locate just outside the metropolis. We may call this type of agriculture *the type 3 brand agriculture*.

Type 2: cultivating the products aiming for the local markets

So far, we have neglected the local demand represented by the last term in equation (A.26). However, in the intermediate situation between type 1 and type 3 such that parameter a_h and $[(\sigma_h - 1)/\sigma_h]\cdot\tau_h$ are roughly the same, i.e.,

$$a_h \approx \frac{\sigma_h - 1}{\sigma_h}\cdot\tau_h \tag{A.36}$$

the last term in equation (A.26) becomes important. In this case, as depicted by the curve Ω_r^2, the associated potential function tends to achieve the maximum at a middle location where the local demand for that product is large. This may happen when the newly started brand agriculture is not yet very competitive in the metropolitan market, and hence its main target is the local markets nearby. For another example, an successful Michino Eki tends to be at an intermediate location where traveling cars

wish to take a rest. We call this type of agrarian activity *the type 2 brand agriculture*.

We have identified above three representative types of brand agriculture, which are discussed in the text.

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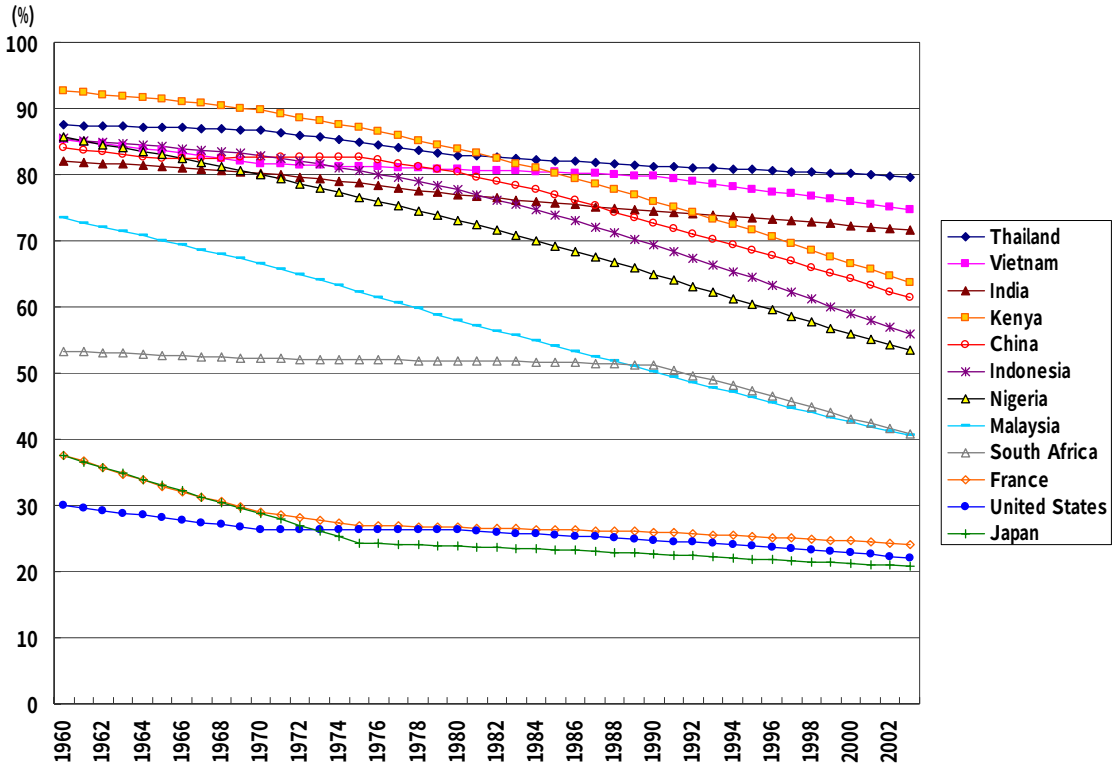
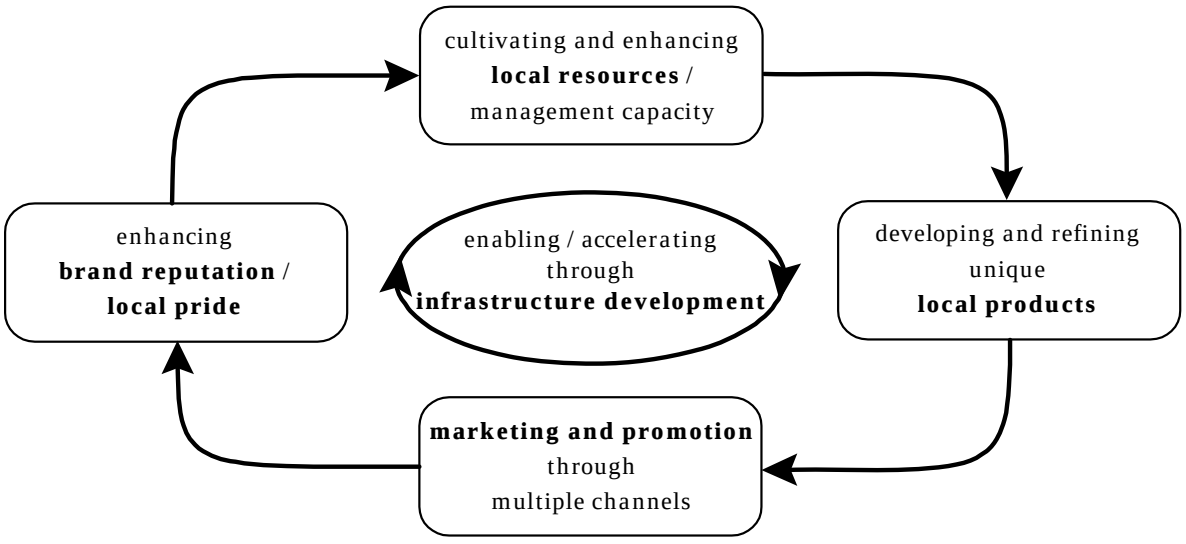
Figure 1. Rural Population Share in Selected Countries



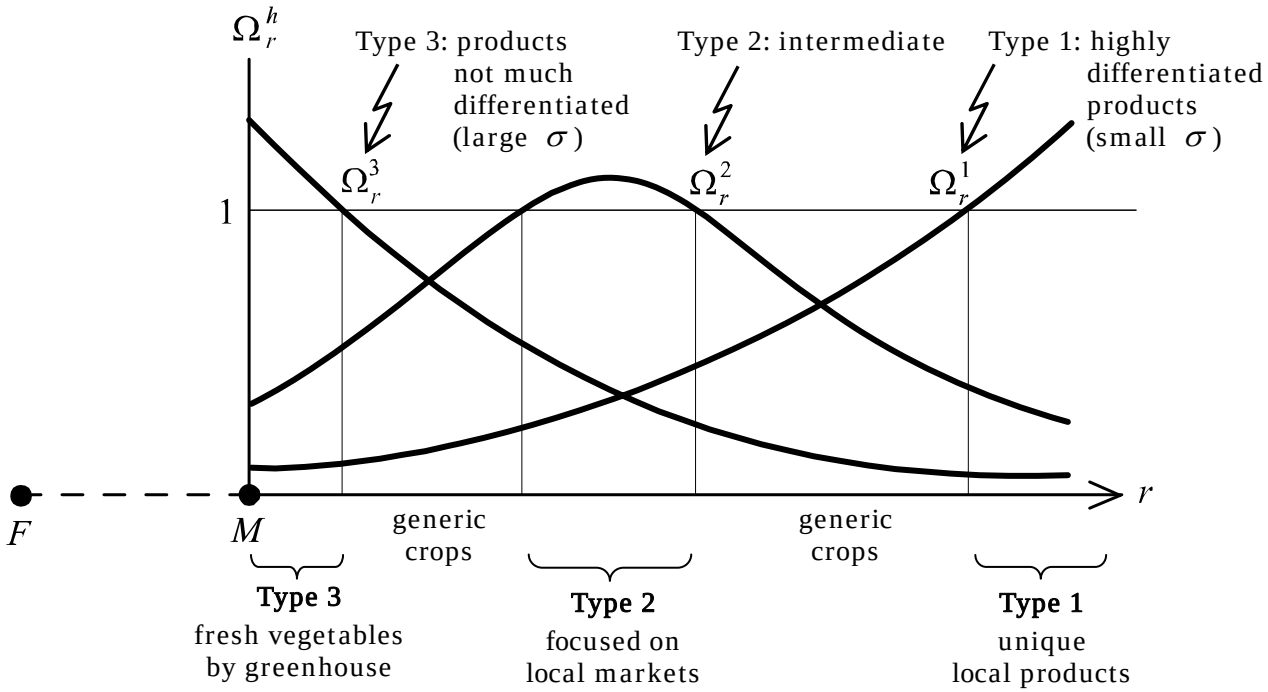
Source: Data from World Bank, World Development Indicators

Figure 2. Evolution of Brand Agriculture through Double-Loop Processes



Source: Author

Figure 3. Potential Curves for the Three Types of Brand Agriculture



Source: Author

Figure 4. The Map of Japan with Cited Locations

Source: Author

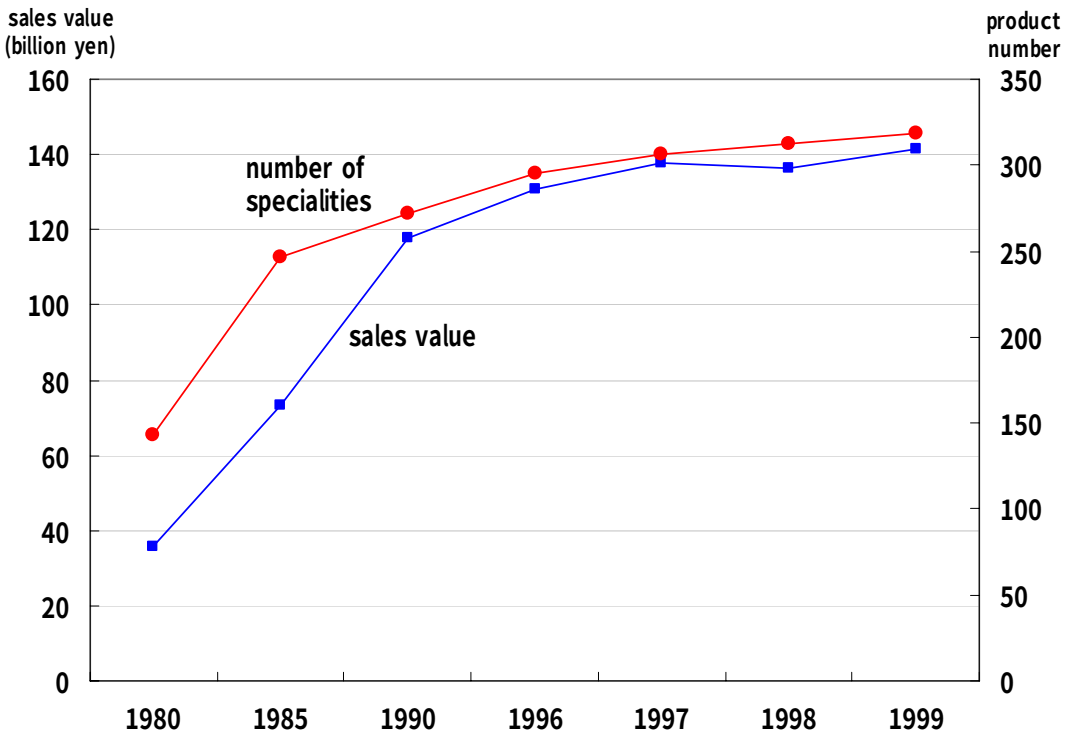
Figure 5. Designated OVOP Projects in Oita Prefecture in 2000

project type	number
community promotion activity	103
special facilities	134
environmental	76
cultural	124
specialties	329
total	766

agricultural products	157
stock raising products	35
stock raising processed goods	39
fishery products	38
forestry products	27
handicraft･others	33

Source: Oita OVOP Survey (2000)

Figure 6. Growth of OVOP in Oita Prefecture (specialty products)



Source: Oita OVOP Survey (2000)

Figure 7. Products of Irodori Project: Tsumamono for Japanese Dishes

Source: pictures provided by Irodori Co., Inc.

Figure 8. Irodori Project in Action with All Smiles

Source: pictures provided by Irodori Co., Inc.

Figure 9. Information-Transportation System Supporting Irodori Project

(a) Watching market information

(b) Special keyboard and big mouse

(c) Packing

(d) Sending to the airport by special truck

Source: pictures provided by Irodori Co., Inc.

Figure 10. Michino Eki Tomiura / Loquat Club (Chiba Prefecture)

(a) Michino Eki Tomira from the front

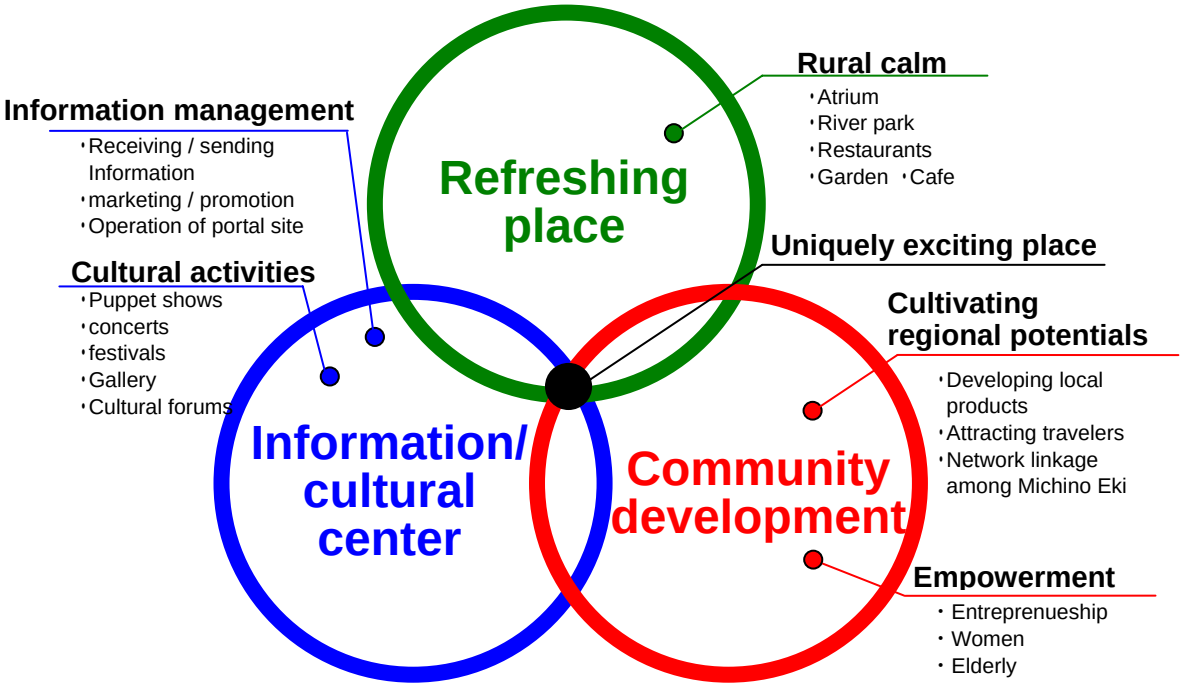
(b) Michino Eki Tomiura looking from the stream

(c) Busses and cars from Tokyo and many other cities

(d) The loquat, the central local resource

Source: pictures provided by Loquat Club

Figure 11. The Concept and Functions of Michino Eki Tomiura



Source: Management office of Michino Eki Tomiura / Loquat Club

Figure 12. Examples of Loquat Products

Source: Management office of Michino Eki Tomiura / Loquat Club

Figure 13. Knowledge Externalities and Learning Networks in Multiple Layers